CAS SciFinder

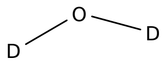
Task History

Initiating Search

February 21, 2025, 11:35 AM

Substances:

Filtered By:



Structure Match: **As Drawn**

Search Tasks

Task	Search Type	View
Returned Substance Results + Filters (1,728)	Substances	View Results
Exported: Retrieved Related Reaction Results + Filters (1,932)	Reactions	View Results

Filtered By:

Substance Role: **Reagent, Solvent**

Catalyst: **[1,1'-Bis(diphenylphosphino)ferrocene]dichloropalladium, [(1,2,5,6-η)-1,5-Cyclooctadiene][(3,4-η)-2,5-furandione]palladium, [1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]chloro(η^{3}-2-propen-1-yl)palladium, [[2',6'-Bis(1-methylethoxy)[1,1'-biphenyl]-2-yl]dicyclohexylphosphine-κ*P*]bromo[3-[(3*S*)-3,7-dimethyloctyl]-2-thienyl]palladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*][[2',6'-bis(1-methylethoxy)[1,1'-biphenyl]-2-yl]dicyclohexylphosphine-κ*P*]chloropalladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*]chloro[[5-(diphenylphosphino)-9,9-dimethyl-9*H*-xanthen-4-yl]diphenylphosphine-κ*P*]palladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*](methanesulfonato-κ*O*)[tris(1,1-dimethylethyl)phosphine]palladium, Bis[(2,3-η)-bicyclo[2.2.1]hept-2-ene]bis[μ-[(2,3-η:5,6-η)-2,5-cyclohexadiene-1,4-dione]]dipalladium, Bis(acetato-κ*O*)bis(*N*,*N*-dimethylguanidine-κ*N*'')palladium, Bis(acetato-κ*O*)bis(*N*,*N*,*N*',*N*'-tetramethylguanidine-κ*N*'')palladium, Bis[μ-(acetato-κ*O*:κ*O*')]bis(2,9-dimethyl-1,10-phenanthroline-κN^{1},κN^{10})dipalladium(2+), Bis(benzonitrile)dichloropalladium, Bis(dibenzylideneacetone)palladium,**

Bis(hexafluoroacetylacetonato)palladium, Bis(tri-*tert*-
butylphosphine)palladium, Hexakis[2,9-bis(2,4,6-
trimethylphenyl)-1,10-phenanthroline-
κN^1,κN^{10}]tetrakis[μ$_3$-[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-
triazine]]hexapalladium(12+), Methanesulfonic acid,
1,1,1-trifluoro-, palladium(2+) salt (2:1), Palladate(2-),
bis[μ-(acetato-κ*O*:κ*O*')]tetrakis[(1,1-
dimethylethyl)phenylphosphinito-κ*P*]di-, dihydrogen,
Palladate(4-), bis(acetato-κ*O*)bis[2-amino-6-(hydroxy-
κ*O*)-4(3*H*)-pyrimidinonato(2-)]-, sodium (1:4),
Palladate(4-), bis(acetato-κ*O*)bis[2-(dimethylamino)-
6-(hydroxy-κ*O*)-4(3*H*)-pyrimidinonato(2-)]-, sodium
(1:4), Palladate(9-), tris[[3,3',3''-(phosphinidyne-
κ*P*)tris[benzenesulfonato]](3-)]-, sodium (1:9),
Palladium, Palladium, [1,1'-
bis(diphenylphosphino)ferrocene-*P*,*P*']dichloro-, (*SP*-
4-2)-, compd. with 2-propanone (2:1),
Palladium(12+), hexakis(1,2-ethanediamine-
κN^1,κN^2)tetrakis[μ$_3$-[2,4,6-tri(3-pyridinyl-κ*N*)-1,3,5-
triazine]]hexa-, nitrate (1:12), Palladium(12+),
hexakis(1,2-ethanediamine-κN^1,κN^2)tetrakis[μ$_3$-
[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-triazine]]hexa-, nitrate
(1:12), Palladium(12+), hexakis(1,2-
ethanediamine-*N*,*N*')tetrakis[μ$_3$-[2,4,6-tris[4-(4-
pyridinyl)phenyl]-1,3,5-triazine-N^2:N^4:N^6]]hexa-,
dodecanitrate, Palladium(12+), hexakis(N^1,N^1,N^2,N^2-
tetramethyl-1,2-ethanediamine-κN^1,κN^2)tetrakis[μ$_3$-
[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-triazine]]hexa-, nitrate
(1:12), Palladium(1+), (acetonitrile)[2,3-dihydro-3-[2-
(hydroxy-κ*O*)ethyl]-*N*-phenyl-1*H*-benzimidazole-1-
acetamidato(3-)-κC^2,κN^{N^1}]-, (*SP*-4-3)-,
tetrafluoroborate(1-) (1:1), Palladium(1+),
(acetonitrile)[2,3-dihydro-3-methyl-*N*-[2-methyl-1-
[(phenylmethoxy-κ*O*)methyl]propyl]-1*H*-
benzimidazole-1-acetamidato(3-)-κC^2,κN^{N^1}]-, (*SP*-4-
4)-, tetrafluoroborate(1-) (1:1), Palladium(1+),
(acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-
methyl-1*H*-benzimidazole-1-acetamidato(3-)-
κC^2,κN^{N^1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1),
Palladium(1+), diaqua(L-methioninato-κ*N*,κ*S*)-,
monohydrogen, (*SP*-4-2)-, Palladium(1+), diaqua(*S*-
methyl-L-cysteinato-κ*N*,κ*S*)-, hydrogen, (*SP*-4-2)-,
Palladium(1+), tris[μ-
(methanethiolato)]tris(triphenylphosphine)tri-,
triangulo, stereoisomer, (*OC*-6-11)-
hexafluoroantimonate(1-) (1:1), Palladium(24+),
tetracosakis[μ-[(2*S*,5*S*)-3-[2-[2,6-bis[2-(4-pyridinyl-
κ*N*)ethynyl]phenoxy]ethyl]-2-(1,1-dimethylethyl)-5-
(phenylmethyl)-4-imidazolidinone]]dodeca-,
tetrafluoroborate(1-) (1:24), Palladium(24+),
tetracosakis[μ-[4-[[2-[2,6-bis[2-(4-pyridinyl-
κ*N*)ethynyl]phenoxy]acetyl]oxy]-2,2,6,6-tetramethyl-
1-piperidinyloxy]]dodeca-, tetrafluoroborate(1-)
(1:24), Palladium(24+), tetracosakis[μ-[4,4'-[(2-
methoxy-1,3-phenylene)di-2,1-
ethynediyl]bis[pyridine-κ*N*]]dodeca-,
tetrafluoroborate(1-) (1:24), Palladium(2+), bis(1,10-
phenanthroline-κN^1,κN^{10})-, (*SP*-4-1)-,
hexafluorophosphate(1-) (1:2), Palladium(2+),
bis[1,1'-(1*S*)-[1,1'-binaphthalene]-2,2'-diylbis[1,1-
diphenylphosphine-κ*P*]]di-μ-hydroxydi-,
tetrafluoroborate(1-) (1:2), Palladium(2+), bis[μ-
(acetato-κ*O*:κ*O*')]bis[2-[(4*S*)-4-(1,1-dimethylethyl)-4,5-

dihydro-2-oxazolyl-κ*N*³]-6-methylpyridine-κ*N*]di-, stereoisomer, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis[μ-(acetato-κ*O*:κ*O*')]bis(2,9-dimethyl-1,10-phenanthroline-κ*N*¹,κ*N*¹⁰)di-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis(acetonitrile)[2-(2-pyridinyl-κ*N*)benzoxazole-κ*N*³]-, (*SP*-4-2)-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis(acetonitrile)(2,9-dimethyl-1,10-phenanthroline-κ*N*¹,κ*N*¹⁰)-, (*SP*-4-2)-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), diaqua(1,2-cyclohexanediamine-κ*N*,κ*N*')-, (*SP*-4-2)-, Palladium(2+), diaqua(1,2-propanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(2-methyl-1,2-propanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(*N*-methyl-1,2-ethanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(*N*,*N*,*N*',*N*'-tetramethyl-1,2-ethanediamine-κ*N*,κ*N*')-, (*SP*-4-2)-, Palladium(2+), di-μ-hydroxytetrakis(triphenylphosphine)di-, tetrafluoroborate(1-) (1:2), Palladium(2+), tetraaqua-, (*SP*-4-1)-, Palladium(2+), tetrakis(acetonitrile)-, (*SP*-4-1)-, tetrafluoroborate(1-) (1:2), Palladium acetylacetonate, Palladium, bis(acetonitrile)dichloro-, Palladium bromide, Palladium chloride, Palladium diacetate, Palladium, dichlorobis[tris(3,5-difluorophenyl)phosphine-κ*P*]-, Palladium dihydroxide, Palladium diiodide, Palladium dipivalate, Palladium, hexakis[μ-(acetato-κ*O*:κ*O*')]tri-, *cyclo*, Palladium hydroxide, Palladium nitrate, Palladium oxide (PdO), Palladium trifluoroacetate, Palladium, tris[μ-[(1,2-η:4,5-η)-(1*E*,4*E*)-1,5-diphenyl-1,4-pentadien-3-one]]di-, compd. with trichloromethane (1:1), Poly(oxy-1,2-ethanediyl), α-hydroxy-ω-methoxy-, ether with (*SP*-4-3)-[2,6-bis[[(2-hydroxyethyl)thio-κ*S*]methyl]phenyl-κ*C*]chloropalladium (2:1), Potassium tetrachloropalladate, (*SP*-4-1)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]dichloro(3-chloropyridine-κ*N*)palladium, (*SP*-4-1)-Chloro[*rel*-2,6-bis[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Chloro[*rel*-4-methoxy-2,6-bis[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Chloro[*rel*-4-methoxy-2,6-bis[[(*R*)-phenylseleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Dichlorobis[1-(phenylmethyl)-1*H*-imidazole-κ*N*³]palladium, (*SP*-4-2)-[1,1'-(1,3-Propanediyl)bis[1,1-diphenylphosphine-κ*P*]]bis(1,1,1-trifluoromethanesulfonato-κ*O*)palladium, (*SP*-4-2)-(1,2-Ethanediamine-κ*N*¹,κ*N*²)bis(nitrato-κ*O*)palladium, (*SP*-4-2)-Chloro[*rel*-2-[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]-6-[[(*S*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Chloro[*rel*-4-methoxy-2-[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]-6-[[(*S*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Chloro[*rel*-4-methoxy-2-[[(*R*)-phenylseleno-κ*Se*]methyl]-6-[[(*S*)-phenylseleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Diaqua[1,2-bis(methylthio-κ*S*)ethane]palladium(2+), (*SP*-4-2)-Diaqua(1,2-ethanediamine-κ*N*¹,κ*N*²)palladium(2+), (*SP*-4-2)-Dibromobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]decane-κ*P*⁷)palladium, (*SP*-4-2)-Dichloro[1,1'-(1,3-

propanediyl)bis[1,1-diphenylphosphine-κ*P*]]palladium, (*SP*-4-2)-Dichloro(1,2-ethanediamine-κN^1,κN^2)palladium, (*SP*-4-2)-Dichlorobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]decane-κP^7)palladium, Stereoisomer of tetrachlorobis[μ-[*O*,*O*-diethyl *N*-(7λ^5-1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]dec-7-ylidene-κN^1)phosphoramidothioate-κ*S*]]dipalladium, stereoisomer of (η^5-2,4-Cyclopentadien-1-yl)[(1,2,3-η)-1-phenyl-2-propen-1-yl]palladium, (*SP*-4-3)-[Dicyclohexyl[2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]phosphine](methanesulfonato-κ*O*)[2'-(methylamino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*]palladium, (*SP*-4-3)-Chloro[4-[(4*S*)-4-[[2-(1,1-dimethylethoxy)-2-oxoacetyl]amino]-5-oxo-5-(undecylamino)pentyl]-2,6-di(2-pyridinyl-κ*N*)phenyl-κ*C*]palladium, (*SP*-4-3)-[1-[Bis(1,1-dimethylethyl)phosphino]-1'-[bis(tricyclo[3.3.1.1^{3,7}]dec-1-yl)phosphino]ferrocene]dichloropalladium, Tetrakis(triphenylphosphine)palladium

Document Type: Journal

Language: English

Reactions (500)

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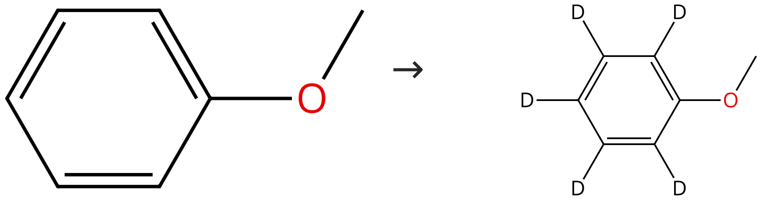
Scheme 1 (1 Reaction)

Steps: **1** Yield: **100%**



Suppliers (89)

Suppliers (23)

31-614-CAS-24211368

Steps: **1** Yield: **100%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 40 °C

Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 2 (1 Reaction)

Steps: **1** Yield: **100%**

31-614-CAS-30132539

Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

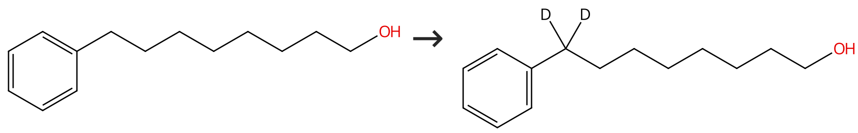
Efficient and selective Pt/C-catalyzed H-D exchange reaction of aromatic rings

By: Ito, Nobuhiro; et al

Bulletin of the Chemical Society of Japan (2008), 81(2), 278-286.

Scheme 3 (1 Reaction)

Steps: **1** Yield: **100%**



Suppliers (55)

31-116-CAS-12602378

Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 50 °C

Experimental Protocols

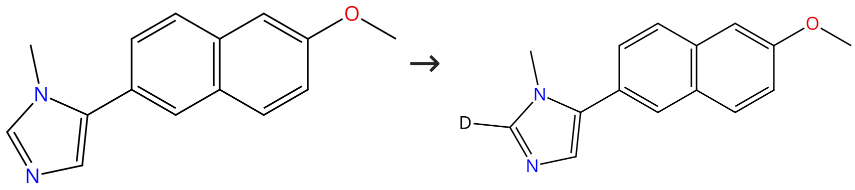
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 4 (1 Reaction)

Steps: **1** Yield: **100%**



Supplier (1)

31-116-CAS-15171780

Steps: **1** Yield: **100%**

1.1 **Reagents:** Cesium carbonate, Water-d_2
Catalysts: Palladium(2+), bis(1,10-phenanthroline-κN^1,κN^{10})-, (*SP*-4-1)-, hexafluorophosphate(1-) (1:2)
Solvents: Dimethylacetamide; 20 h, 150 °C

Experimental Protocols

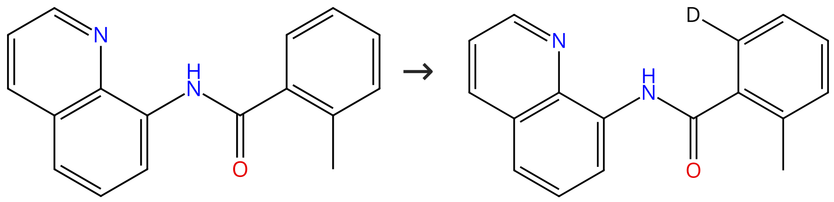
Direct Arylation of Simple Azoles Catalyzed by 1,10-Phenanthroline Containing Palladium Complexes: An Investigation of C4 Arylation of Azoles and the Synthesis of Triarylated Azoles by Sequential Arylation

By: Shibahara, Fumitoshi; et al

Journal of Organic Chemistry (2011), 76(8), 2680-2693.

Scheme 5 (2 Reactions)

Steps: **1** Yield: **95-100%**



Suppliers (4)

31-614-CAS-37484177

Steps: **1** Yield: **100%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 72 h, 140 °C

Experimental Protocols

Palladium-Catalyzed Direct C(sp^2)-H Cyanomethylation of Arylamides using Chloroacetonitrile

By: Garai, Sumit; et al

Journal of Organic Chemistry (2023), 88(17), 12755-12764.

31-116-CAS-19041715

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 6 (2 Reactions)

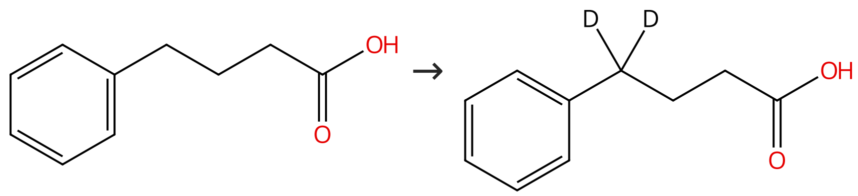
Steps: **1** Yield: **94-100%**

Suppliers (73)

31-116-CAS-1625759 Steps: **1** Yield: **100%**	**Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, 50 °C	By: Kurita, Takanori; et al
Experimental Protocols	Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-8732136 Steps: **1** Yield: **94%**	**Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C	By: Esaki, Hiroyoshi; et al
Experimental Protocols	Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 7 (8 Reactions) Steps: **1** Yield: **49-100%**



Suppliers (102) Suppliers (2)

31-116-CAS-2761856 Steps: **1** Yield: **100%**	**Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 6 - 24 h, 50 °C	By: Kurita, Takanori; et al
Experimental Protocols	Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-20426432 Steps: **1** Yield: **93%**	**Catalytic C-H Amination Mediated by Dipyrrin Cobalt Imidos**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 50 °C	By: Baek, Yunjung; et al
	Journal of the American Chemical Society (2019), 141(19), 7797-7806.

31-116-CAS-19895677 Steps: **1** Yield: **84%**	**Ruthenium(II)-Catalyzed Enantioselective γ-Lactams Formation by Intramolecular C-H Amidation of 1,4,2-Dioxazol-5-ones**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 1 atm, 50 °C	By: Xing, Qi; et al
Experimental Protocols	Journal of the American Chemical Society (2019), 141(9), 3849-3853.

31-614-CAS-35965723 Steps: **1** Yield: **80%**	**Discovery of a simple iron catalyst reveals the intimate steps of C-H amination to form C-N bonds**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 72 h, 50 °C	By: Stroek, Wowa; et al
Experimental Protocols	Chemical Science (2023), 14(11), 2849-2859.

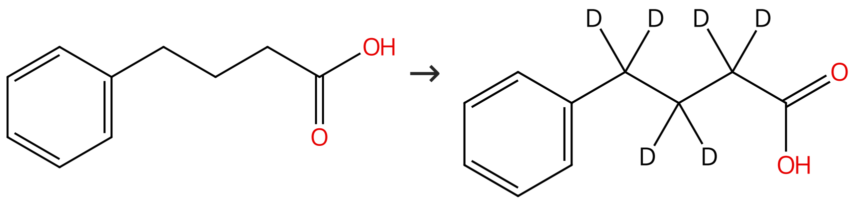
31-614-CAS-31591747 Steps: **1** Yield: **80%**	**An Iron-Mesoionic Carbene Complex for Catalytic Intramo lecular C-H Amination Utilizing Organic Azides**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 72 h, 50 °C	By: Stroek, Wowa; et al
Experimental Protocols	Journal of the American Chemical Society (2021), 143(48), 20157-20165.

31-614-CAS-39587033	Steps: **1** Yield: **49%**	Iron-Catalyzed Intramolecular C(sp^3)-H Lactonization of Hydroxamate Derivatives Promoted by a 1,5-HAT
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 24 h, rt	By: Esteves, Hugo; et al ACS Catalysis (2024), 14(6), 4329-4339.

31-614-CAS-41216659	Steps: **1**	Selective nitrogen insertion into aryl alkanes
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 24 h, 50 °C	By: Zhang, Zheng; et al
Experimental Protocols		Nature Communications (2024), 15(1), 6016.

31-614-CAS-33032349	Steps: **1**	Site-selective desaturation of C(sp^3)-C(sp^3) bonds via photoinduced ruthenium catalysis
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 50 °C	By: Wang, Chuanyong; et al
Experimental Protocols		Organic Chemistry Frontiers (2022), 9(16), 4316-4327.

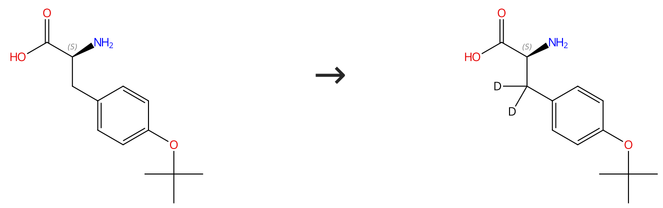
Scheme 8 (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (102)

31-614-CAS-29520032	Steps: **1** Yield: **100%**	Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C	By: Esaki, Hiroyoshi; et al
Experimental Protocols		Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 9 (1 Reaction) Steps: **1** Yield: **100%**



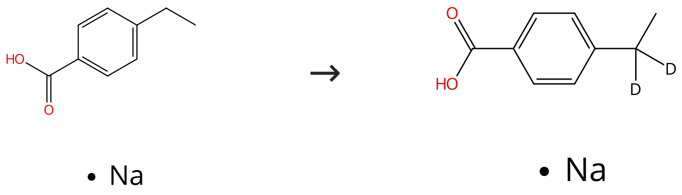
Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (87)

31-116-CAS-7278850	Steps: **1** Yield: **100%**	Efficient and selective deuteration of phenylalanine derivatives catalyzed by Pd/C
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 6 h, 110 °C	By: Maegawa, Tomohiro; et al
1.2	**Reagents:** Water	Synlett (2005), (5), 845-847.
Experimental Protocols		

Scheme 10 (2 Reactions) Steps: **1** Yield: **99-100%**



Suppliers (3)

31-116-CAS-10750310 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-9881216 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

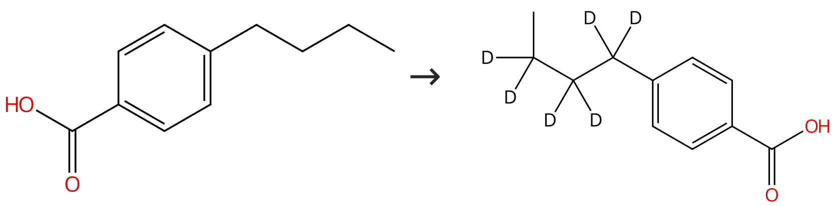
Experimental Protocols

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 11 (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (87)

31-116-CAS-6978893 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 12 (1 Reaction) Steps: **1** Yield: **100%**

Suppliers (76)

31-614-CAS-26356580 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium (carbon-supported)
Solvents: Water-d_2; 24 h, 160 °C

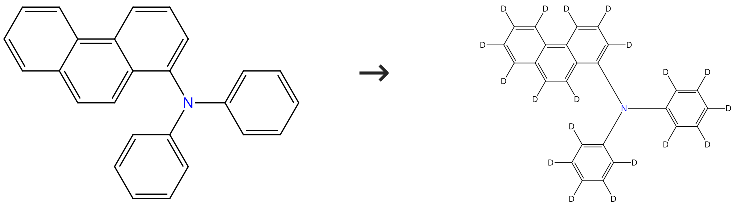
Synthesis of deuterium-labelled drugs by hydrogen-deuterium (H-D) exchange using heterogeneous catalysis

By: Modutlwa, Nkaelang; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2010), 53(11-12), 686-692.

Scheme 13 (1 Reaction)

Steps: **1** Yield: **100%**



31-116-CAS-22750365

Steps: **1** Yield: **100%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C

Experimental Protocols

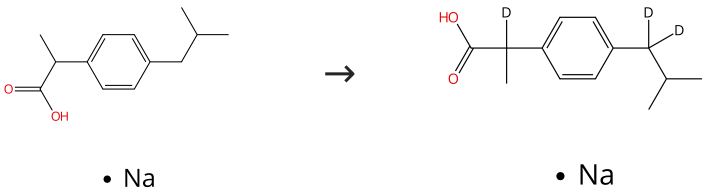
Highly Efficient Persistent Room-Temperature Phosphorescence from Heavy Atom-Free Molecules Triggered by Hidden Long Phosphorescent Antenna

By: Bhattacharjee, Indranil; et al

Advanced Materials (Weinheim, Germany) (2020), 32(31), 2001348.

Scheme 14 (1 Reaction)

Steps: **1** Yield: **100%**



Suppliers (52)

31-116-CAS-3677152

Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, 50 °C

Experimental Protocols

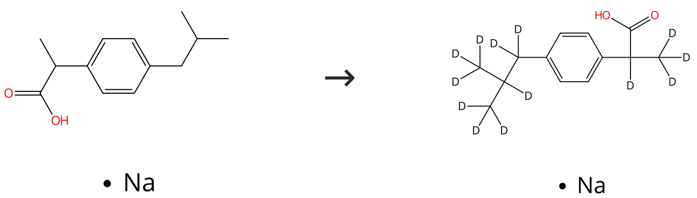
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 15 (3 Reactions)

Steps: **1** Yield: **99-100%**



Suppliers (52)

31-614-CAS-26083770

Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

31-614-CAS-30939808

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Efficient and selective Pt/C-catalyzed H-D exchange reaction of aromatic rings

By: Ito, Nobuhiro; et al

Bulletin of the Chemical Society of Japan (2008), 81(2), 278-286.

31-614-CAS-29043757 Steps: **1** Yield: **99%**

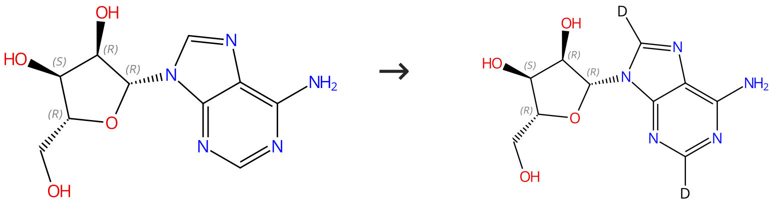
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 160 °C

Aromatic ring favorable and efficient H-D exchange reaction catalyzed by Pt/C

By: Sajiki, Hironao; et al

Tetrahedron Letters (2005), 46(41), 6995-6998.

Scheme 16 (3 Reactions) Steps: **1** Yield: **99-100%**



Absolute stereochemistry shown

Suppliers (164)

Absolute stereochemistry shown, Rotation (-)

Supplier (1)

31-116-CAS-2841625 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 48 h, 140 °C

Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

31-116-CAS-10100603 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-6431719 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

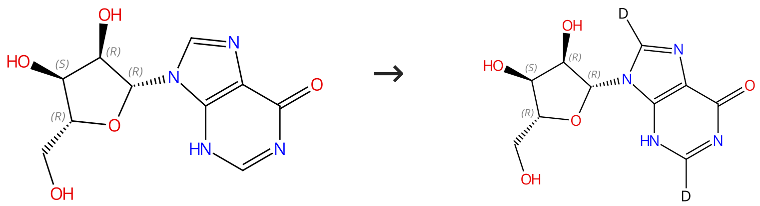
Experimental Protocols

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 17 (2 Reactions) Steps: **1** Yield: **100%**



Absolute stereochemistry shown

Suppliers (148)

Absolute stereochemistry shown, Rotation (-)

Suppliers (10)

31-116-CAS-8247457 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-12819522 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

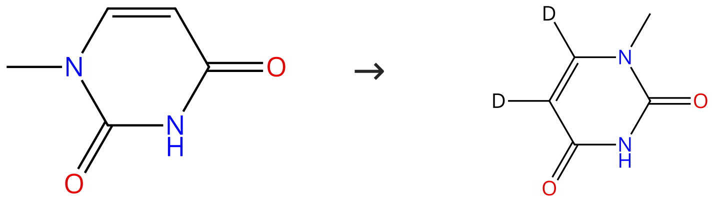
Experimental Protocols

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 18 (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (85)

31-116-CAS-15472823 Steps: **1** Yield: **100%**

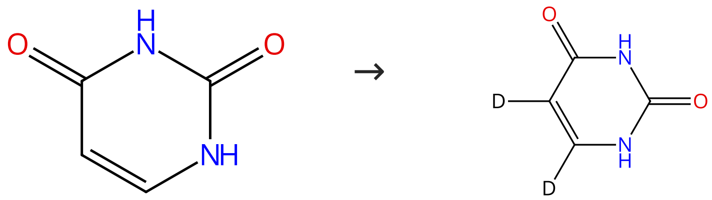
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

Scheme 19 (2 Reactions) Steps: **1** Yield: **100%**



Suppliers (145)   Suppliers (35)

31-116-CAS-12497306 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-1499288 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C; cooled

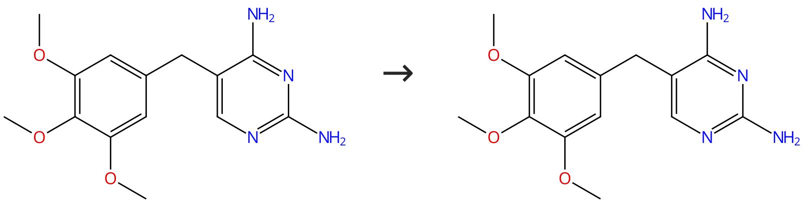
Experimental Protocols

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 20 (1 Reaction) Steps: **1** Yield: **100%**



Suppliers (130)

31-614-CAS-30106943 Steps: **1** Yield: **100%**

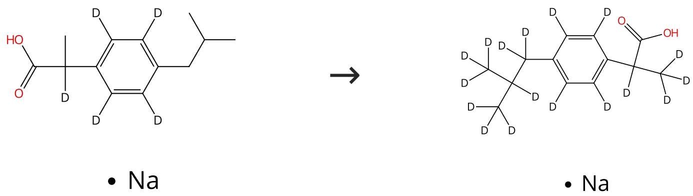
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium (carbon-supported), Platinum (carbon-supported)
Solvents: Water-d_2; 34 h, 180 °C

Synthesis of deuterium-labelled drugs by hydrogen-deuterium (H-D) exchange using heterogeneous catalysis

By: Modutlwa, Nkaelang; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2010), 53(11-12), 686-692.

Scheme 21 (1 Reaction) Steps: **1** Yield: **100%**



31-614-CAS-28238815 Steps: **1** Yield: **100%**

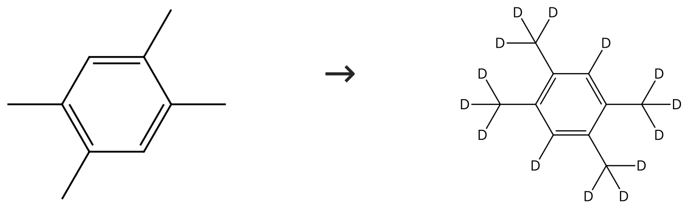
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 160 °C

Aromatic ring favorable and efficient H-D exchange reaction catalyzed by Pt/C

By: Sajiki, Hironao; et al

Tetrahedron Letters (2005), 46(41), 6995-6998.

Scheme 22 (2 Reactions) Steps: **1** Yield: **92-100%**



Suppliers (67) Suppliers (19)

31-116-CAS-3719888 Steps: **1** Yield: **100%**

1.1 **Reagents:** Hydrogen, Sodium borohydride
Catalysts: Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

Experimental Protocols

Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

31-116-CAS-7439425 Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

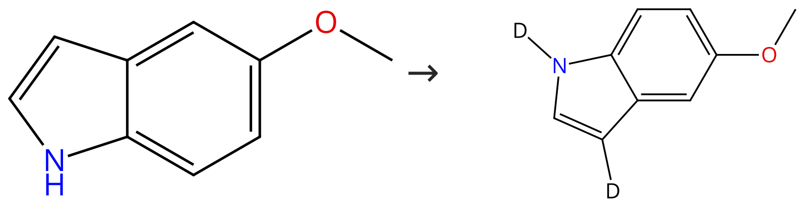
Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 23 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (114)

Supplier (1)

31-116-CAS-16576378 Steps: **1** Yield: **99%**

1.1 **Reagents:** Benzyl alcohol, Water-d_2
Catalysts: Palladium diacetate, Benzenesulfonic acid, 3-(diphenylphosphino)-, sodium salt (1:1); 30 min, 60 °C

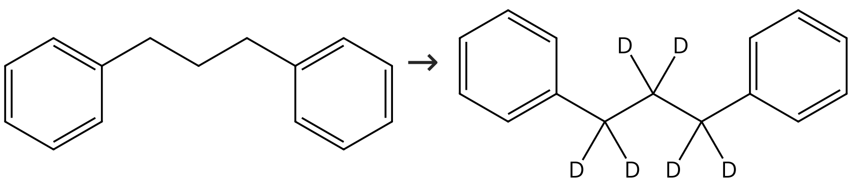
Experimental Protocols

Pd-catalyzed C-H activation in water: synthesis of bis(indolyl) methanes from indoles and benzyl alcohols

By: Hikawa, Hidemasa; et al

RSC Advances (2013), 3(4), 1061-1064.

Scheme 24 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (70)

31-614-CAS-26212792 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

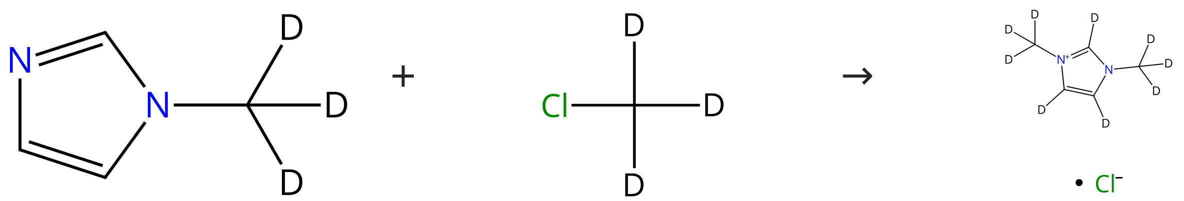
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 25 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (29)

Suppliers (7)

31-116-CAS-10308415 Steps: **1** Yield: **99%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2

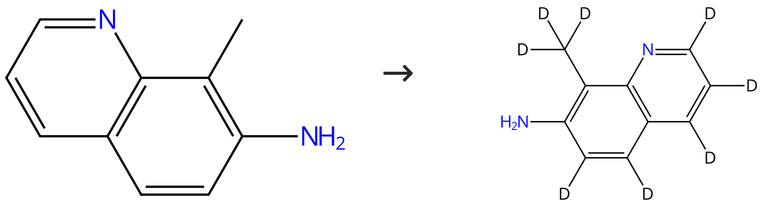
1.2 -

A highly efficient synthetic procedure for deuterating imidazoles and imidazolium salts

By: Hardacre, Christopher; et al

Chemical Communications (Cambridge, United Kingdom) (2001), (4), 367-368.

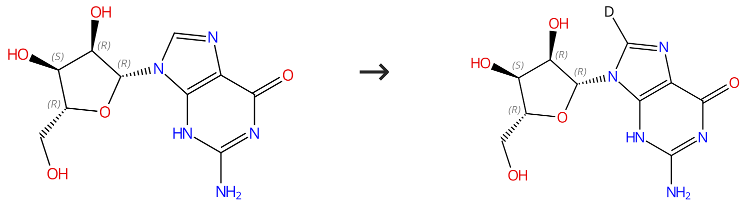
Scheme 26 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (19)

31-614-CAS-42860944 Steps: **1** Yield: **99%**	**Polyatomic molecules with emission quantum yields >20% enable efficient organic light-emitting diodes in the NIR(II) window**
1.1 **Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium; 24 h, 180 °C	By: Wang, Sheng-Fu; et al Nature Photonics (2022), 16(12), 843-850.

Scheme 27 (2 Reactions) Steps: **1** Yield: **92-99%**



Absolute stereochemistry shown

Suppliers (137)

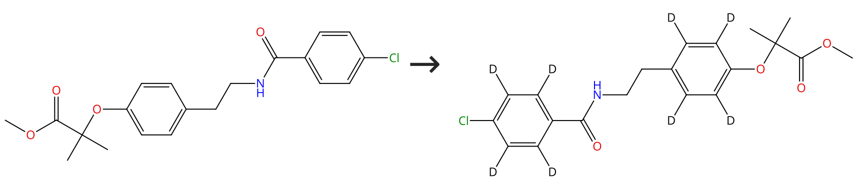
Absolute stereochemistry shown, Rotation (-)

Suppliers (5)

31-116-CAS-10684790 Steps: **1** Yield: **99%**	**Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 110 °C; cooled Experimental Protocols	By: Sajiki, Hironao; et al Synlett (2005), (9), 1385-1388.

31-116-CAS-6111552 Steps: **1** Yield: **92%**	**Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 110 °C; cooled	By: Esaki, Hiroyoshi; et al Heterocycles (2005), 66, 361-369.

Scheme 28 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (14)

31-614-CAS-24211339 Steps: **1** Yield: **99%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

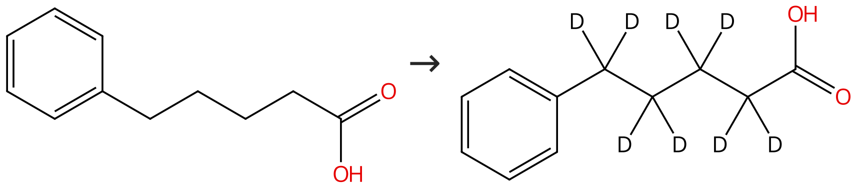
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 29 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (86)

31-614-CAS-28724965 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

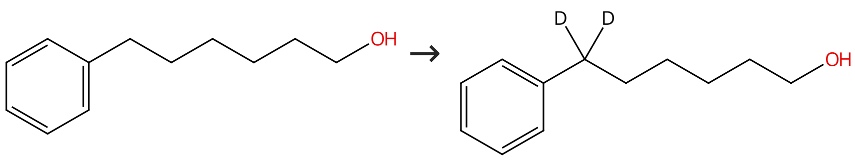
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 30 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (58)

31-614-CAS-25961621 Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

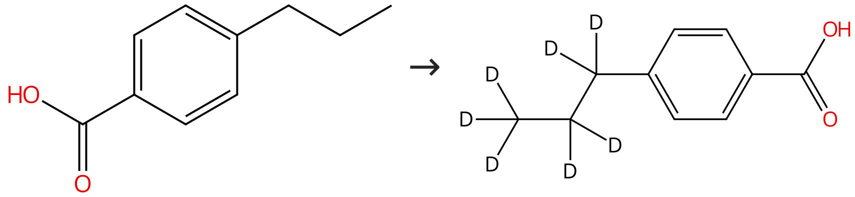
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 31 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (86)

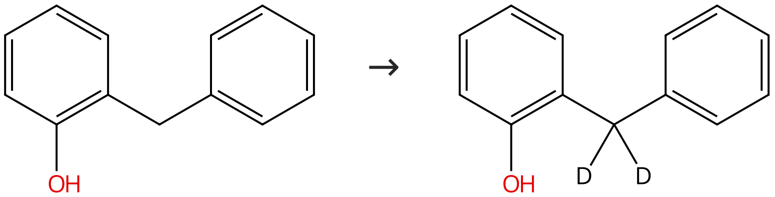
31-614-CAS-27002978	Steps: **1** Yield: **99%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 160 °C	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 32 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (80)

31-116-CAS-14690261	Steps: **1** Yield: **99%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 50 °C	
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 33 (2 Reactions) Steps: **1** Yield: **99%**

Suppliers (59)

31-116-CAS-1475946	Steps: **1** Yield: **99%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium; 4 h, 250 °C	
Experimental Protocols	

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

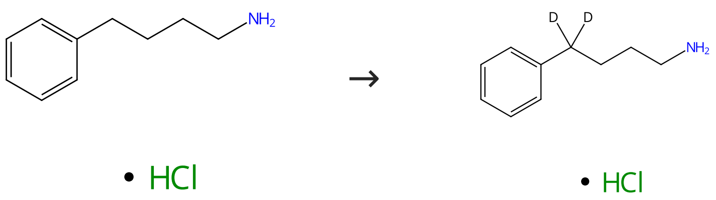
31-116-CAS-1303407	Steps: **1** Yield: **99%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 4 h, 250 °C	

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 34 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (56)

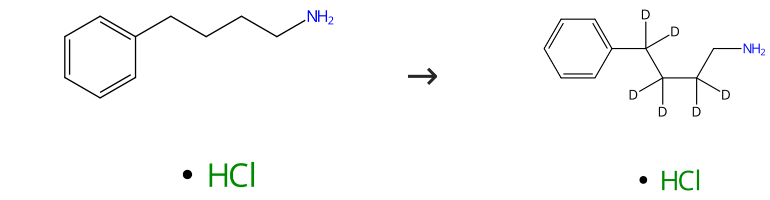
31-116-CAS-5879637	Steps: **1** Yield: **99%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, rt	
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 35 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (56)

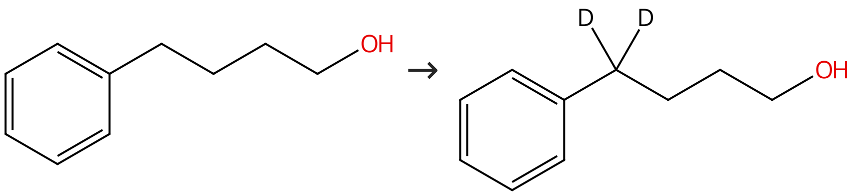
31-116-CAS-10859684	Steps: **1** Yield: **99%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C	
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 36 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (95)

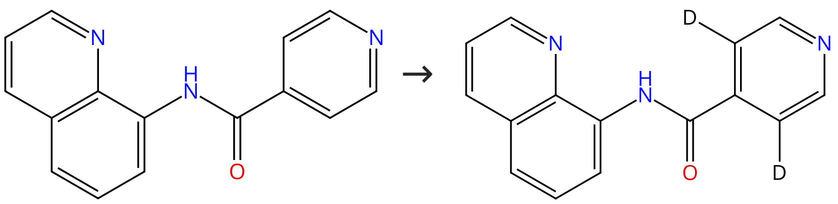
31-614-CAS-30198778	Steps: **1** Yield: **99%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C	
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 37 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (12)

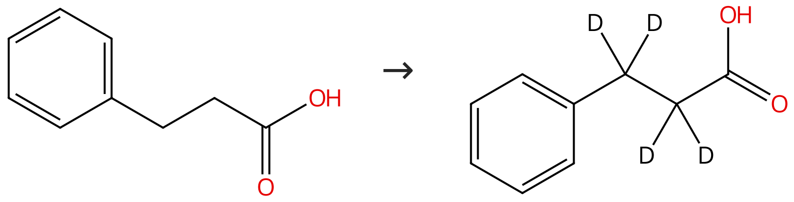
31-116-CAS-19041718	Steps: **1** Yield: **99%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Water-d_2; 48 h, 140 °C; 140 °C → rt
Experimental Protocols	

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 38 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (112)

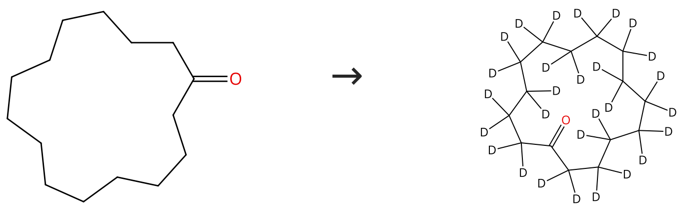
31-614-CAS-28706403	Steps: **1** Yield: **99%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 39 (2 Reactions) Steps: **1** Yield: **99%**



Suppliers (70)

31-116-CAS-1732416	Steps: **1** Yield: **99%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium; 10 h, 250 °C
Experimental Protocols	

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-11970055	Steps: **1** Yield: **99%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 10 h, 250 °C

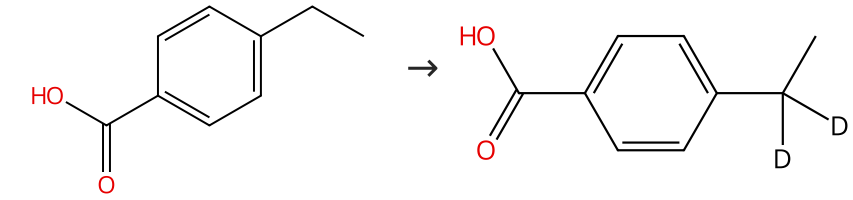
Palladium-catalyzed H-D exchange reaction under hydrothermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 40 (2 Reactions)

Steps: **1** Yield: **97-99%**



Suppliers (95)

31-116-CAS-1076095

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

Experimental Protocols

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

31-116-CAS-14732297

Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

Experimental Protocols

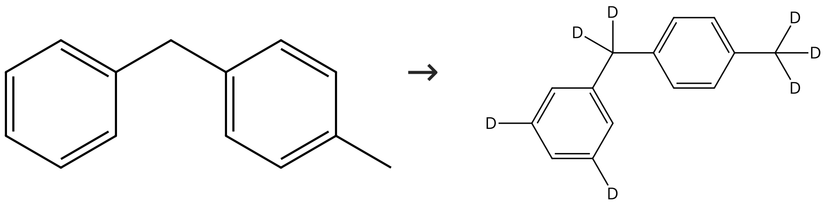
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 41 (1 Reaction)

Steps: **1** Yield: **99%**



Suppliers (66)

31-614-CAS-30320702

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

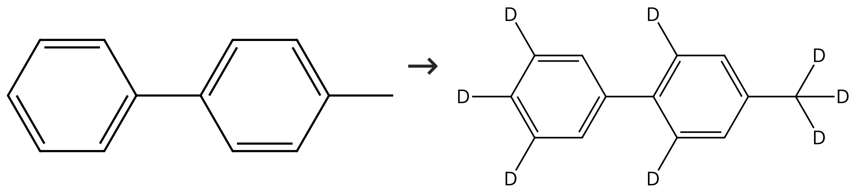
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 42 (1 Reaction)

Steps: **1** Yield: **99%**



Suppliers (86)

31-614-CAS-29584734

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

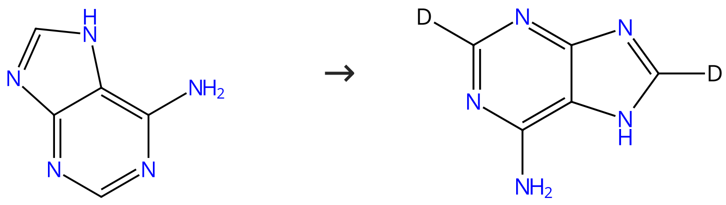
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 43 (3 Reactions)

Steps: **1** Yield: **99%**



Suppliers (156)

Supplier (1)

31-116-CAS-7962874

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-5833761

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-4278874

Steps: **1** Yield: **99%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Experimental Protocols

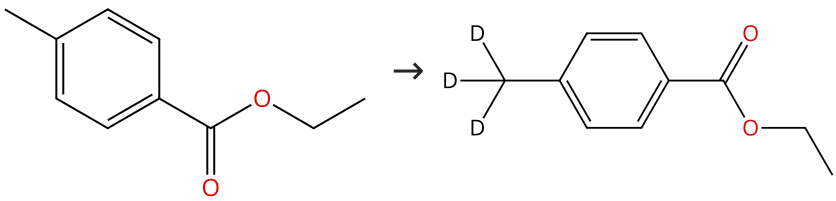
Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 44 (3 Reactions)

Steps: **1** Yield: **93-99%**



Suppliers (69)

Supplier (1)

31-614-CAS-24220251

Steps: **1** Yield: **99%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 3 d, 50 °C

Experimental Protocols

Copper(I)-catalyzed site-selective C(sp^3)-H bond chlorination of ketones, (E)-enones and alkylbenzenes by dichloramine-T

By: Jin, Jianwen; et al

Nature Communications (2021), 12(1), 4065.

31-116-CAS-7690896

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, 50 °C

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-614-CAS-39784252 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 4 d, 50 °C

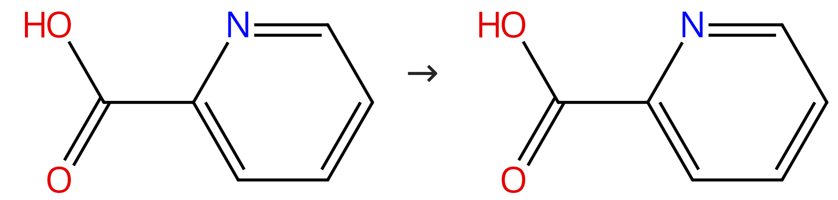
Experimental Protocols

Exploiting Hydroxamic Acids as Organocatalysts for the Epoxidation of Alkenes with Hydrogen Peroxide as the Oxidant

By: Poursaitidis, Efthymios T.; et al

European Journal of Organic Chemistry (2024), 27(13), e202400082.

Scheme 45 (1 Reaction) Steps: **1** Yield: **99%**



Suppliers (115) Supplier (1)

31-614-CAS-29932681 Steps: **1** Yield: **99%**

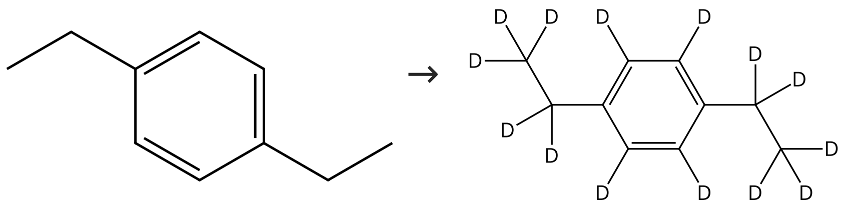
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 46 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (67) Suppliers (11)

31-116-CAS-7535423 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-d_2; 3 h, 2 bar, rt

1.2 **Solvents:** Water-d_2; 24 h, 2 bar, 150 °C

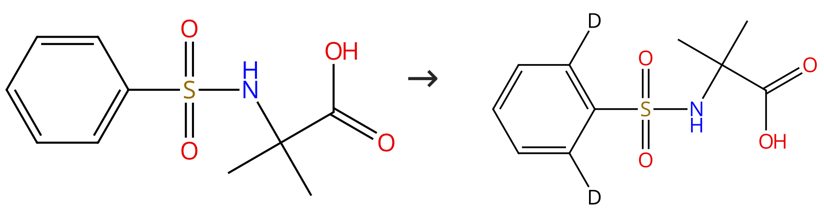
Experimental Protocols

Polystyrene Brushes on Fully Deuterated Organic Nanoparticles by Surface-Initiated Nitroxide-Mediated Radical Polymerization

By: Mazurowski, Markus; et al

Macromolecular Chemistry and Physics (2013), 214(10), 1094-1106.

Scheme 47 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (8)

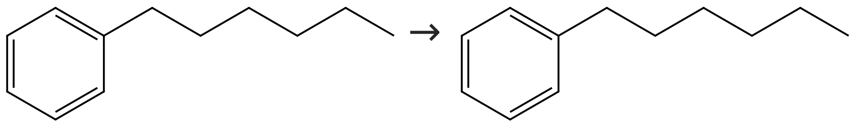
31-116-CAS-19314684	Steps: **1** Yield: **98%**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	
Experimental Protocols	

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 48 (4 Reactions) Steps: **1** Yield: **85-98%**



Suppliers (75)

31-614-CAS-28890923	Steps: **1** Yield: **98%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

31-614-CAS-28086589	Steps: **1** Yield: **97%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

31-614-CAS-27275743	Steps: **1** Yield: **85%**
1.1 **Reagents:** Hydrogen, Sodium borohydride **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

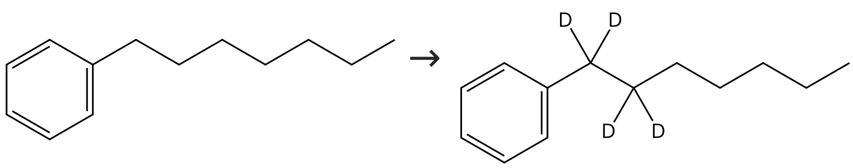
31-614-CAS-31015552	Steps: **1**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 24 h, 110 °C	
Experimental Protocols	

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 49 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (73)

31-614-CAS-25382392 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

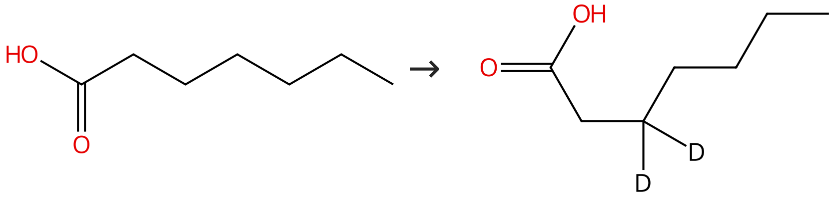
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 50 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (92)

31-614-CAS-39495801 Steps: **1** Yield: **98%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

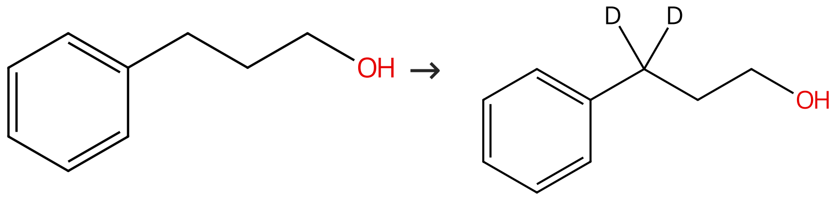
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 51 (3 Reactions) Steps: **1** Yield: **98%**



Suppliers (95) Supplier (1)

31-116-CAS-628050 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-3542071 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

Experimental Protocols

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

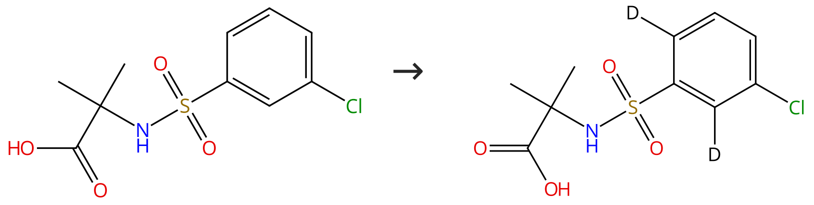
31-116-CAS-21978275	Steps: **1**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium; rt; 72 h, rt
Experimental Protocols	

Reaction scope and mechanistic insights of nickel-catalyzed migratory Suzuki-Miyaura cross-coupling

By: Li, Yuqiang; et al

Nature Communications (2020), 11(1), 417.

Scheme 52 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (3)

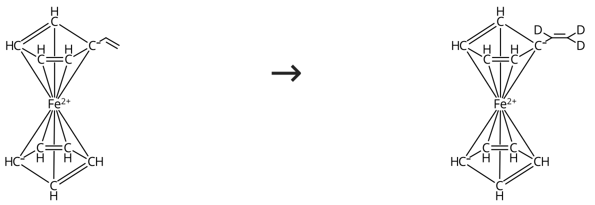
31-116-CAS-19314689	Steps: **1** Yield: **98%**
1.1	**Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-*d*$_4$, Water-*d*$_2$; 18 h, rt → 120 °C
Experimental Protocols	

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 53 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (63)

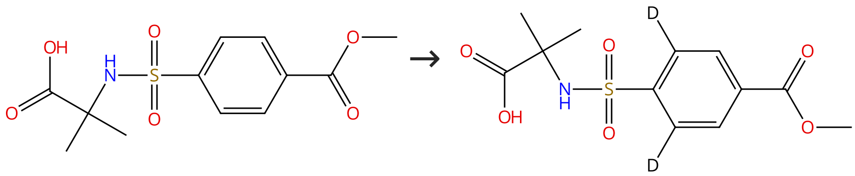
31-116-CAS-22371286	Steps: **1** Yield: **98%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D$_2$O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 54 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (2)

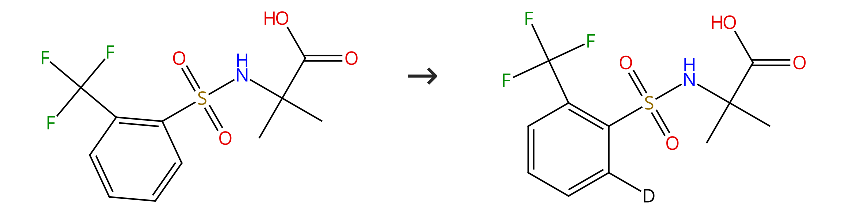
31-116-CAS-19314687	Steps: **1** Yield: **98%**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	
Experimental Protocols	

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 55 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (2)

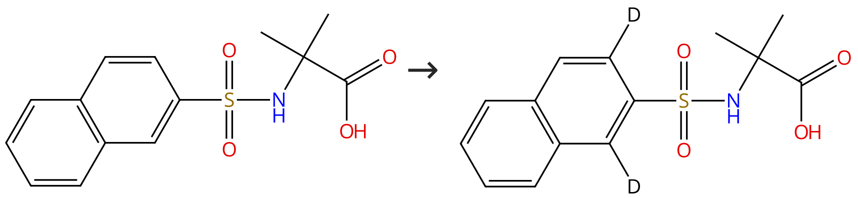
31-116-CAS-19314734	Steps: **1** Yield: **98%**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	
Experimental Protocols	

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 56 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (2)

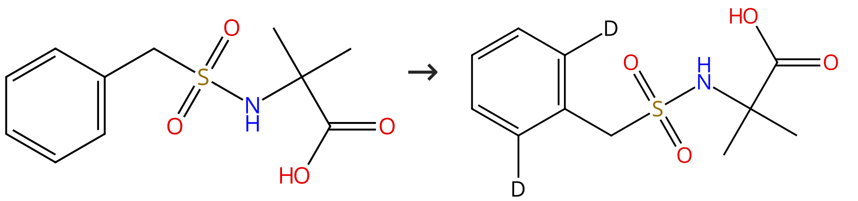
31-116-CAS-19314693	Steps: **1** Yield: **98%**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	
Experimental Protocols	

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 57 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (2)

31-116-CAS-19314695	Steps: **1** Yield: **98%**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	
Experimental Protocols	

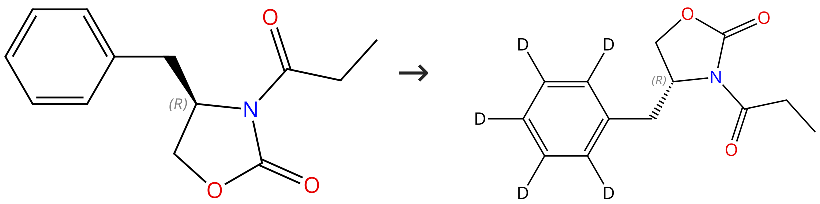
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 58 (1 Reaction)

Steps: **1** Yield: **98%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (88)

Absolute stereochemistry shown

31-614-CAS-24211359

Steps: **1** Yield: **98%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

Experimental Protocols

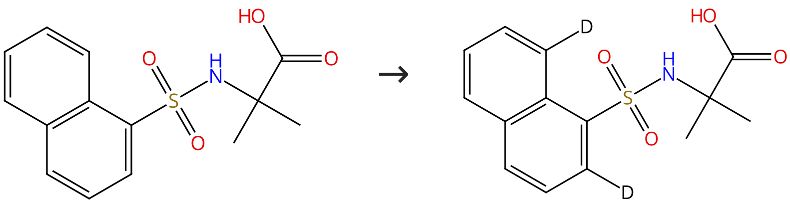
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 59 (1 Reaction)

Steps: **1** Yield: **98%**



Supplier (1)

31-116-CAS-19314692

Steps: **1** Yield: **98%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

Experimental Protocols

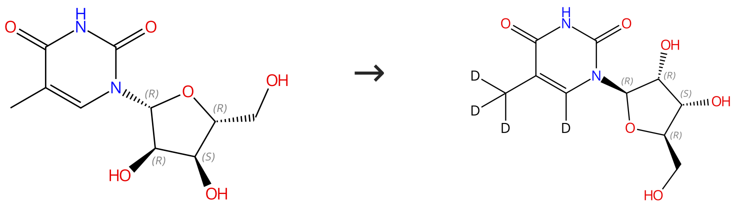
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 60 (1 Reaction)

Steps: **1** Yield: **98%**



Absolute stereochemistry shown, Rotation (+)

Suppliers (107)

Absolute stereochemistry shown

Suppliers (28)

31-116-CAS-4940455

Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

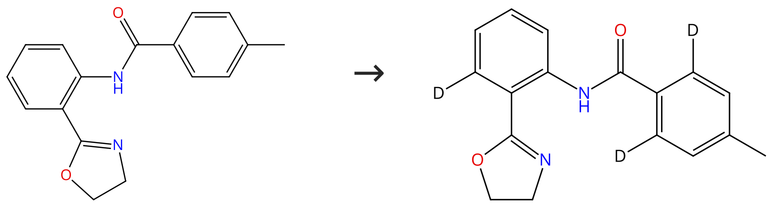
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 61 (1 Reaction)

Steps: **1** Yield: **98%**



Supplier (1)

31-614-CAS-31947023

Steps: **1** Yield: **98%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium trifluoroacetate
Solvents: Toluene; 1 h, 130 °C

Experimental Protocols

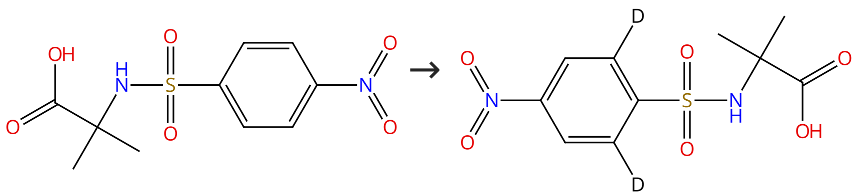
Expedient Ni-catalyzed C-H/C-H cross-dehydrogenative coupling of aryl amides with azoles

By: Sarkar, Tanumay; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(40), 5980-5983.

Scheme 62 (1 Reaction)

Steps: **1** Yield: **98%**



Suppliers (4)

31-116-CAS-19314731

Steps: **1** Yield: **98%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

Experimental Protocols

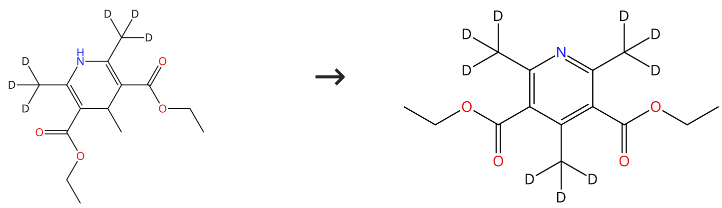
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 63 (1 Reaction)

Steps: **1** Yield: **98%**



31-116-CAS-20083053

Steps: **1** Yield: **98%**

1.1 **Catalysts:** Palladium
1.2 **Reagents:** Water-d_2
Solvents: Trifluoroacetic acid-*d*, *N*-Methyl-2-pyrrolidone; -196 °C; -196 °C → rt; 24 h, 50 °C; 40 h, 70 °C

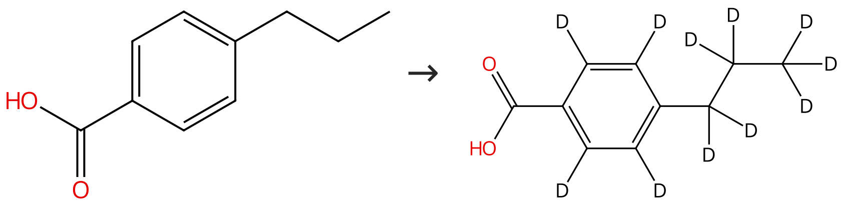
Experimental Protocols

A highly selective H/D exchange reaction of 1,4-dihydrop yridines

By: Wang, Kaiqian; et al

Organic & Biomolecular Chemistry (2019), 17(15), 3845-3852.

Scheme 64 (4 Reactions) Steps: **1** Yield: **64-98%**



Suppliers (86)

31-116-CAS-5871575 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen, Sodium borohydride
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Experimental Protocols

Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

31-116-CAS-2324458 Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

31-116-CAS-9584683 Steps: **1** Yield: **72%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-6320419 Steps: **1** Yield: **64%**

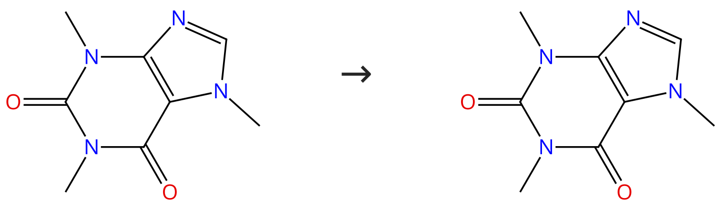
1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 65 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (137)

31-614-CAS-25526909 Steps: **1** Yield: **98%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium (carbon-supported)
Solvents: Water-*d*$_2$; 24 h, 160 °C

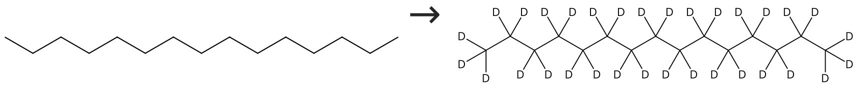
Synthesis of deuterium-labelled drugs by hydrogen-deuterium (H-D) exchange using heterogeneous catalysis

By: Modutlwa, Nkaelang; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2010), 53(11-12), 686-692.

Scheme 66 (2 Reactions)

Steps: **1** Yield: **98%**



Suppliers (96)

Suppliers (32)

31-116-CAS-10890046

Steps: **1** Yield: **98%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 16 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-3432677

Steps: **1** Yield: **98%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 16 h, 250 °C

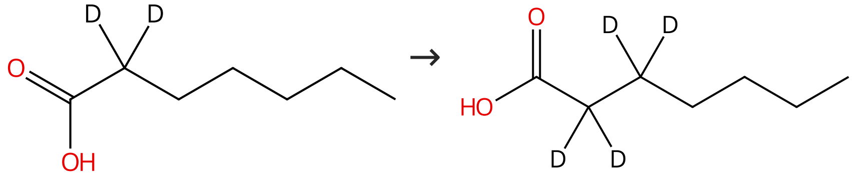
Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 67 (1 Reaction)

Steps: **1** Yield: **98%**



Suppliers (15)

Suppliers (14)

31-614-CAS-39495811

Steps: **1** Yield: **98%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

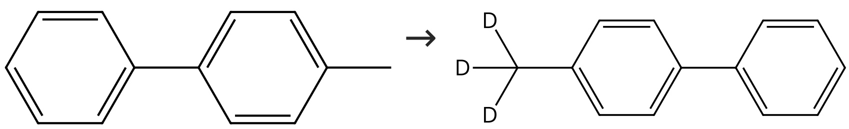
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 68 (1 Reaction)

Steps: **1** Yield: **98%**



Suppliers (86)

Suppliers (9)

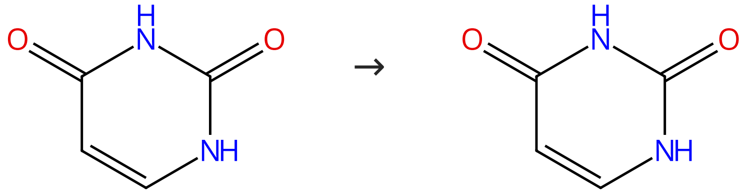
31-116-CAS-9814505	Steps: **1** Yield: **98%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, 50 °C	
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 69 (1 Reaction) Steps: **1** Yield: **98%**



Suppliers (145)

deuterated derivatives

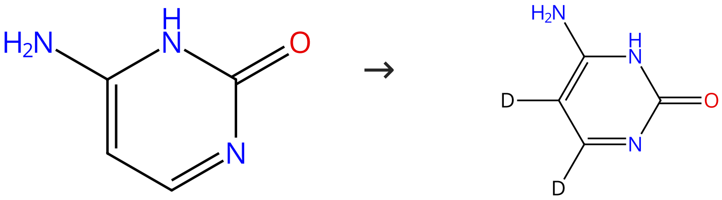
31-614-CAS-29581812	Steps: **1** Yield: **98%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 48 h, 160 °C	

Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 70 (2 Reactions) Steps: **1** Yield: **98%**



Suppliers (129)

Suppliers (29)

31-116-CAS-1239514	Steps: **1** Yield: **98%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 48 h, 160 °C; cooled	

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

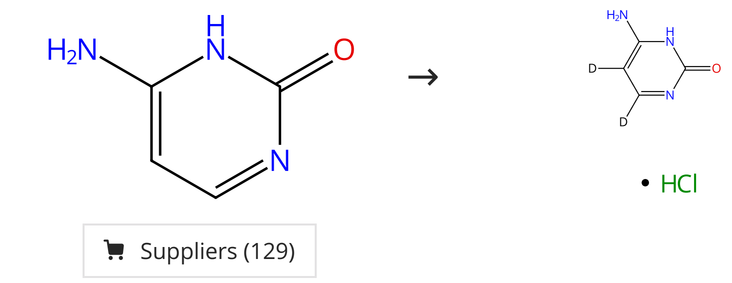
31-116-CAS-13098182	Steps: **1** Yield: **98%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 48 h, 160 °C; cooled	
Experimental Protocols	

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 71 (1 Reaction) Steps: **1** Yield: **98%**



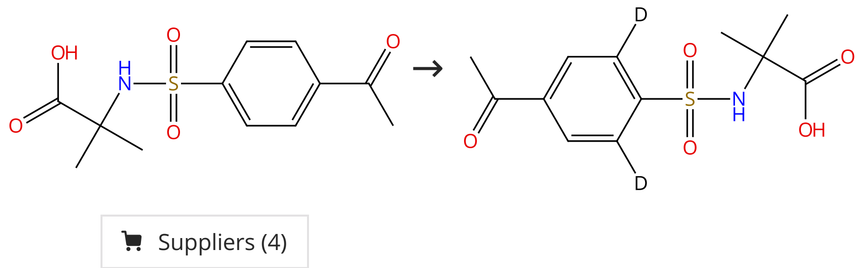
31-116-CAS-20328610	Steps: **1** Yield: **98%**
1.1	**Reagents:** Platinum dioxide, Sodium borohydride **Catalysts:** Palladium **Solvents:** Water-d_2; 80 min, 160 °C
1.2	**Reagents:** Deuterium chloride **Solvents:** Water-d_2; 0 °C

Synthesis and biological evaluation of deuterated sofosbuvir analogs as HCV NS5B inhibitors with enhanced pharmaco kinetic properties

By: Ao, Wangwei; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2019), 62(5), 215-229.

Scheme 72 (1 Reaction) Steps: **1** Yield: **98%**



31-116-CAS-19314685	Steps: **1** Yield: **98%**
1.1	**Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

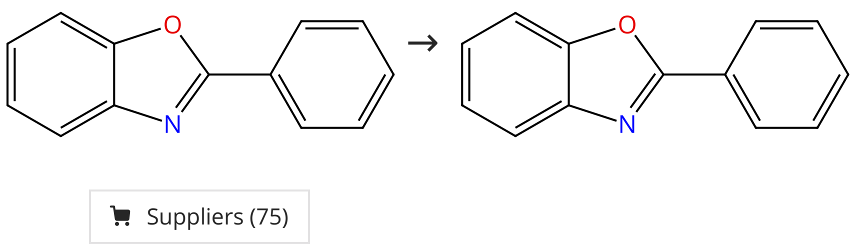
Experimental Protocols

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 73 (1 Reaction) Steps: **1** Yield: **98%**



31-614-CAS-38395400	Steps: **1** Yield: **98%**
1.1	**Reagents:** Cesium carbonate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Acetic acid; 12 h, 100 °C

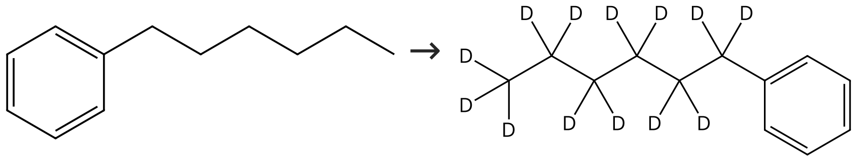
Experimental Protocols

Benzoxazole or Benzothiazole as an Innate Directing Group for Palladium- and Ruthenium-Catalyzed Complementary C-H Arylation: Functionalization of Biorelevant Heterocyclic Scaffolds

By: Maingle, Mohit; et al

Synthesis (2024), 56(2), 312-328.

Scheme 74 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (75)

31-614-CAS-30442305 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

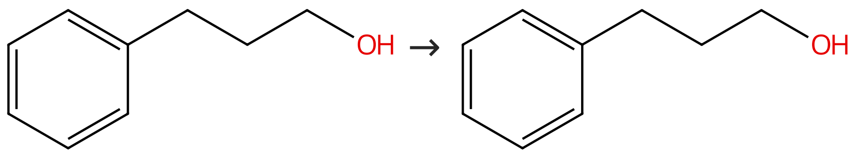
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 75 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (95)

31-614-CAS-29386843 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

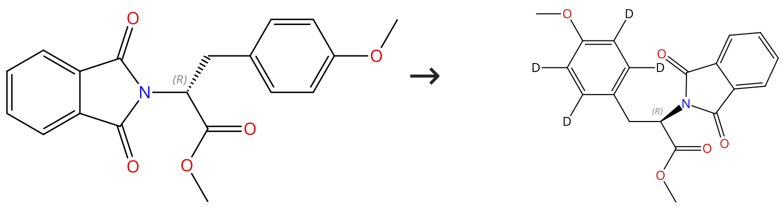
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 76 (1 Reaction) Steps: **1** Yield: **97%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (2)

31-614-CAS-24211354 Steps: **1** Yield: **97%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

Experimental Protocols

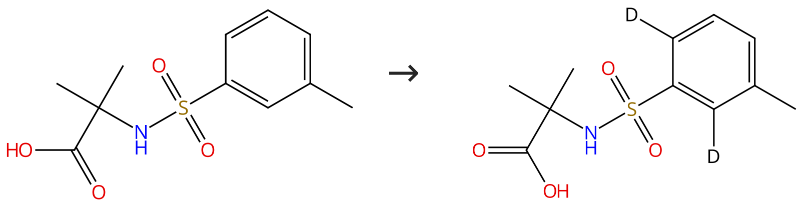
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 77 (1 Reaction)

Steps: **1** Yield: **97%**

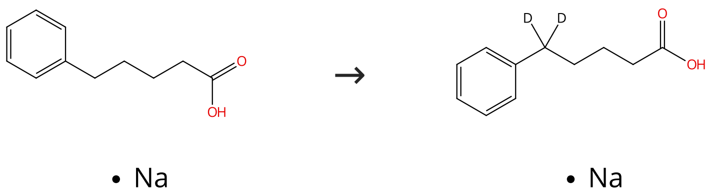


Suppliers (3)

31-116-CAS-19314733 Steps: **1** Yield: **97%**	**Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C	By: Liu, Wei; et al Tetrahedron (2018), 74(30), 4111-4118.

Scheme 78 (3 Reactions)

Steps: **1** Yield: **97%**



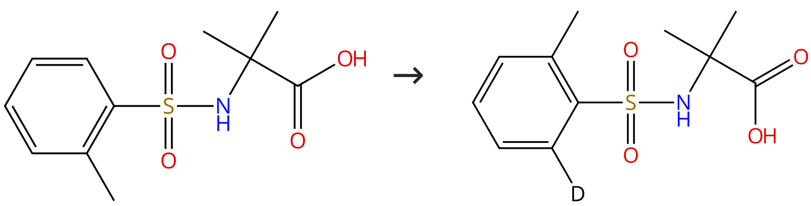
31-116-CAS-12888145 Steps: **1** Yield: **97%**	**Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, rt Experimental Protocols	By: Kurita, Takanori; et al Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-5005215 Steps: **1** Yield: **97%**	**Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2 Experimental Protocols	By: Sajiki, Hironao; et al Synlett (2002), (7), 1149-1151.

31-116-CAS-12751141 Steps: **1**	**Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 1 atm, rt Experimental Protocols	By: Esaki, Hiroyoshi; et al Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 79 (1 Reaction)

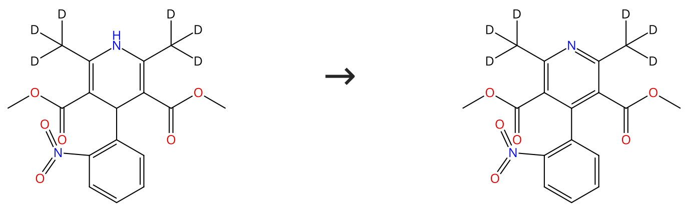
Steps: **1** Yield: **97%**



Suppliers (2)

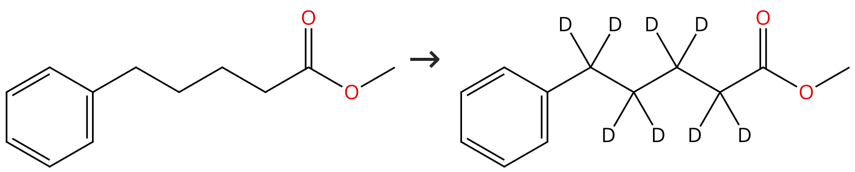
31-116-CAS-19314690 Steps: **1** Yield: **97%**	**Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-*d*$_4$, Water-*d*$_2$; 18 h, rt → 120 °C	By: Liu, Wei; et al
Experimental Protocols	Tetrahedron (2018), 74(30), 4111-4118.

Scheme 80 (1 Reaction) Steps: **1** Yield: **97%**



31-614-CAS-26611774 Steps: **1** Yield: **97%**	**A highly selective H/D exchange reaction of 1,4-dihydrop yridines**
1.1 **Catalysts:** Palladium 1.2 **Reagents:** Water-*d*$_2$ **Solvents:** Trifluoroacetic acid-*d*, *N*-Methyl-2-pyrrolidone; -196 °C; -196 °C → rt; 24 h, 50 °C; 48 h, 70 °C	By: Wang, Kaiqian; et al
Experimental Protocols	Organic & Biomolecular Chemistry (2019), 17(15), 3845-3852.

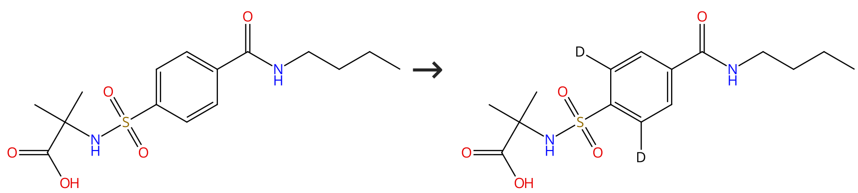
Scheme 81 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (57)

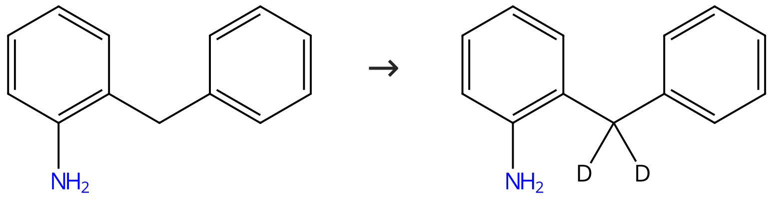
31-614-CAS-26193948 Steps: **1** Yield: **97%**	**Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system**
1.1 **Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium, Carbon **Solvents:** Water-*d*$_2$; 24 h, 160 °C	By: Esaki, Hiroyoshi; et al
Experimental Protocols	Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 82 (1 Reaction) Steps: **1** Yield: **97%**



31-116-CAS-19314688 Steps: **1** Yield: **97%**	**Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary**
1.1 **Reagents:** Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** Acetic acid-*d*$_4$, Water-*d*$_2$; 18 h, rt → 120 °C	By: Liu, Wei; et al
Experimental Protocols	Tetrahedron (2018), 74(30), 4111-4118.

Scheme 83 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (74) Supplier (1)

31-116-CAS-12267527 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, 50 °C

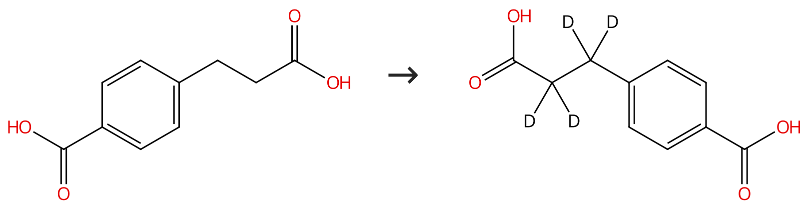
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 84 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (84) Supplier (1)

31-116-CAS-17605151 Steps: **1** Yield: **97%**

1.1 **Reagents:** Sodium carbonate, Hydrogen, Water- d_2
Catalysts: Palladium; 64 h, 1 atm, 130 °C

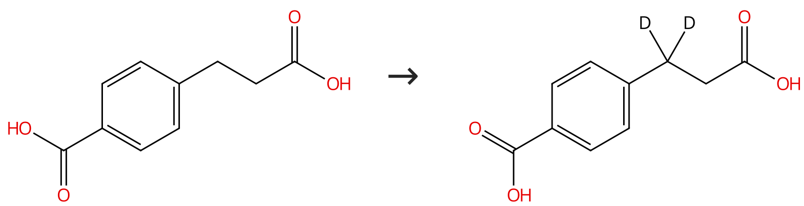
1.2 **Reagents:** Hydrochloric acid
Solvents: Water; pH 2

Synthesis of Am80 (Tamibarotene) prodrug candidates, congeners and metabolites

By: Muratake, Hideaki; et al

Chemical & Pharmaceutical Bulletin (2013), 61(8), 846-852.

Scheme 85 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (84) Supplier (1)

31-116-CAS-17626942 Steps: **1** Yield: **97%**

1.1 **Reagents:** Sodium carbonate, Hydrogen, Water- d_2
Catalysts: Palladium; 48 h, 1 atm, 100 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; pH 2

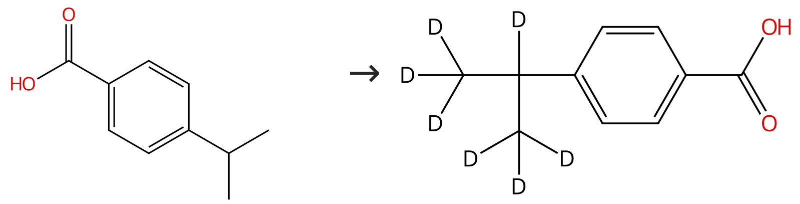
Synthesis of Am80 (Tamibarotene) prodrug candidates, congeners and metabolites

By: Muratake, Hideaki; et al

Chemical & Pharmaceutical Bulletin (2013), 61(8), 846-852.

Scheme 86 (1 Reaction)

Steps: **1** Yield: **97%**



Suppliers (96)

Supplier (1)

31-116-CAS-2970210

Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

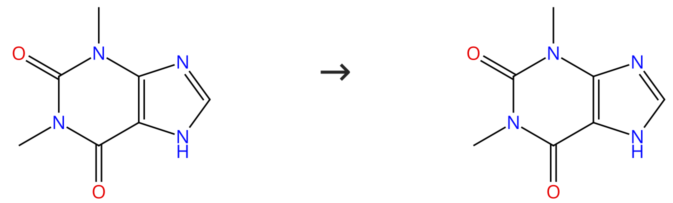
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 87 (1 Reaction)

Steps: **1** Yield: **97%**



Suppliers (152)

31-614-CAS-27722536

Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium (carbon-supported)
Solvents: Water-d_2; 24 h, 160 °C

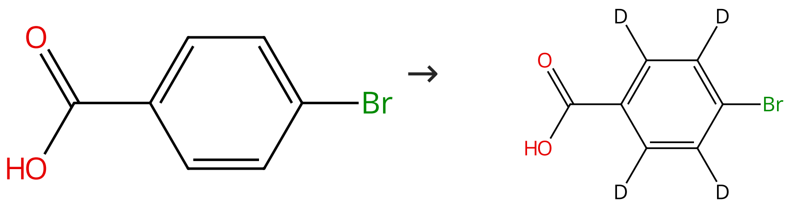
Synthesis of deuterium-labelled drugs by hydrogen-deuterium (H-D) exchange using heterogeneous catalysis

By: Modutlwa, Nkaelang; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2010), 53(11-12), 686-692.

Scheme 88 (1 Reaction)

Steps: **1** Yield: **97%**



Suppliers (107)

Suppliers (36)

31-116-CAS-23253538

Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 1 bar, 100 °C

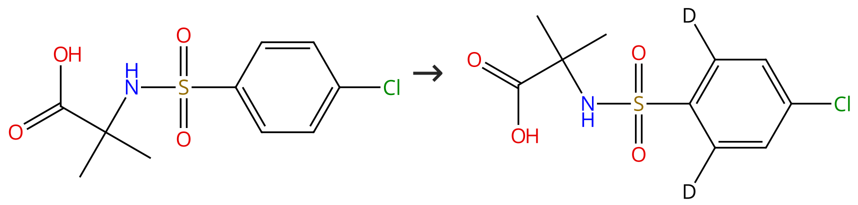
Experimental Protocols

New Pd-phosphorus ylide complexes based on FC_{60} as heterogeneous nano-catalyst for H/D exchange reaction

By: Yousefi, Abed; et al

Applied Organometallic Chemistry (2021), 35(3), e6139.

Scheme 89 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (5)

31-116-CAS-19314730 Steps: **1** Yield: **97%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

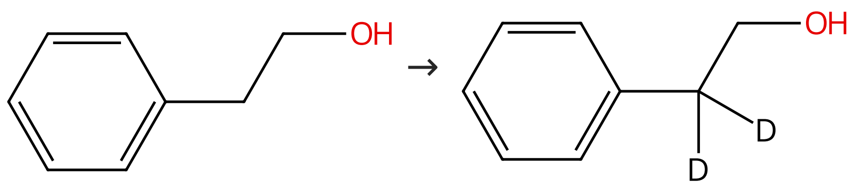
Experimental Protocols

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 90 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (119) Supplier (1)

31-116-CAS-8293532 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

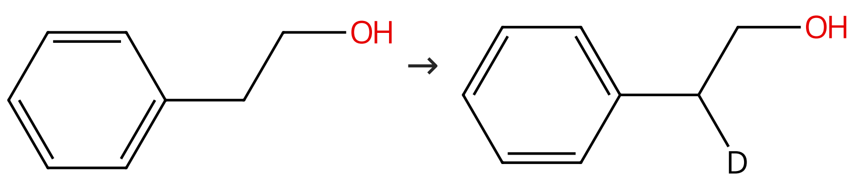
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 91 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (119) Supplier (1)

31-116-CAS-9061176 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

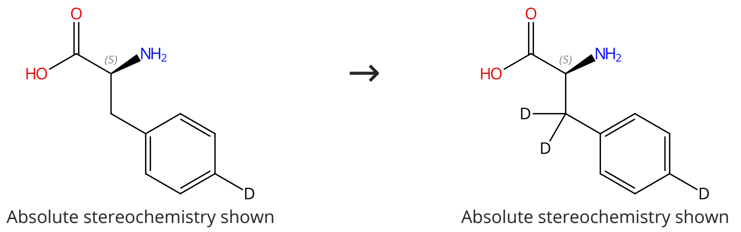
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 92 (1 Reaction) Steps: **1** Yield: **97%**



Supplier (1)

31-116-CAS-5141175 Steps: **1** Yield: **97%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 6 h, 110 °C
1.2 **Reagents:** Water

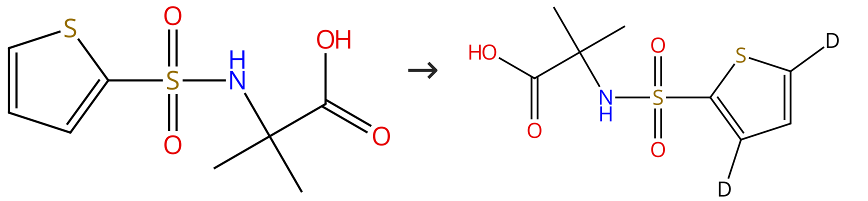
Experimental Protocols

Efficient and selective deuteration of phenylalanine deriva tives catalyzed by Pd/C

By: Maegawa, Tomohiro; et al

Synlett (2005), (5), 845-847.

Scheme 93 (1 Reaction) Steps: **1** Yield: **97%**



Suppliers (18)

31-116-CAS-19314694 Steps: **1** Yield: **97%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

Experimental Protocols

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 94 (1 Reaction) Steps: **1** Yield: **96%**

Suppliers (74)

31-614-CAS-24961963 Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

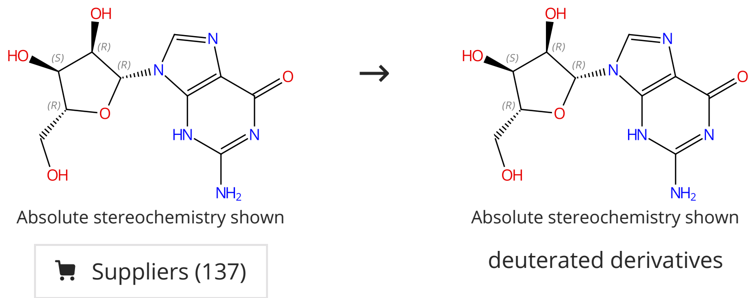
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 95 (1 Reaction)

Steps: **1** Yield: **96%**



31-614-CAS-26942371

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

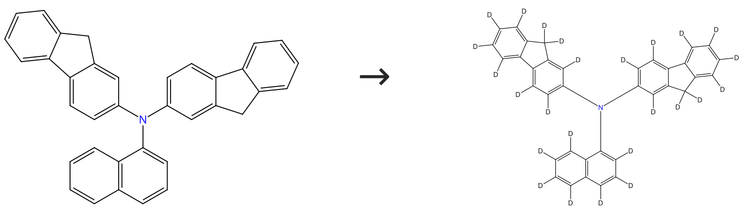
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 96 (1 Reaction)

Steps: **1** Yield: **96%**



31-116-CAS-22750363

Steps: **1** Yield: **96%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C

Experimental Protocols

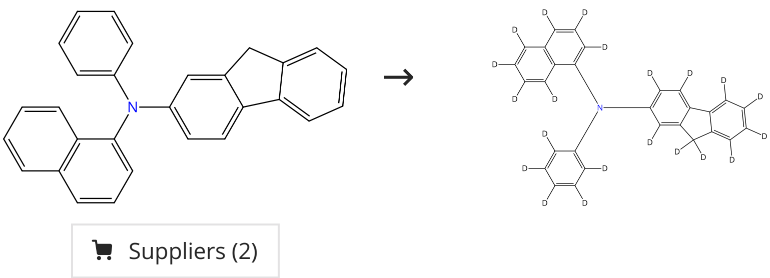
Highly Efficient Persistent Room-Temperature Phosphor escence from Heavy Atom-Free Molecules Triggered by Hidden Long Phosphorescent Antenna

By: Bhattacharjee, Indranil; et al

Advanced Materials (Weinheim, Germany) (2020), 32(31), 2001348.

Scheme 97 (1 Reaction)

Steps: **1** Yield: **96%**



31-116-CAS-10977904

Steps: **1** Yield: **96%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

Experimental Protocols

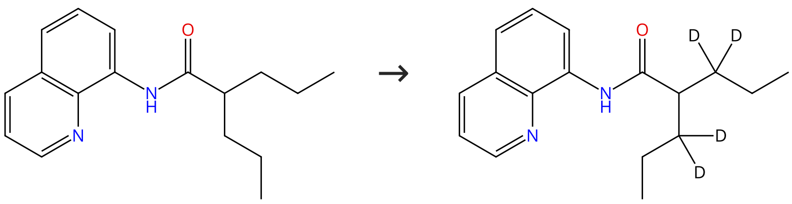
Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 98 (1 Reaction)

Steps: **1** Yield: **96%**



Supplier (1)

31-116-CAS-19041723

Steps: **1** Yield: **96%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

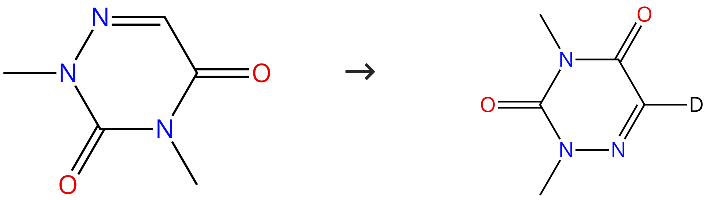
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 99 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (5)

31-614-CAS-43027592

Steps: **1** Yield: **96%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Sodium borodeuteride; 12 h, 130 °C

Experimental Protocols

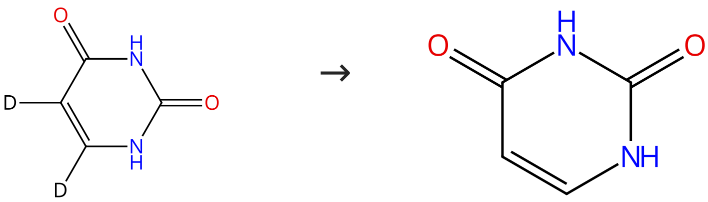
C-H Alkylation of Heterocycles via Light-Mediated Palladium Catalysis

By: Senapati, Sudip; et al

Angewandte Chemie, International Edition (2025), 64(4), e202417107.

Scheme 100 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (35)

Suppliers (145)

31-614-CAS-26183724

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 10 min, rt; 24 h, 160 °C

Experimental Protocols

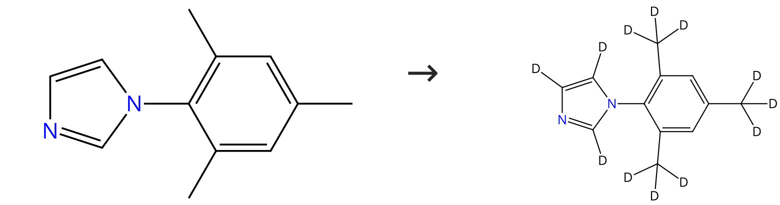
Synthesis of C8-N9 Annulated Purines by Iron-Catalyzed C-H Amination

By: Maes, Jens; et al

Chemistry - A European Journal (2013), 19(28), 9137-9141.

Scheme 101 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (39)

31-116-CAS-23366237

Steps: **1** Yield: **96%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Platinum
Solvents: Tetrahydrofuran; 3 d, 150 °C

Experimental Protocols

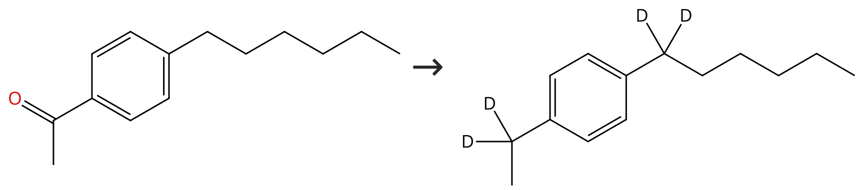
The free-energy barrier to hydride transfer across a dipalladium complex

By: Vanston, C. R.; et al

Faraday Discussions (2015), 177, 99-109.

Scheme 102 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (68)

31-116-CAS-14032681

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 50 °C

Experimental Protocols

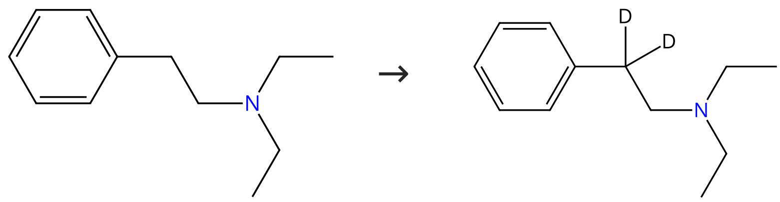
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 103 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (20)

31-116-CAS-10148825

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

Experimental Protocols

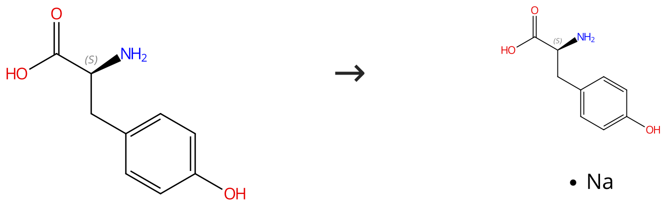
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 104 (1 Reaction)

Steps: **1** Yield: **96%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (178)

• Na

Absolute stereochemistry shown

31-614-CAS-28717546

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 6 h, 110 °C

1.2 **Reagents:** Water

Experimental Protocols

Efficient and selective deuteration of phenylalanine derivatives catalyzed by Pd/C

By: Maegawa, Tomohiro; et al

Synlett (2005), (5), 845-847.

Scheme 105 (1 Reaction)

Steps: **1** Yield: **96%**

Suppliers (134)

deuterated derivatives

31-614-CAS-30382013

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 48 h, 140 °C

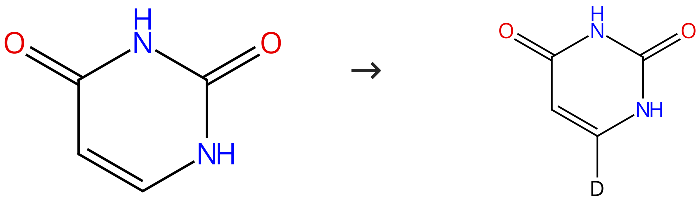
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 106 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (145)

Suppliers (17)

31-116-CAS-4988718

Steps: **1** Yield: **96%**

1.1 **Reagents:** Deuterium, Sodium hydroxide-*d*
Catalysts: Calcium carbonate, Palladium
Solvents: Water-d_2

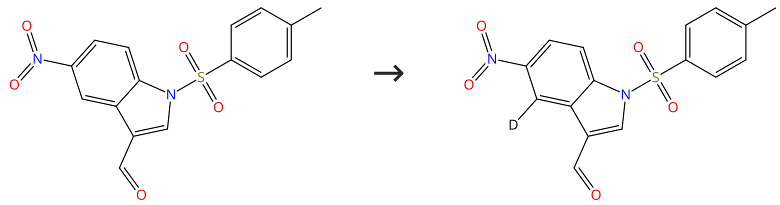
Syntheses of [5-^{2}H]-uracil, [5-^{2}H]-cytosine, [6-^{2}H]-uracil and [6-^{2}H]-cytosine

By: Kiritani, Reiko; et al

Journal of Labelled Compounds and Radiopharmaceuticals (1986), 23(2), 207-14.

Scheme 107 (1 Reaction)

Steps: **1** Yield: **96%**



31-614-CAS-38370022

Steps: **1** Yield: **96%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

Experimental Protocols

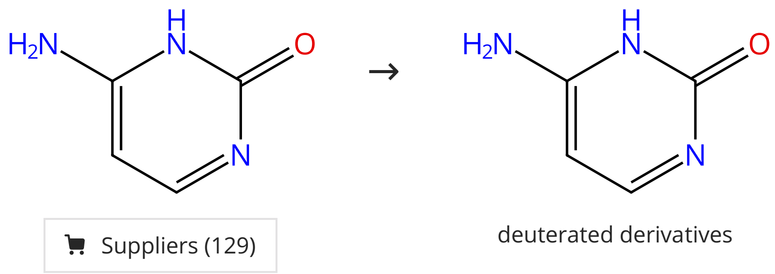
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 108 (1 Reaction)

Steps: **1** Yield: **96%**



31-614-CAS-25322023

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 48 h, 140 °C

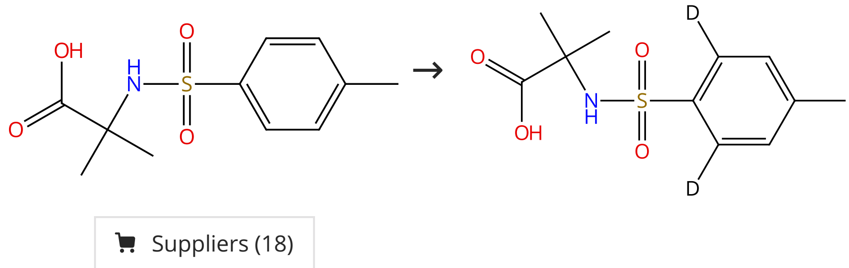
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 109 (1 Reaction)

Steps: **1** Yield: **96%**



31-116-CAS-19314729

Steps: **1** Yield: **96%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-*d*$_4$, Water-*d*$_2$; 18 h, rt → 120 °C

Experimental Protocols

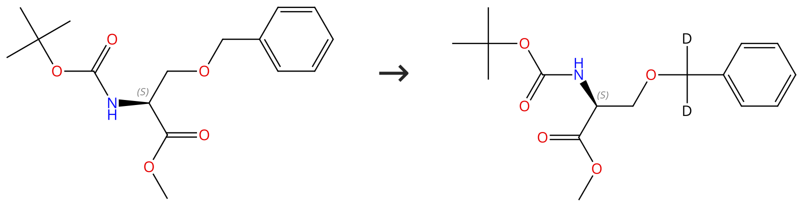
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 110 (1 Reaction)

Steps: **1** Yield: **96%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (5)

31-116-CAS-5508101

Steps: **1** Yield: **96%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Tetrahydrofuran, Water-d_2; 168 h, 50 °C

Experimental Protocols

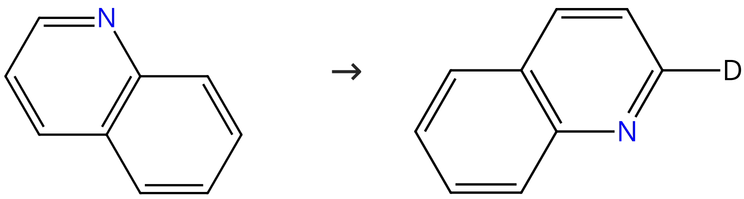
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 111 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (124)

Suppliers (14)

31-116-CAS-24132538

Steps: **1** Yield: **96%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-d_2; 12 h, 130 °C

Experimental Protocols

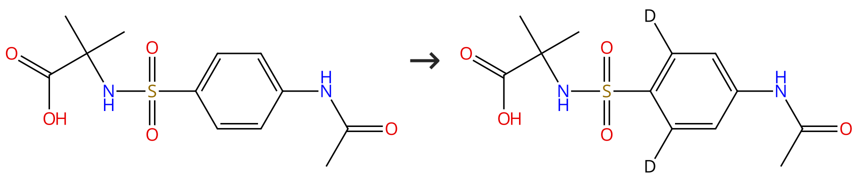
Practical iridium-catalyzed direct α-arylation of N-hetero arenes with (hetero)arylboronic acids by H_2O-mediated H_2 evolution

By: Cao, Liang; et al

Nature Communications (2021), 12(1), 4206.

Scheme 112 (1 Reaction)

Steps: **1** Yield: **96%**



Suppliers (4)

31-116-CAS-19314732

Steps: **1** Yield: **96%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

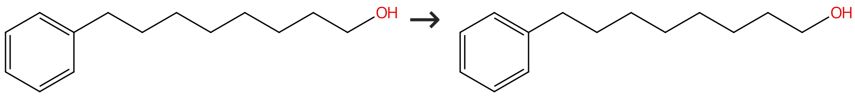
Experimental Protocols

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 113 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (55)

31-614-CAS-30301892 Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

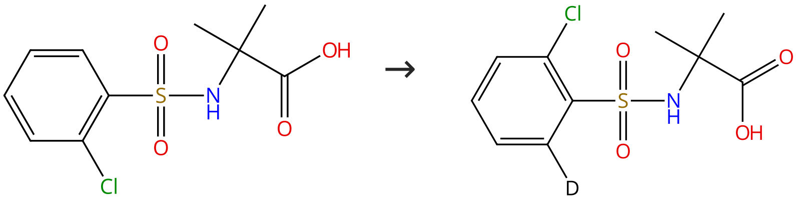
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 114 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (3)

31-116-CAS-19314691 Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

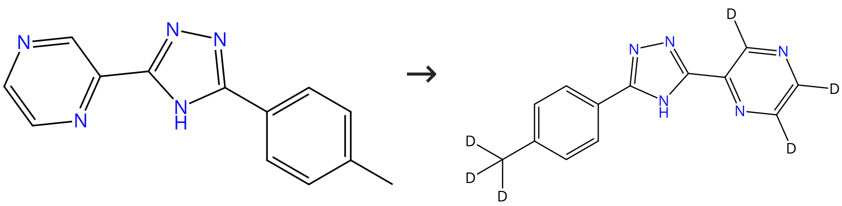
Experimental Protocols

Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 115 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (4)

31-116-CAS-4100025 Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium

Experimental Protocols

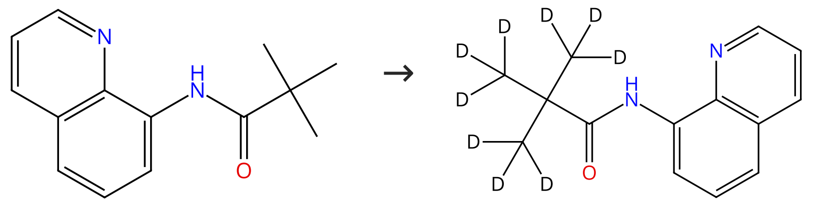
Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 116 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (4)

31-116-CAS-19041724

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

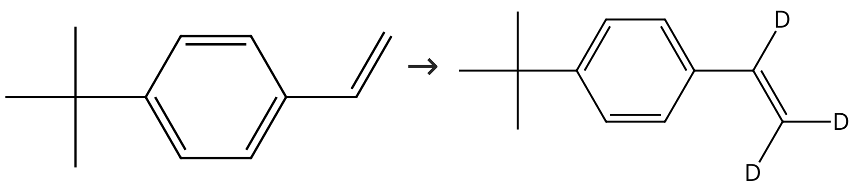
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 117 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (60)

31-116-CAS-20303325

Steps: **1** Yield: **95%**

1.1 **Reagents:** Pentamethyldiethylenetriamine, Water-d_2
Catalysts: Palladium diacetate, 2'-(Dicyclohexylphosphino)-*N*, *N*-dimethyl[1,1'-biphenyl]-2-amine
Solvents: *N*-Methyl-2-pyrrolidone; 12 h, 130 °C

1.2 **Reagents:** Lithium chloride, Hydrochloric acid
Solvents: Water; neutralized

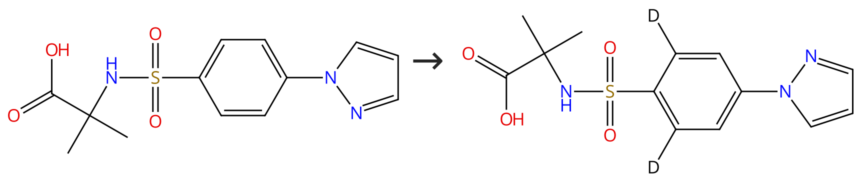
Pd-Catalyzed Synthesis of Vinyl Arenes from Aryl Halides and Acrylic Acid

By: Gao, Yang; et al

Chemistry - A European Journal (2019), 25(37), 8709-8712.

Scheme 118 (1 Reaction)

Steps: **1** Yield: **95%**



31-116-CAS-19314686

Steps: **1** Yield: **95%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

Experimental Protocols

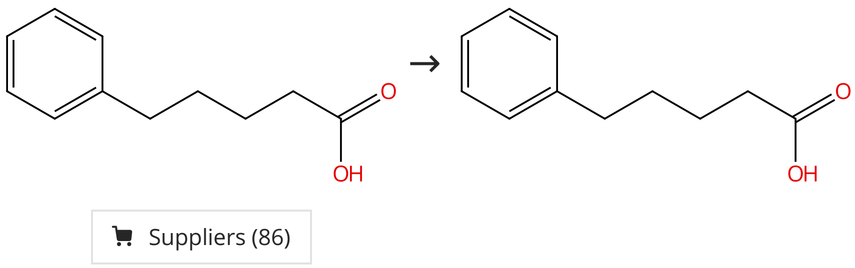
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 119 (1 Reaction)

Steps: **1** Yield: **95%**



31-614-CAS-29115777

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrazine
Catalysts: Palladium
Solvents: Water-d_2; 6 h, 180 °C

Experimental Protocols

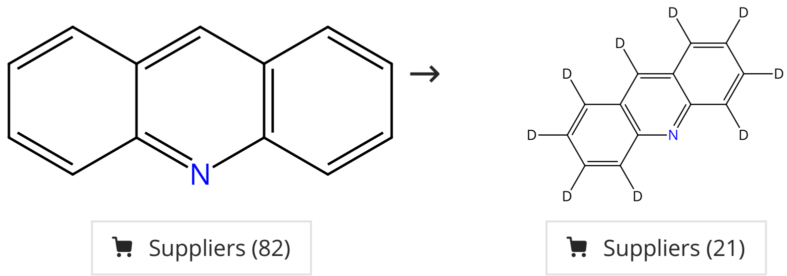
Bimetallic palladium-platinum-on-carbon-catalyzed H-D exchange reaction: synergistic effect on multiple deuterium incorporation

By: Maegawa, Tomohiro; et al

Synthesis (2009), (16), 2674-2678.

Scheme 120 (1 Reaction)

Steps: **1** Yield: **95%**



31-614-CAS-40655058

Steps: **1** Yield: **95%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2, 4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 48 h, 130 °C

Experimental Protocols

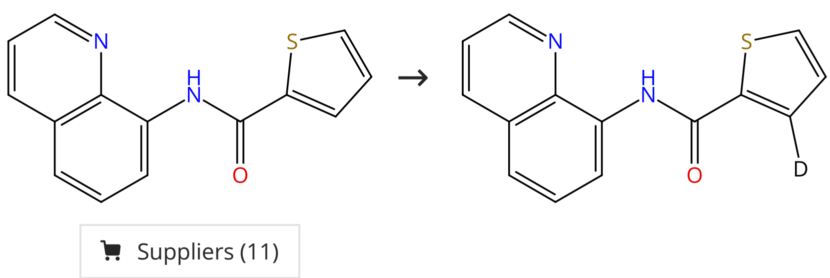
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 121 (1 Reaction)

Steps: **1** Yield: **95%**



31-116-CAS-19041719

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

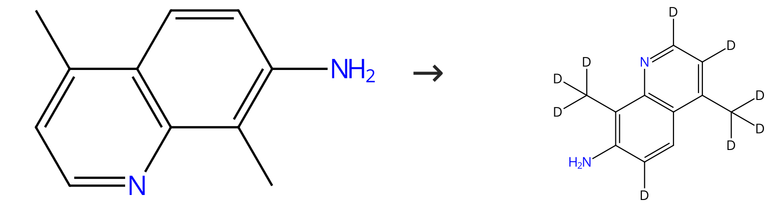
Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 122 (1 Reaction) Steps: **1** Yield: **95%**



31-614-CAS-42868420 Steps: **1** Yield: **95%**

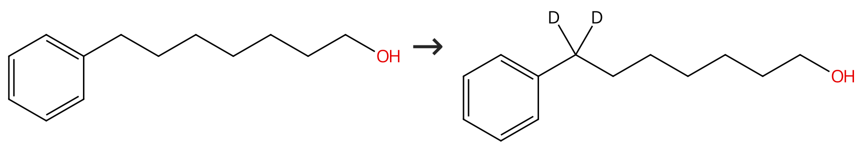
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 180 °C

Polyatomic molecules with emission quantum yields >20% enable efficient organic light-emitting diodes in the NIR(II) window

By: Wang, Sheng-Fu; et al

Nature Photonics (2022), 16(12), 843-850.

Scheme 123 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (50)

31-614-CAS-29501389 Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

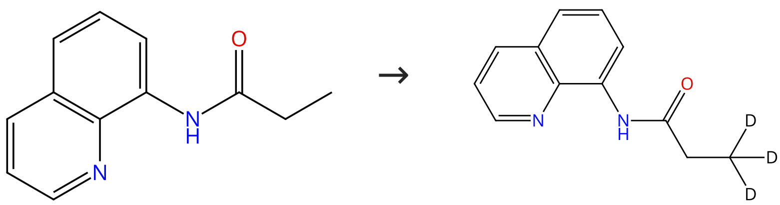
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 124 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (11)

31-116-CAS-19041721 Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

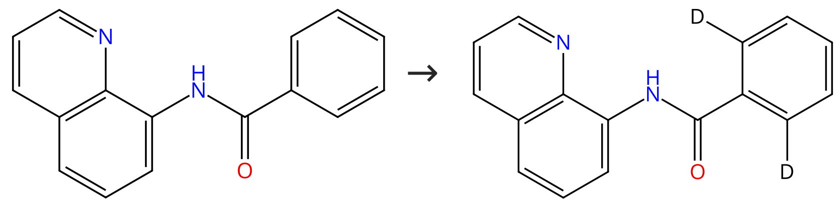
Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 125 (2 Reactions) Steps: **1** Yield: **95%**



Suppliers (24)

31-116-CAS-19041714	Steps: **1** Yield: **95%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

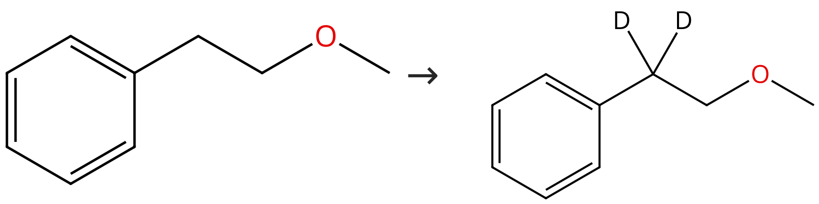
31-116-CAS-15419528	Steps: **1**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium trifluoroacetate **Solvents:** Toluene; 5 min, 130 °C

Redox-Neutral Palladium-Catalyzed C-H Functionalization To Form Isoindolinones with Carboxylic Acids or Anhydrides as Readily Available Starting Materials

By: Liang, Hong-Wen; et al

Organic Letters (2015), 17(11), 2764-2767.

Scheme 126 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (57)

31-116-CAS-10428695	Steps: **1** Yield: **95%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, 50 °C

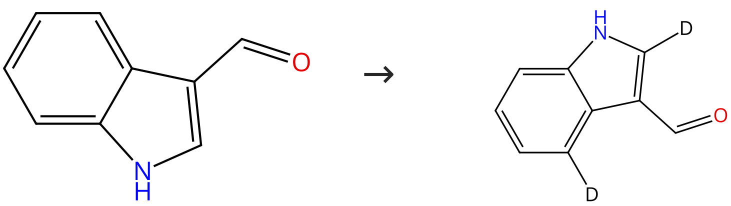
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 127 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (123)

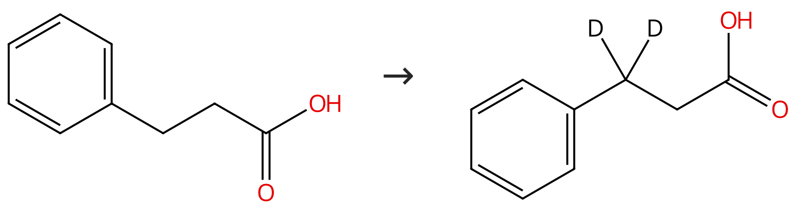
31-614-CAS-38370045	Steps: **1** Yield: **95%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 128 (2 Reactions) Steps: **1** Yield: **88-95%**



Suppliers (112) Supplier (1)

31-614-CAS-35378305	Steps: **1** Yield: **95%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 40 h, 50 °C
Experimental Protocols	

Copper-Catalyzed Decarboxylative Elimination of Carboxylic Acids to Styrenes

By: Stanton, Michael P.; et al

Journal of Organic Chemistry (2023), 88(3), 1713-1719.

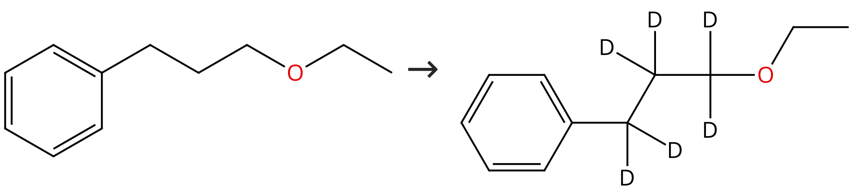
31-614-CAS-41070761	Steps: **1** Yield: **88%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 48 h, 70 °C
Experimental Protocols	

Decatungstate/Cobalt Dual Catalyzed Dehydrogenation of Ketones Enabled by Polarity-Matched Site-Selective Activation

By: Sun, Bin; et al

ACS Catalysis (2024), 14(14), 11138-11146.

Scheme 129 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (3)

31-614-CAS-27672880	Steps: **1** Yield: **95%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C
Experimental Protocols	

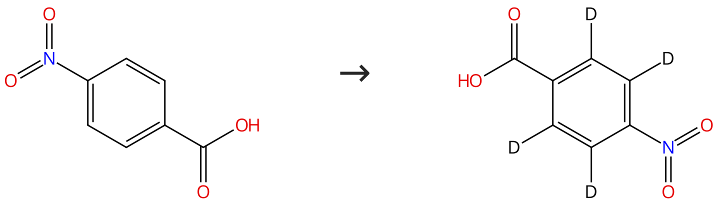
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 130 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (112)

Suppliers (28)

31-116-CAS-23254031

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 1 bar, 100 °C

Experimental Protocols

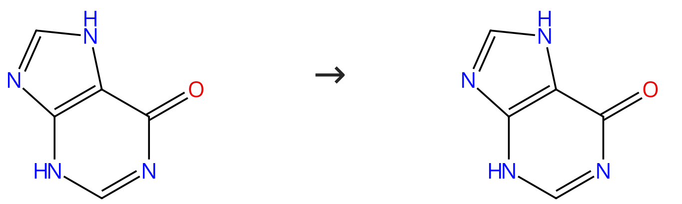
New Pd-phosphorus ylide complexes based on FC_{60} as heterogeneous nano-catalyst for H/D exchange reaction

By: Yousefi, Abed; et al

Applied Organometallic Chemistry (2021), 35(3), e6139.

Scheme 131 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (147)

deuterated derivatives

31-614-CAS-28542908

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 48 h, 110 °C

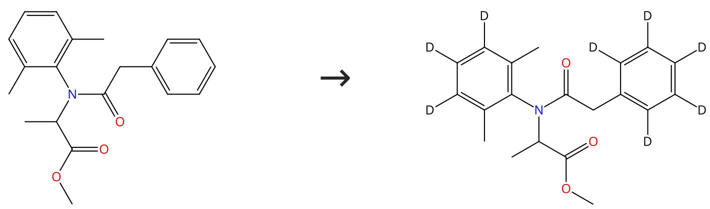
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 132 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (59)

31-614-CAS-24211348

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

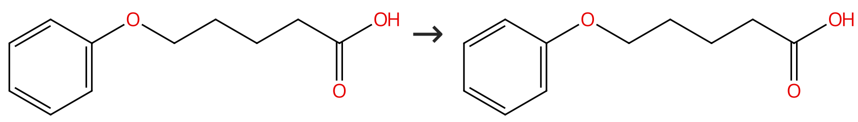
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 133 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (59)

31-614-CAS-25046129

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

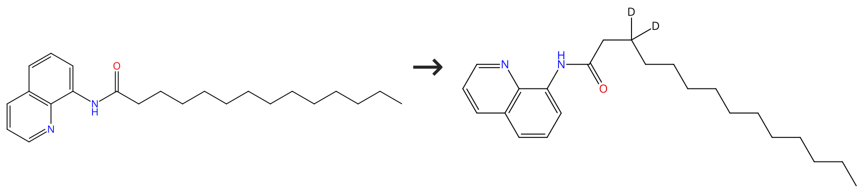
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 134 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (3)

31-116-CAS-19041722

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

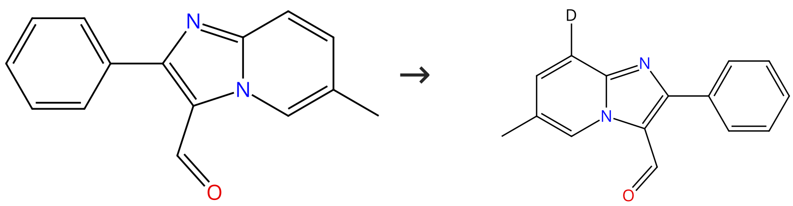
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 135 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (39)

31-614-CAS-24545280

Steps: **1** Yield: **95%**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 36 h, 110 °C

Experimental Protocols

Palladium(II) catalyzed site-selective C-H olefination of imidazo[1,2-a]pyridines

By: Tali, Javeed Ahmad; et al

Organic & Biomolecular Chemistry (2021), 19(43), 9401-9406.

Scheme 136 (1 Reaction)

Steps: **1** Yield: **95%**

Suppliers (156)

deuterated derivatives

31-614-CAS-26145429

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 48 h, 140 °C

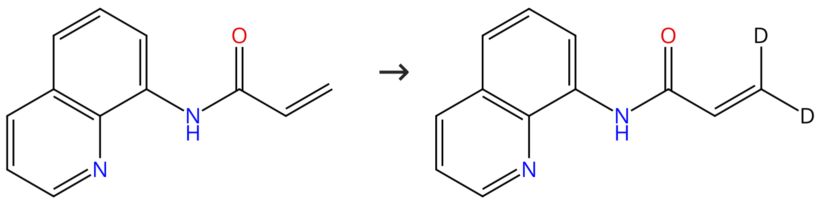
Palladium-catalyzed H-D exchange into nucleic acids in deuterium oxide

By: Sajiki, Hironao; et al

Nucleic Acids Research Supplement (2003), 3, 55-56.

Scheme 137 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (3)

31-116-CAS-19041725

Steps: **1** Yield: **95%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

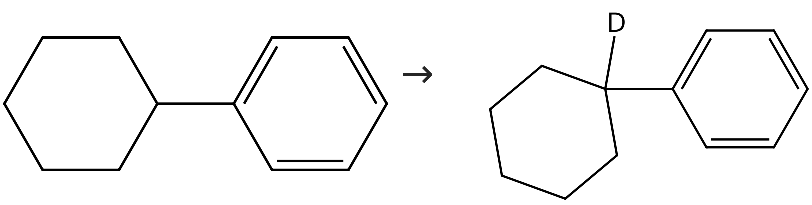
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 138 (1 Reaction)

Steps: **1** Yield: **95%**



Suppliers (83)

31-614-CAS-25031174

Steps: **1** Yield: **95%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

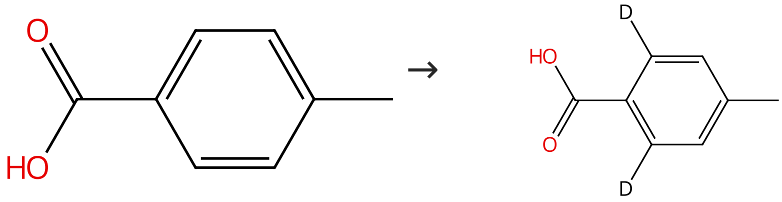
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 139 (1 Reaction) Steps: **1** Yield: **95%**



Suppliers (103)

31-614-CAS-34526997 Steps: **1** Yield: **95%**

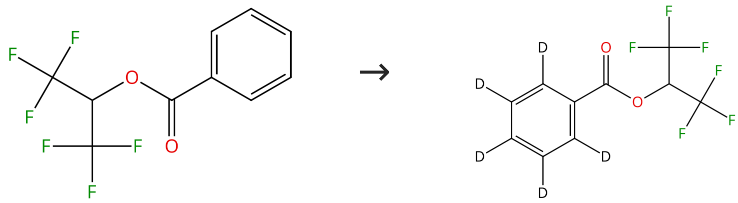
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 140 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (23)

31-614-CAS-24211309 Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

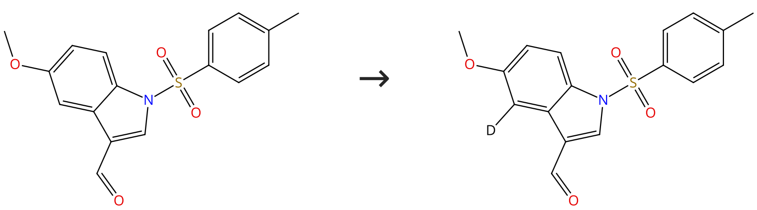
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 141 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (4)

31-614-CAS-38370014 Steps: **1** Yield: **94%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

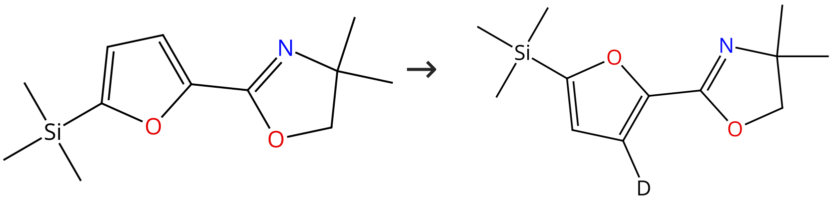
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 142 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (2)

Supplier (1)

31-116-CAS-11213020

Steps: **1** Yield: **94%**

1.1 **Reagents:** *sec*-Butyllithium
Solvents: Tetrahydrofuran

1.2 **Reagents:** Zinc bromide

1.3 **Reagents:** Water-d_2
Catalysts: Tetrakis(triphenylphosphine)palladium
Solvents: Tetrahydrofuran

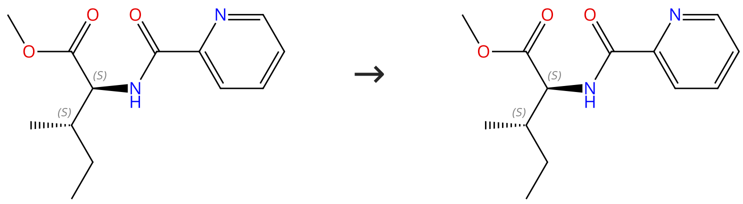
Synthesis of 3-substituted furans by directed lithiation and palladium catalyzed coupling

By: Ennis, David S.; et al

Tetrahedron (1990), 46(7), 2623-32.

Scheme 143 (1 Reaction)

Steps: **1** Yield: **94%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Supplier (1)

31-614-CAS-26982047

Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Quinone, 1-Adamantanecarboxylic acid, Palladium diacetate
Solvents: 1,1,2-Trichloroethane; 24 h, 100 °C

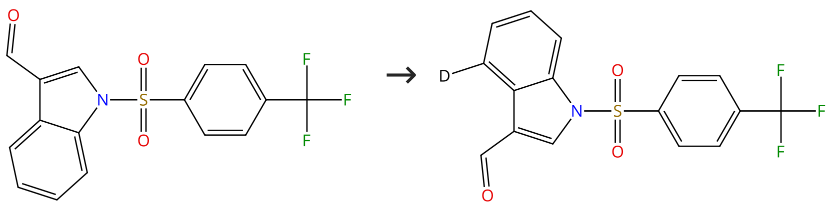
Site-selective δ-C(sp^3)-H alkylation of amino acids and peptides with maleimides via a six-membered palladacycle

By: Zhan, Bei-Bei; et al

Angewandte Chemie, International Edition (2018), 57(20), 5858-5862.

Scheme 144 (1 Reaction)

Steps: **1** Yield: **94%**



31-614-CAS-38370038

Steps: **1** Yield: **94%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

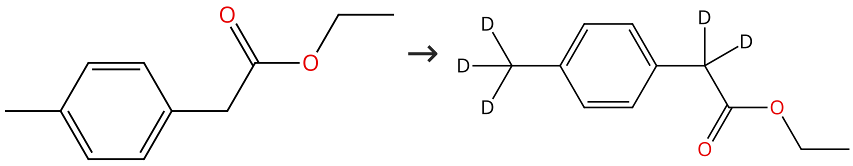
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 145 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (72)

31-116-CAS-5546298

Steps: **1** Yield: **94%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 120 h, 50 °C

Experimental Protocols

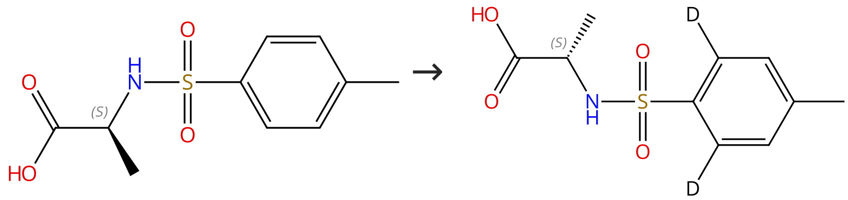
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 146 (1 Reaction)

Steps: **1** Yield: **94%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

Suppliers (68)

31-116-CAS-19314736

Steps: **1** Yield: **94%**

1.1 **Reagents:** Potassium carbonate
Catalysts: Palladium diacetate
Solvents: Acetic acid-d_4, Water-d_2; 18 h, rt → 120 °C

Experimental Protocols

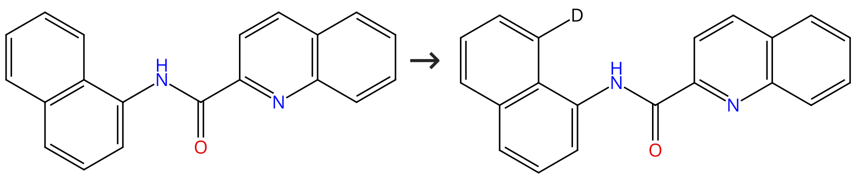
Palladium-catalyzed site-selective hydrogen isotope exchange (HIE) reaction of arylsulfonamides using amino acid auxiliary

By: Liu, Wei; et al

Tetrahedron (2018), 74(30), 4111-4118.

Scheme 147 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (8)

Supplier (1)

31-116-CAS-8313691

Steps: **1** Yield: **94%**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Palladium diacetate
Solvents: Xylene; 12 h, 130 °C

Experimental Protocols

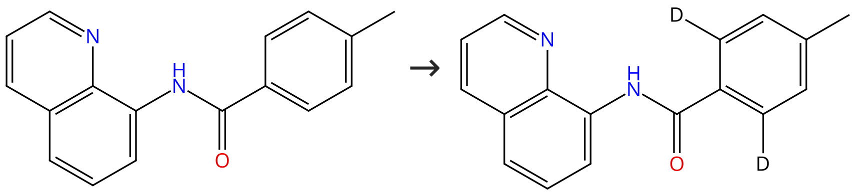
Palladium(II)-Catalyzed Regioselective Arylation of Naphthy lamides with Aryl Iodides Utilizing a Quinoli namide Bidentate System

By: Huang, Lehao; et al

Journal of Organic Chemistry (2013), 78(7), 3030-3038.

Scheme 148 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (8)

31-116-CAS-19041716

Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

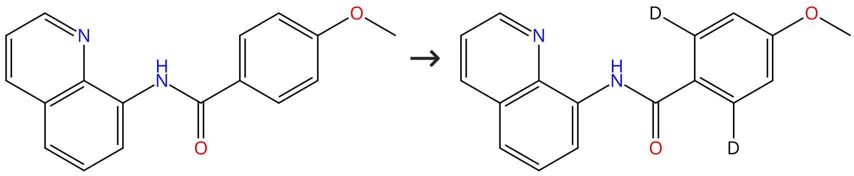
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 149 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (6)

31-116-CAS-19041717

Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

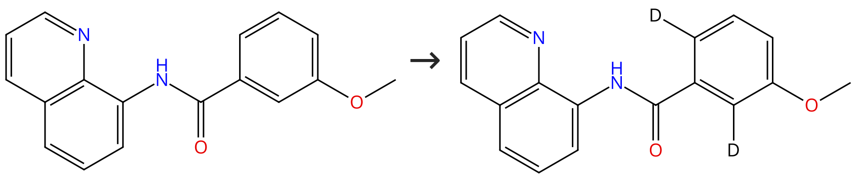
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 150 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (7)

31-116-CAS-19041720

Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

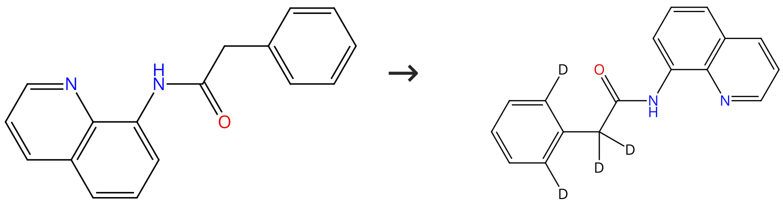
Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 151 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (5)

31-116-CAS-19041728 Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

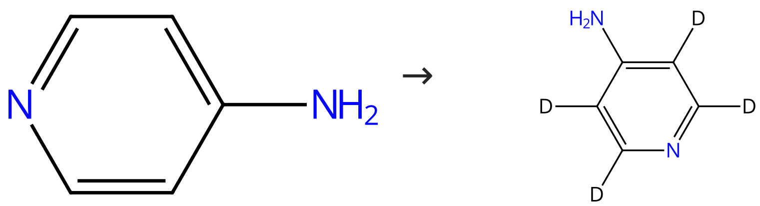
Experimental Protocols

Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 152 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (101) Suppliers (14)

31-614-CAS-23983842 Steps: **1** Yield: **94%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 20 h, 160 °C

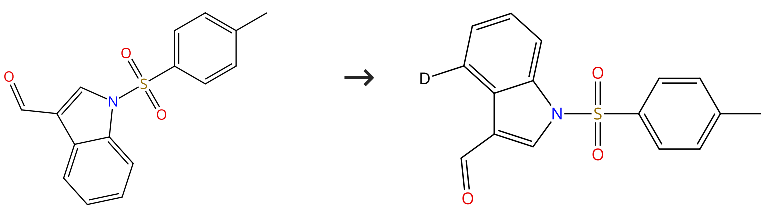
Experimental Protocols

Mechanism of 2,6-Dichloro-4,4'-bipyridine-Catalyzed Diboration of Pyrazines Involving a Bipyridine-Stabilized Boryl Radical

By: Ohmura, Toshimichi; et al

Bulletin of the Chemical Society of Japan (2021), 94(7), 1894-1902.

Scheme 153 (2 Reactions) Steps: **1** Yield: **86-94%**



Suppliers (63)

31-614-CAS-38370011	Steps: **1** Yield: **94%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt

Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

31-614-CAS-43775753	Steps: **1** Yield: **86%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** Silver triflate, 2-Amino-5-methylbenzoic acid, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 100 °C
1.2	**Reagents:** Water-d_2; 6 h, 100 °C

Experimental Protocols

Transient Directing Group-Assisted Palladium-Catalyzed C4-Alkynylation of Indoles

By: Guo, Shuqi; et al

Journal of Organic Chemistry (2025), 90(3), 1455-1459.

Scheme 154 (1 Reaction) Steps: **1** Yield: **94%**

Suppliers (51)

31-116-CAS-9558492	Steps: **1** Yield: **94%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C

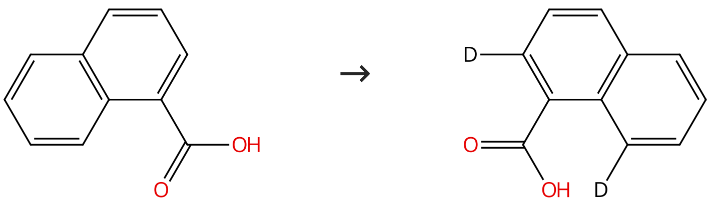
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 155 (1 Reaction) Steps: **1** Yield: **94%**



Suppliers (91)

31-614-CAS-34527023	Steps: **1** Yield: **94%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

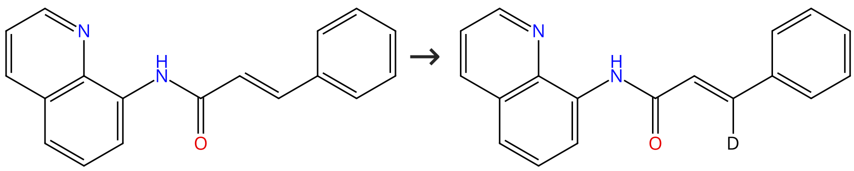
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 156 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (3)

31-116-CAS-19041726

Steps: **1** Yield: **94%**

1.1 **Reagents:** Water-*d*2
Catalysts: Palladium diacetate
Solvents: Water-*d*2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

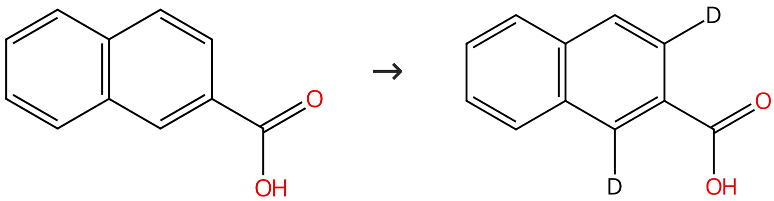
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 157 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (105)

31-614-CAS-34527020

Steps: **1** Yield: **94%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

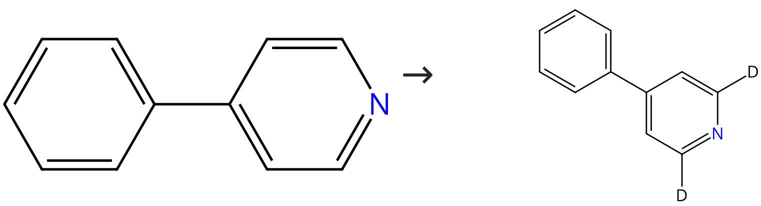
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 158 (1 Reaction)

Steps: **1** Yield: **94%**



Suppliers (92)

31-614-CAS-41719928

Steps: **1** Yield: **94%**

1.1 **Reagents:** Sodium carbonate, Water- *d*2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

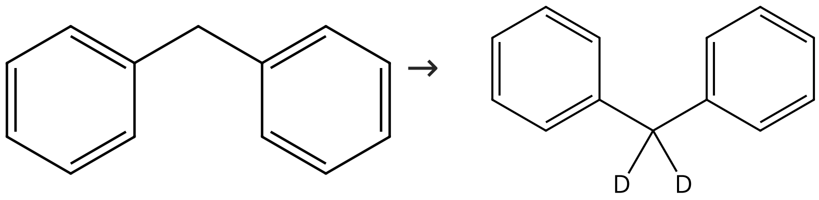
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 159 (2 Reactions) Steps: **1** Yield: **88-93%**



Suppliers (87) Suppliers (4)

31-116-CAS-8347539 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 8 h, 50 °C

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-10253911 Steps: **1** Yield: **88%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

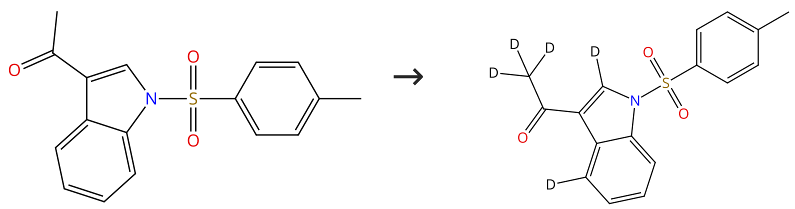
Experimental Protocols

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 160 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (9)

31-614-CAS-38370029 Steps: **1** Yield: **93%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

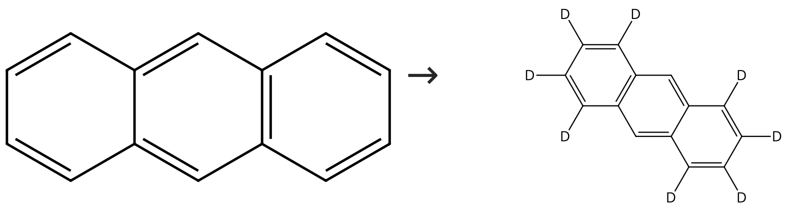
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 161 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (121)

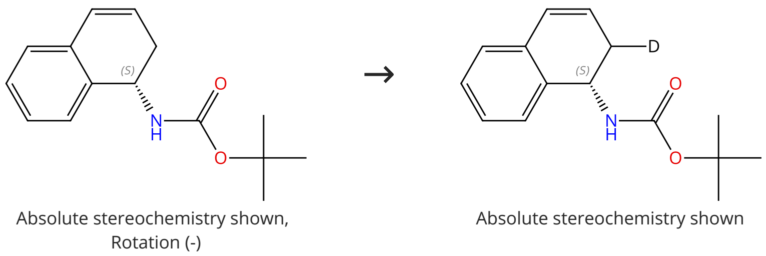
31-614-CAS-37771858	Steps: **1** Yield: **93%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Isopropanol, Cyclohexane; 24 h, rt → 80 °C
Experimental Protocols	

Giant Crystalline Molecular Rotors that Operate in the Solid State

By: Ando, Rempei; et al

Angewandte Chemie, International Edition (2023), 62(47), e202309694.

Scheme 162 (1 Reaction) Steps: **1** Yield: **93%**



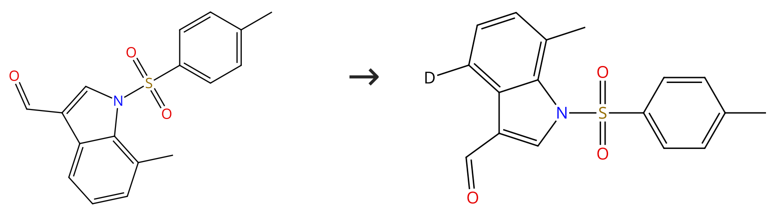
31-116-CAS-19801499	Steps: **1** Yield: **93%**
1.1	**Catalysts:** Palladium diacetate, 1,1'-[(4*R*)-[4,4'-Bi-1,3-benzodioxole]-5,5'-diyl]bis[1,1-diphenylphosphine] **Solvents:** 1,4-Dioxane; 30 min, rt
1.2	**Catalysts:** Zinc triflate; 10 min, rt
1.3	**Solvents:** 1,4-Dioxane; 10 min, rt
1.4	**Reagents:** Zinc, Water-d_2; 20 h, 60 °C
Experimental Protocols	

Asymmetric Transfer Hydrogenation of Heterobicyclic Alkenes with Water as Hydrogen Source

By: Shen, Guoli; et al

Organic Letters (2019), 21(5), 1364-1367.

Scheme 163 (1 Reaction) Steps: **1** Yield: **93%**



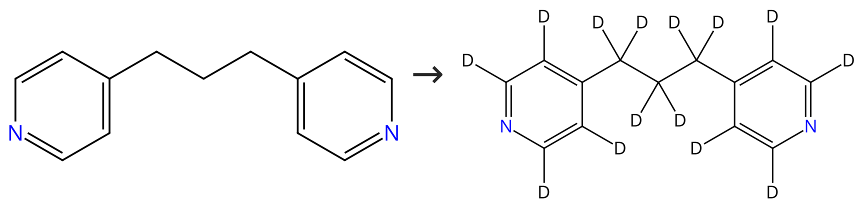
31-614-CAS-38370016	Steps: **1** Yield: **93%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 164 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (61)

31-116-CAS-6763926 Steps: **1** Yield: **93%**

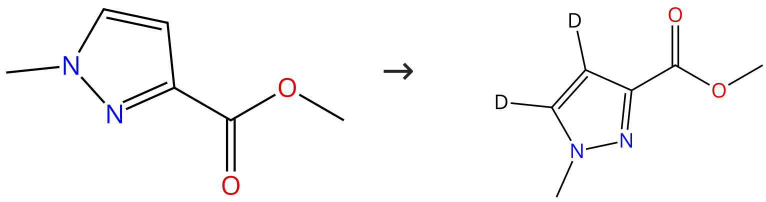
1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 12 h, 4 M Pa, 250 °C

Platinum catalyzed H-D exchange reaction of various aromatic compounds under hydrothermal condition

By: Yamamoto, Mitsuru; et al

Heterocycles (2006), 67(1), 353-359.

Scheme 165 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (65)

31-614-CAS-40655057 Steps: **1** Yield: **93%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2, 4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 130 °C

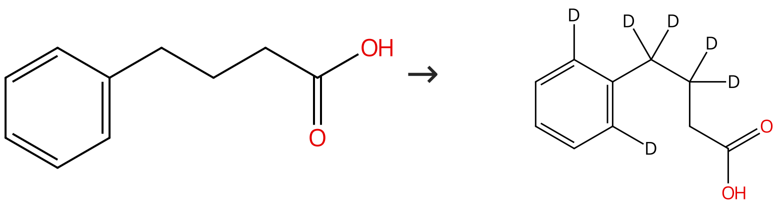
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 166 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (102)

31-614-CAS-30414451 Steps: **1** Yield: **93%**

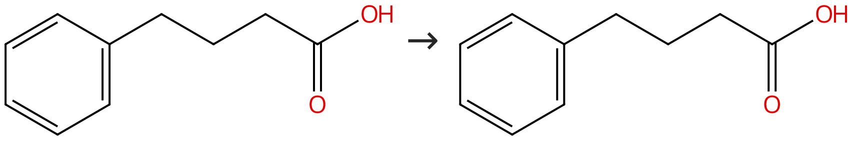
1.1 **Catalysts:** Palladium, Sodium borodeuteride
Solvents: Water-d_2; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 167 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (102)

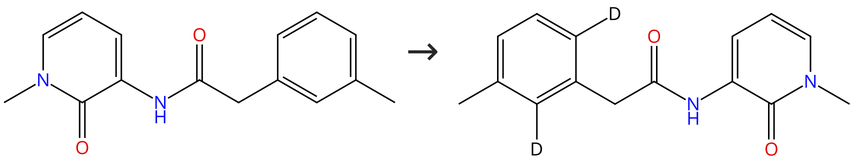
31-614-CAS-30458735	Steps: **1** Yield: **93%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium chloride, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 18 h, 130 °C
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 168 (1 Reaction) Steps: **1** Yield: **93%**



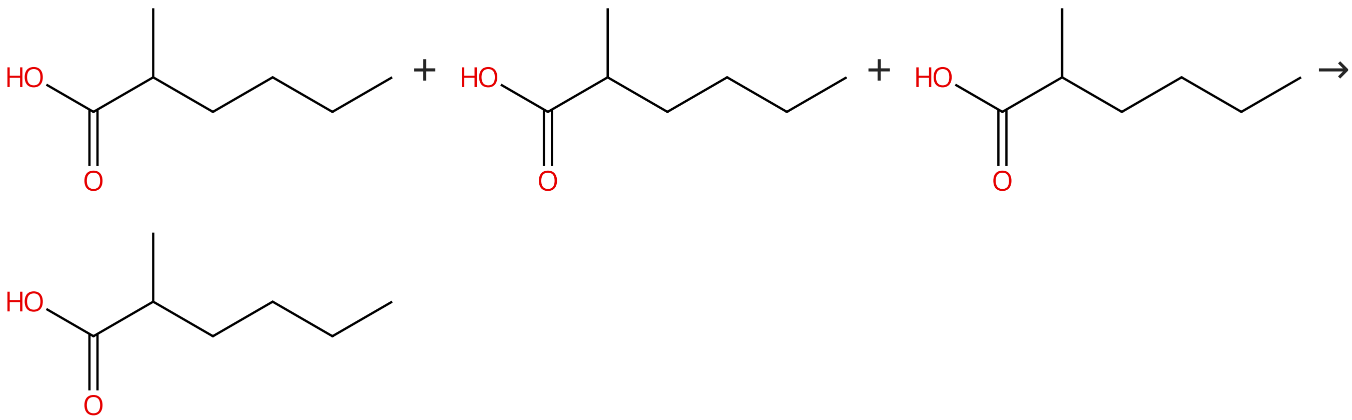
31-116-CAS-23999357	Steps: **1** Yield: **93%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium diacetate; 24 h, 120 °C
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 169 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (78)

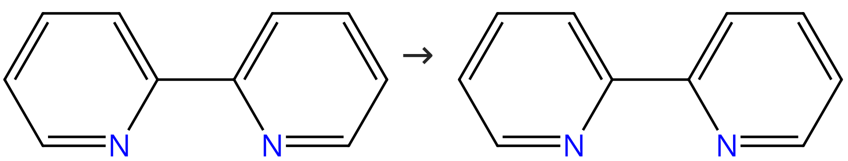
31-614-CAS-28512359	Steps: **1** Yield: **93%**
1.1	**Reagents:** Silver carbonate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *N*-[2-(Dimethylamino)ethyl]-2,4,6-tris(1-methylethyl)benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 90 °C; 90 °C → rt
1.2	**Reagents:** Formic acid; rt
Experimental Protocols	

Late-Stageβ-C(sp^3)-H Deuteration of Carboxylic Acids

By: Uttry, Alexander; et al

Journal of the American Chemical Society (2021), 143(29), 10895-10901.

Scheme 170 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (120)

31-614-CAS-41719936 Steps: **1** Yield: **93%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

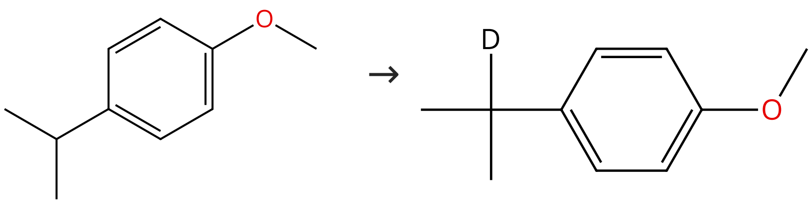
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 171 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (67)

31-614-CAS-41216674 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 50 °C

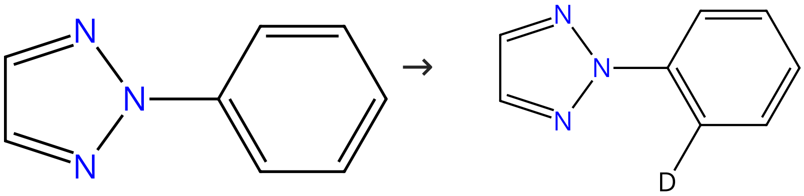
Experimental Protocols

Selective nitrogen insertion into aryl alkanes

By: Zhang, Zheng; et al

Nature Communications (2024), 15(1), 6016.

Scheme 172 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (48)

31-116-CAS-18468987 Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-d_2, Copper(II) triflate
Catalysts: Trifluoromethanesulfonic acid, Palladium diacetate
Solvents: Dichloromethane; 8.5 h, 120 °C

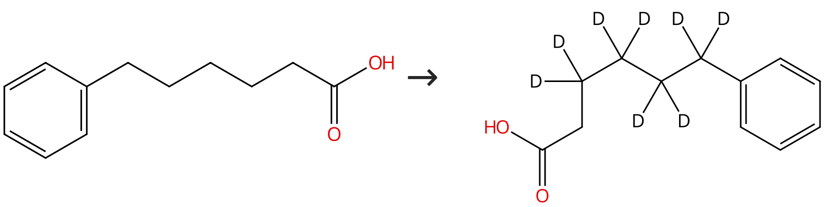
Experimental Protocols

Palladium-catalyzed direct C-H ethoxycarbonylation of 2-aryl-1,2,3-triazoles and efficient synthesis of suvorexant

By: Sang, Rui; et al

Organic Chemistry Frontiers (2018), 5(4), 648-652.

Scheme 173 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (70)

31-614-CAS-25260813 Steps: **1** Yield: **93%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

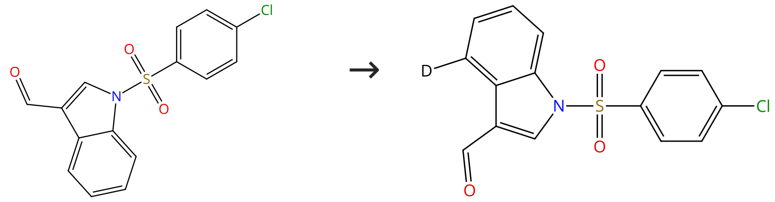
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 174 (1 Reaction)

Steps: **1** Yield: **93%**



Suppliers (3)

31-614-CAS-38370026

Steps: **1** Yield: **93%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

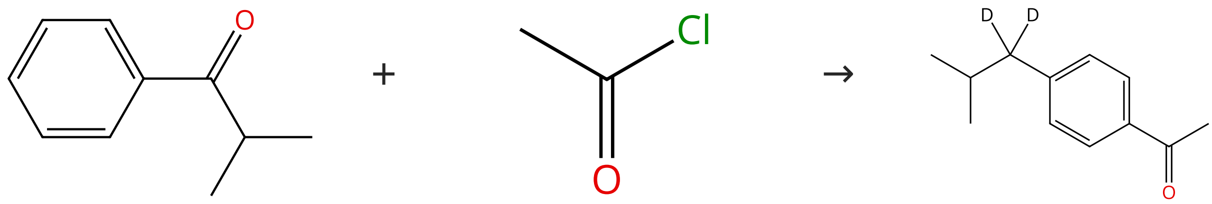
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 175 (1 Reaction)

Steps: **1** Yield: **93%**



Suppliers (66)

Suppliers (93)

31-091-CAS-23324807

Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Potassium *tert*-butoxide, Palladium diacetate
Solvents: Chlorobenzene; 20 h

1.2 **Reagents:** Aluminum chloride
Solvents: Dichloromethane; 0 °C; 2 h, 0 °C

Experimental Protocols

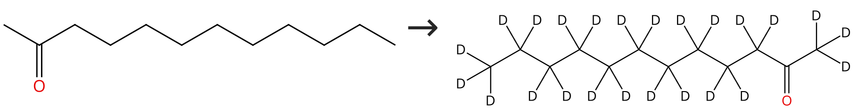
Room-Temperature Palladium-Catalyzed Deuterogenolysis of Carbon Oxygen Bonds towards Deuterated Pharmaceuticals

By: Ou, Wei; et al

Angewandte Chemie, International Edition (2021), 60(12), 6357-6361.

Scheme 176 (2 Reactions)

Steps: **1** Yield: **93%**



Suppliers (72)

31-116-CAS-3864906

Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium; 11 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-5862189 Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 11 h, 250 °C

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 177 (1 Reaction) Steps: **1** Yield: **93%**

Absolute stereochemistry shown

Absolute stereochemistry shown, Rotation (+)

Supplier (1)

31-116-CAS-2076087 Steps: **1** Yield: **93%**

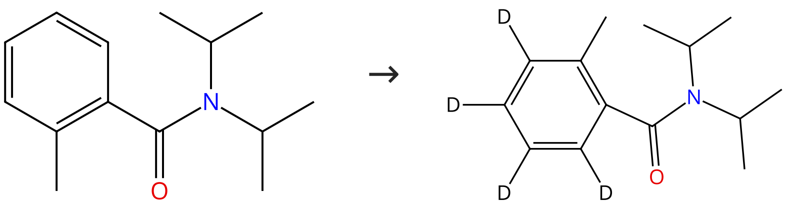
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

Scheme 178 (1 Reaction) Steps: **1** Yield: **93%**



Suppliers (22)

31-614-CAS-24211318 Steps: **1** Yield: **93%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2, 4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl) sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

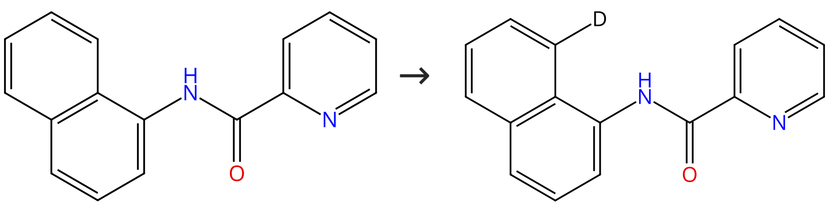
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 179 (5 Reactions) Steps: **1** Yield: **61-93%**



Suppliers (21)

31-116-CAS-23427983	Steps: **1** Yield: **93%**	**Copper(II) mediated C-8 amination of 1-naphthylamide derivatives with acyclic and cyclic amines**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Xylene; 12 h, 130 °C	By: Sahoo, Tapan; et al Tetrahedron Letters (2021), 67, 152858.
Experimental Protocols		

31-116-CAS-7144121	Steps: **1** Yield: **92%**	**Palladium-Catalyzed peri-Selective Chalcogenation of Naphthylamines with Diaryl Disulfides and Diselenides via C-H Bond Cleavage**
1.1	**Reagents:** Water-d_2 **Catalysts:** Bis(benzonitrile)dichloropalladium **Solvents:** Dimethyl sulfoxide; 12 h, 100 °C	By: Iwasaki, Masayuki; et al Journal of Organic Chemistry (2014), 79(23), 11330-11338.
Experimental Protocols		

31-614-CAS-38588458	Steps: **1** Yield: **61%**	**Copper(II)-Mediated, Site Selective C(sp^2)-H Sulfonamidation of 1-Naphthylamines**
1.1	**Catalysts:** Palladium diacetate **Solvents:** Dimethyl sulfoxide, Water-d_2; 20 h, 120 °C	By: Hajra, Arun Kumar; et al Journal of Organic Chemistry (2023), 88(24), 16985-16996.
Experimental Protocols		

31-116-CAS-18639054	Steps: **1**	**Copper-mediated regioselective C-H etherification of naphthylamides with arylboronic acids using water as an oxygen source**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** *m*-Xylene; 12 h, 130 °C	By: Roy, Subhasish; et al Chemical Communications (Cambridge, United Kingdom) (2018), 54(31), 3899-3902.
Experimental Protocols		

31-116-CAS-17088122	Steps: **1**	**Copper(II)-Mediated Chelation-Assisted Regioselective N-Naphthylation of Indoles, Pyrazoles and Pyrrole through Dehydrogenative Cross-Coupling**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Xylene; 12 h, 130 °C	By: Pradhan, Sourav; et al Journal of Organic Chemistry (2017), 82(9), 4883-4890.
Experimental Protocols		

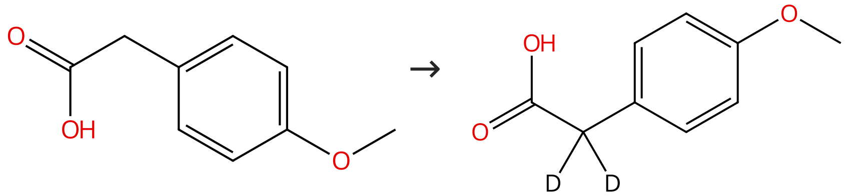
Scheme 180 (1 Reaction) Steps: **1** Yield: **93%**

Suppliers (109) Suppliers (33)

31-614-CAS-37771853	Steps: **1** Yield: **93%**	**Giant Crystalline Molecular Rotors that Operate in the Solid State**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Isopropanol, Cyclohexane; 24 h, 100 °C	By: Ando, Rempei; et al Angewandte Chemie, International Edition (2023), 62(47), e202309694.

Scheme 181 (1 Reaction)

Steps: **1** Yield: **92%**



Suppliers (114)

31-614-CAS-26880784

Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen, Water-*d*2
Catalysts: Palladium, Carbon
Solvents: Water-*d*2; 24 h, 110 °C

Experimental Protocols

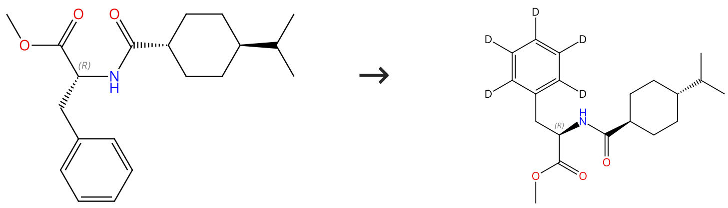
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 182 (1 Reaction)

Steps: **1** Yield: **92%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (28)

31-614-CAS-24211362

Steps: **1** Yield: **92%**

1.1 **Reagents:** Silver fluoride, Water-*d*2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

Experimental Protocols

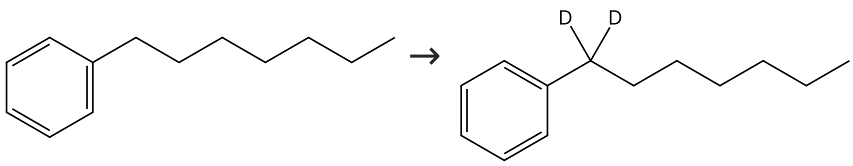
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 183 (2 Reactions)

Steps: **1** Yield: **90-92%**



Suppliers (73)

31-614-CAS-42048791

Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen, Water-*d*2
Catalysts: Palladium; 4.5 d, rt

Experimental Protocols

Ni-catalyzed undirected and regioselective acceptorless dehydrogenative silylation of primary benzylic C(sp^3)-H bonds

By: Yu, Qing; et al

Catalysis Science & Technology (2024), 14(10), 2730-2738.

31-116-CAS-23387969 Steps: **1** Yield: **90%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 95 h, 1 atm, rt

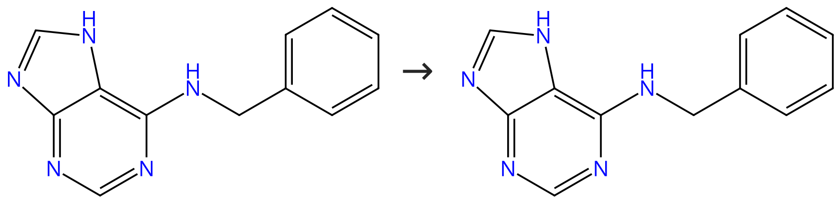
Experimental Protocols

C(sp^3)-H Selective Benzylic Borylation by In Situ Reduced Ultrasmall Ni Species on CeO_2

By: Yoshii, Daichi; et al

ACS Catalysis (2021), 11(4), 2150-2155.

Scheme 184 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (130)

partially deuterated

31-614-CAS-26254843 Steps: **1** Yield: **92%**

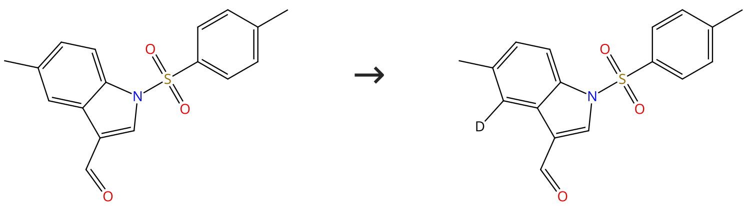
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Ethylenediamine (Palladium on carbon complex with), Palladium (carbon-ethylenediamine complex), Carbon (Palladium and ethylenediamine complex); 24 h, 180 °C

Synthesis of deuterated benzyladenine and its application as a surrogate

By: Modutlwa, Nkaelang; et al

Nucleic Acids Symposium Series (2009), 53(1), 105-106.

Scheme 185 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (3)

31-614-CAS-38370013 Steps: **1** Yield: **92%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

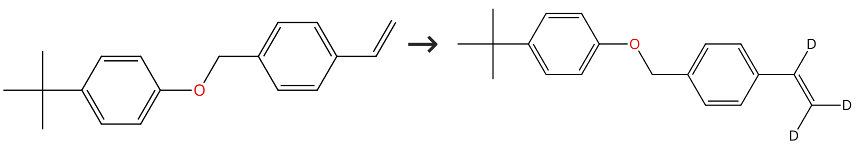
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 186 (1 Reaction) Steps: **1** Yield: **92%**



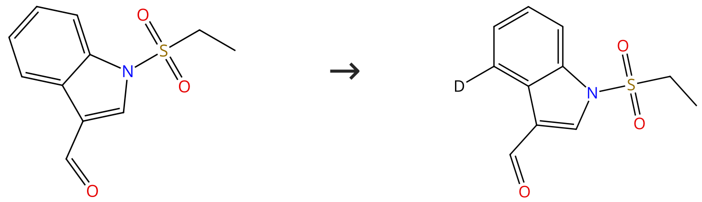
31-116-CAS-22371272	Steps: **1** Yield: **92%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 187 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (2)

31-614-CAS-38370030	Steps: **1** Yield: **92%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 188 (1 Reaction) Steps: **1** Yield: **92%**

Absolute stereochemistry shown

Absolute stereochemistry shown

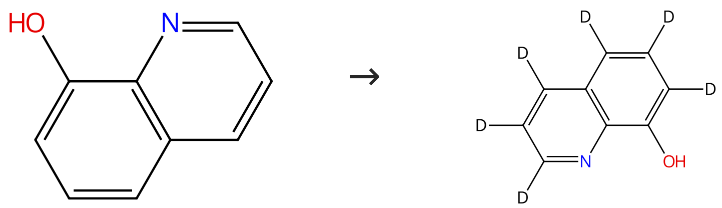
31-614-CAS-38572137	Steps: **1** Yield: **92%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 189 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (141)

Suppliers (5)

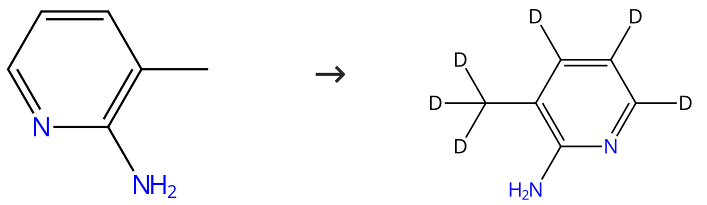
31-116-CAS-9297566	Steps: **1** Yield: **92%**
1.1 **Reagents:** Deuterium, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 16 h, 145 °C	

Synthesis of a delta opioid agonist in [$^2H_6$], [$^2H_4$], [^{11}C], and [^{14}C] labeled forms

By: Elmore, Charles S.; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2011), 54(14), 847-854.

Scheme 190 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (102) Suppliers (5)

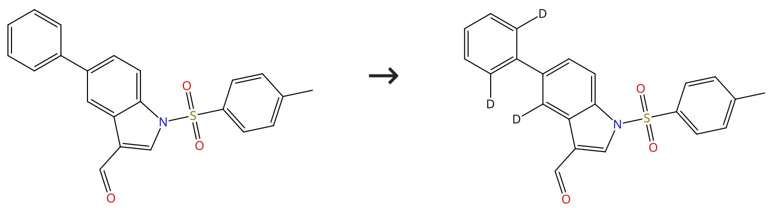
31-116-CAS-19422614	Steps: **1** Yield: **92%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum; 24 h, 180 °C	
Experimental Protocols	

Measuring the excitations in a new S = 1/2 quantum spin chain material with competing interactions

By: Rule, K. C.; et al

Journal of Physics: Condensed Matter (2018), 30(21), 215602/1-215602/7.

Scheme 191 (1 Reaction) Steps: **1** Yield: **92%**



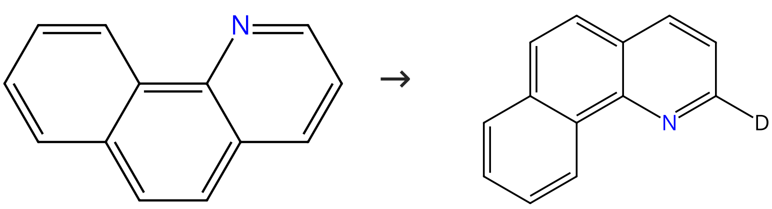
31-614-CAS-38370018	Steps: **1** Yield: **92%**
1.1 **Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt	
1.2 **Reagents:** Sodium bicarbonate **Solvents:** 1,2-Dichloroethane, Water; rt	
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 192 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (81)

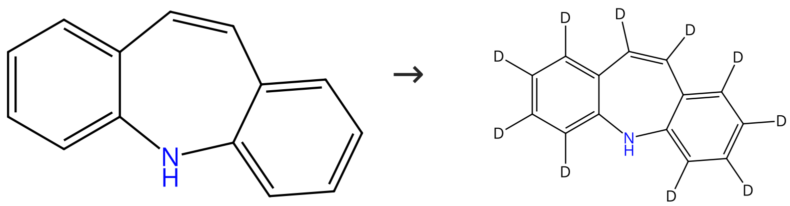
31-614-CAS-41719938	Steps: **1** Yield: **92%**
1.1	**Reagents:** Sodium carbonate, Water- d_2 **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 193 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (109)

31-614-CAS-40655073	Steps: **1** Yield: **92%**
1.1	**Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 100 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 194 (1 Reaction) Steps: **1** Yield: **92%**

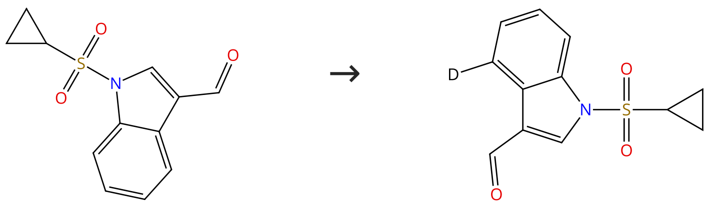
31-614-CAS-38370031	Steps: **1** Yield: **92%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 195 (1 Reaction) Steps: **1** Yield: **92%**



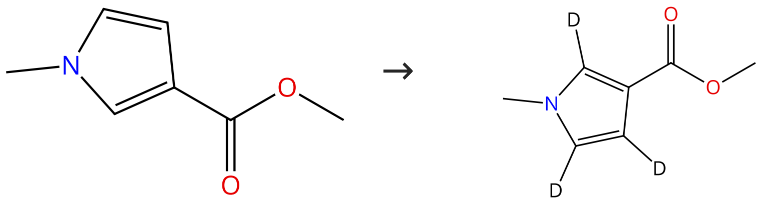
31-614-CAS-38370032	Steps: **1** Yield: **92%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 196 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (51)

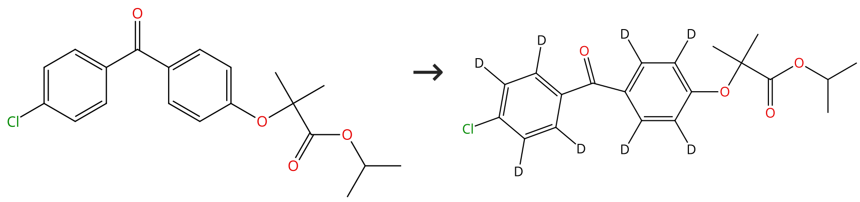
31-614-CAS-40655060	Steps: **1** Yield: **92%**
1.1	**Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methyl ethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 60 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 197 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (127)

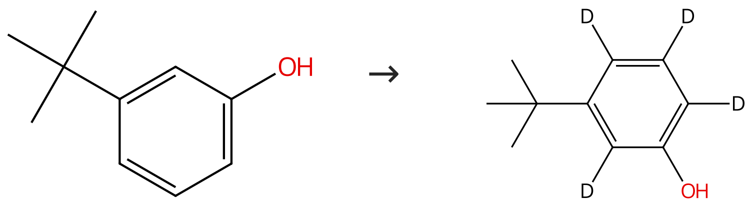
31-614-CAS-24211341	Steps: **1** Yield: **92%**
1.1	**Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 198 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (85)

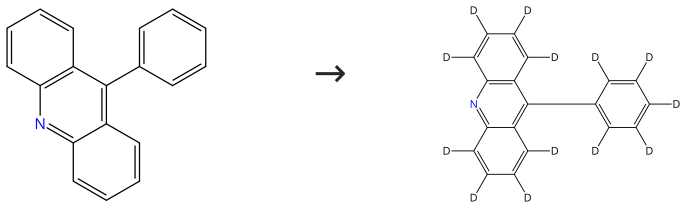
31-614-CAS-24211328	Steps: **1** Yield: **92%**
1.1	**Reagents:** Water-*d*2 **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 199 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (74)

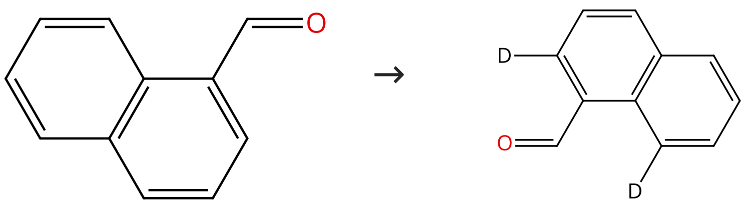
31-614-CAS-40655065	Steps: **1** Yield: **92%**
1.1	**Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-*d*2; 48 h, 130 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 200 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (92)

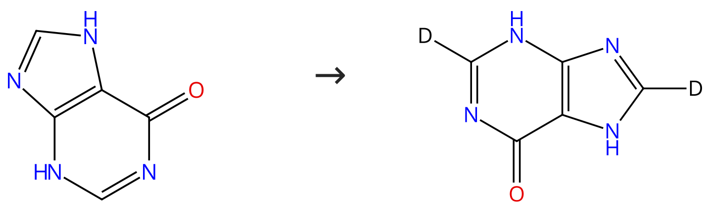
31-614-CAS-24154351	Steps: **1** Yield: **92%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 201 (2 Reactions) Steps: **1** Yield: **92%**



Suppliers (147) Suppliers (17)

31-116-CAS-10379328	Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

31-116-CAS-14958698	Steps: **1** Yield: **92%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

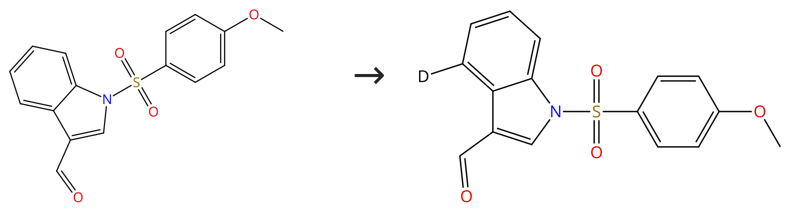
Experimental Protocols

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 202 (1 Reaction) Steps: **1** Yield: **92%**



Suppliers (5)

31-614-CAS-38370033	Steps: **1** Yield: **92%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

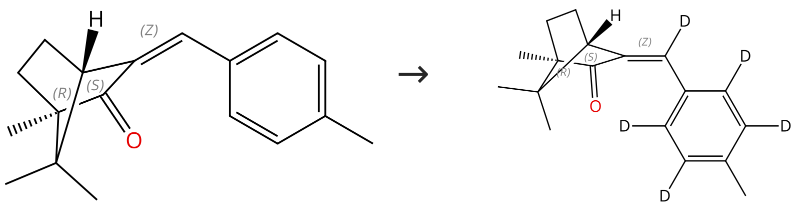
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 203 (1 Reaction) Steps: **1** Yield: **92%**



Absolute stereochemistry shown
Double bond geometry shown

Absolute stereochemistry shown
Double bond geometry shown

Supplier (1)

31-614-CAS-24211355	Steps: **1** Yield: **92%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl) sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

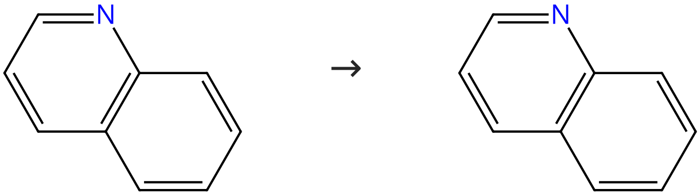
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 204 (3 Reactions)

Steps: **1** Yield: **92%**



Suppliers (124)

31-614-CAS-41719935

Steps: **1** Yield: **92%**

1.1 **Reagents:** Sodium carbonate, Water-*d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

31-614-CAS-34406442

Steps: **1**

1.1 **Reagents:** Palladium diacetate, *N*^{2},*N*^{6}-Bis(2,6-dimethoxyphenyl)-2,6-pyridinedicarboxamide
Catalysts: *rel*-*N*^{2}-(2,6-Dimethoxyphenyl)-*N*^{6}-[(1*R*,2*R*)-1,2,3,4-tetrahydro-1-(3-pyridinyl)-2-naphthalenyl]-2,6-pyridinedicarboxamide
Solvents: Dichloromethane; 1 h, 100 °C

1.2 **Reagents:** Silver carbonate, Water-*d*$_2$
Catalysts: *N*-Acetyl-DL-phenylalanine, Palladium diacetate
Solvents: *tert*-Butanol, 1,4-Dioxane, 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 24 h, 110 °C; 110 °C → rt

1.3 **Reagents:** 4-(Dimethylamino)pyridine
Solvents: Toluene; 30 min, 100 °C

Experimental Protocols

Molecular editing of aza-arene C-H bonds by distance, geometry and chirality

By: Fan, Zhoulong; et al

Nature (London, United Kingdom) (2022), 610(7930), 87-93.

31-614-CAS-34406439

Steps: **1**

1.1 **Reagents:** Palladium diacetate, *N*^{2},*N*^{6}-Bis[3,5-bis(trifluoromethyl)phenyl]-2,6-pyridinedicarboxamide
Catalysts: *N*^{2}-[3,5-Bis(trifluoromethyl)phenyl]-*N*^{6}-[1,2,3,4-tetrahydro-8-(5-pyrimidinyl)-2-naphthalenyl]-2,6-pyridinedicarboxamide
Solvents: Acetonitrile; 1 h, 100 °C

1.2 **Reagents:** Silver carbonate, Water-*d*$_2$
Catalysts: Acetylglycine, Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 24 h, 100 °C; 100 °C → rt

1.3 **Reagents:** 4-(Dimethylamino)pyridine
Solvents: Toluene; 30 min, 100 °C

Experimental Protocols

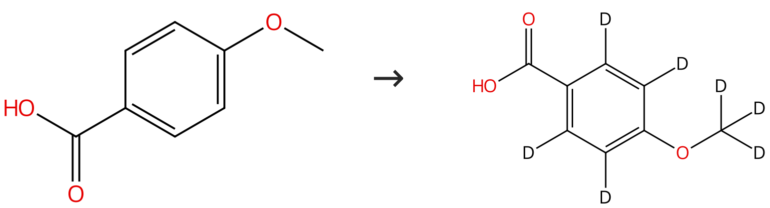
Molecular editing of aza-arene C-H bonds by distance, geometry and chirality

By: Fan, Zhoulong; et al

Nature (London, United Kingdom) (2022), 610(7930), 87-93.

Scheme 205 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (116)

Suppliers (16)

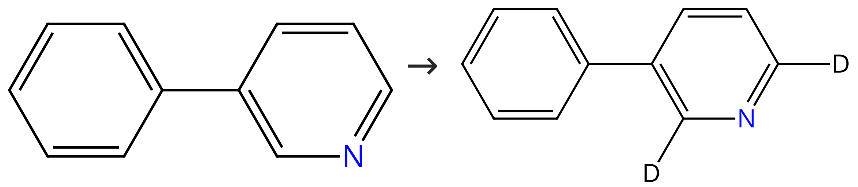
31-116-CAS-23254376	Steps: **1** Yield: **91%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium; 24 h, 1 bar, 100 °C
Experimental Protocols	

New Pd-phosphorus ylide complexes based on FC_{60} as heterogeneous nano-catalyst for H/D exchange reaction

By: Yousefi, Abed; et al

Applied Organometallic Chemistry (2021), 35(3), e6139.

Scheme 206 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (84)

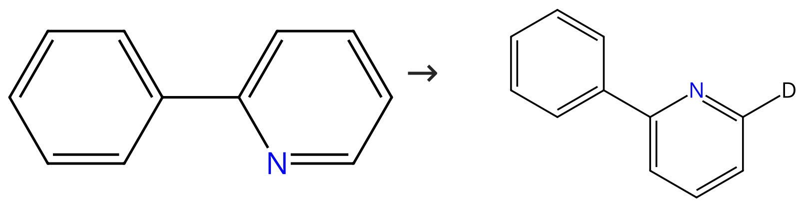
31-614-CAS-41719919	Steps: **1** Yield: **91%**
1.1	**Reagents:** Sodium carbonate, Water-*d*$_2$ **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 207 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (94)

Supplier (1)

31-614-CAS-41719918	Steps: **1** Yield: **91%**
1.1	**Reagents:** Sodium carbonate, Water-*d*$_2$ **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 208 (1 Reaction) Steps: **1** Yield: **91%**

Suppliers (3)

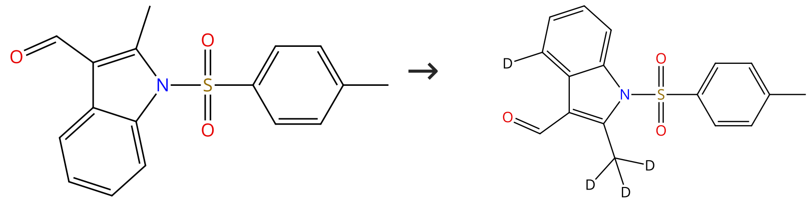
31-614-CAS-25485636	Steps: **1** Yield: **91%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 160 °C	
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 209 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (4)

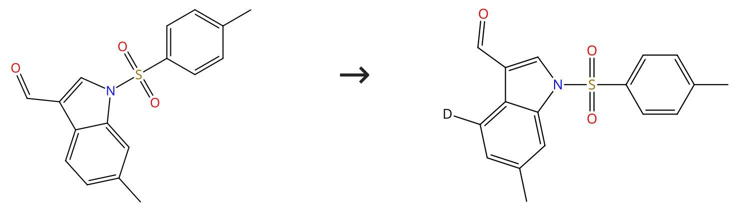
31-614-CAS-38370019	Steps: **1** Yield: **91%**
1.1 **Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt	
1.2 **Reagents:** Sodium bicarbonate **Solvents:** Water; rt	
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 210 (1 Reaction) Steps: **1** Yield: **91%**



31-614-CAS-38370012	Steps: **1** Yield: **91%**
1.1 **Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt	
1.2 **Reagents:** Sodium bicarbonate **Solvents:** Water; rt	
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 211 (1 Reaction) Steps: **1** Yield: **91%**

Absolute stereochemistry shown Absolute stereochemistry shown

31-614-CAS-38572135	Steps: **1** Yield: **91%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water

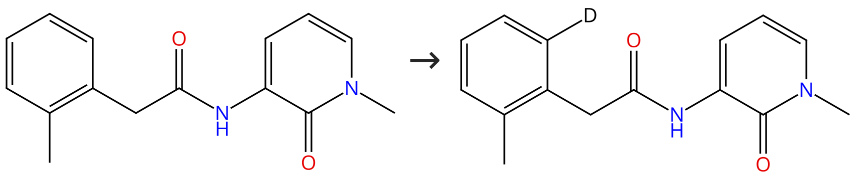
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 212 (1 Reaction) Steps: **1** Yield: **91%**



31-116-CAS-23999998	Steps: **1** Yield: **91%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C

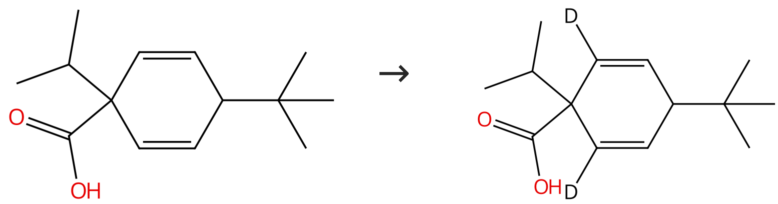
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 213 (1 Reaction) Steps: **1** Yield: **91%**



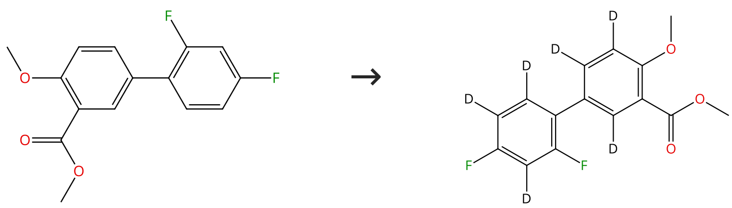
31-116-CAS-22668284	Steps: **1** Yield: **91%**
1.1	**Reagents:** Cupric acetate, Silver acetate **Catalysts:** Palladium diacetate **Solvents:** Water-d_2; 24 h, 80 °C

Palladium-Catalyzed Proaromatic C(Alkenyl)-H Olefination: Synthesis of Densely Functionalized 1,3-Dienes

By: Wang, Yu-Chun; et al

Organic Letters (2020), 22(17), 6765-6770.

Scheme 214 (1 Reaction) Steps: **1** Yield: **91%**



Suppliers (4)

31-614-CAS-24211346	Steps: **1** Yield: **91%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

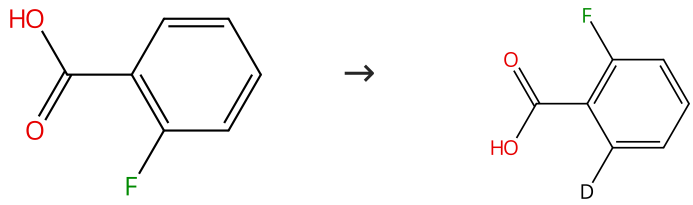
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 215 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (98)

31-614-CAS-34527004

Steps: **1** Yield: **91%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

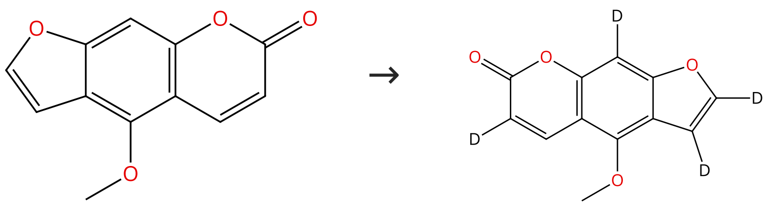
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 216 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (92)

31-614-CAS-40655037

Steps: **1** Yield: **91%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*2; 18 h, 90 °C

Experimental Protocols

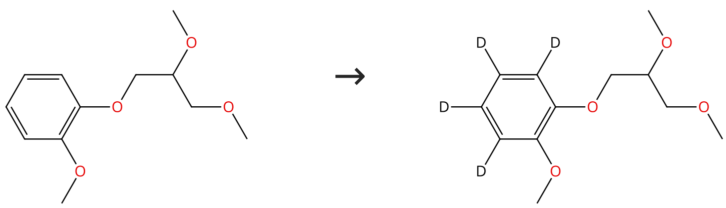
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 217 (1 Reaction)

Steps: **1** Yield: **91%**



Supplier (1)

31-614-CAS-24211344

Steps: **1** Yield: **91%**

1.1 **Reagents:** Silver fluoride, Water-*d*2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

Experimental Protocols

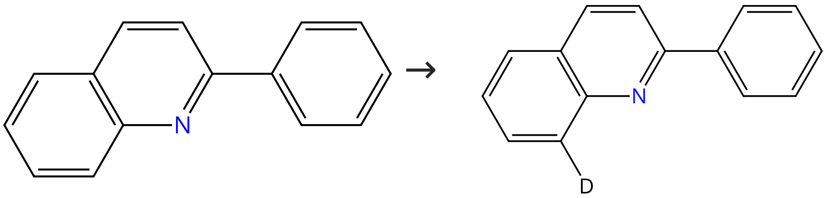
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 218 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (85)

31-614-CAS-41719937

Steps: **1** Yield: **91%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

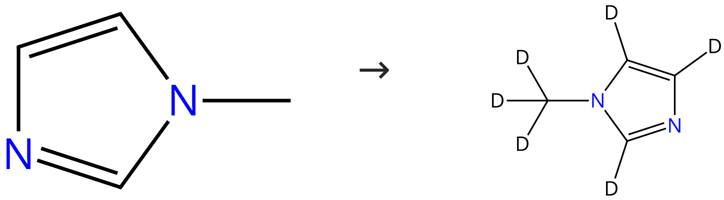
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 219 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (123)

Suppliers (34)

31-116-CAS-6330195

Steps: **1** Yield: **91%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$

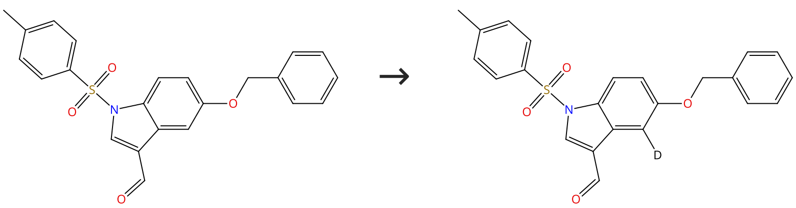
A highly efficient synthetic procedure for deuterating imidazoles and imidazolium salts

By: Hardacre, Christopher; et al

Chemical Communications (Cambridge, United Kingdom) (2001), (4), 367-368.

Scheme 220 (1 Reaction)

Steps: **1** Yield: **91%**



Supplier (1)

31-614-CAS-38370021

Steps: **1** Yield: **91%**

1.1 **Reagents:** Trifluoroacetic acid, Water- *d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

Experimental Protocols

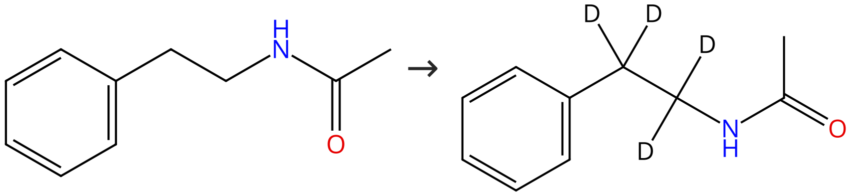
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 221 (1 Reaction)

Steps: **1** Yield: **91%**



Suppliers (65)

31-614-CAS-30076935

Steps: **1** Yield: **91%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

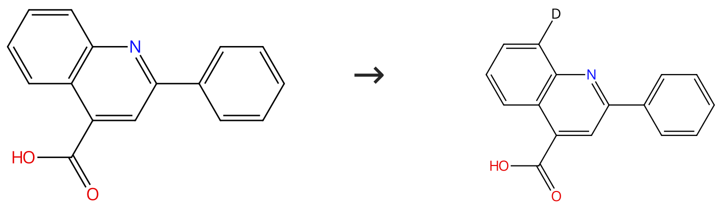
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 222 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (90)

31-614-CAS-41719946

Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

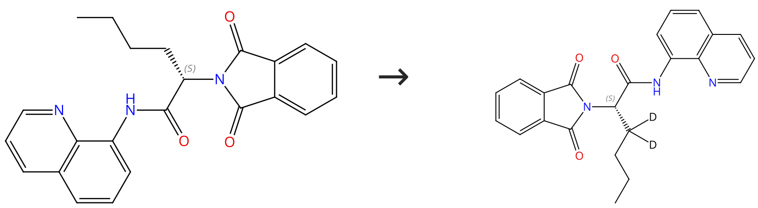
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 223 (1 Reaction)

Steps: **1** Yield: **90%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-38572136

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

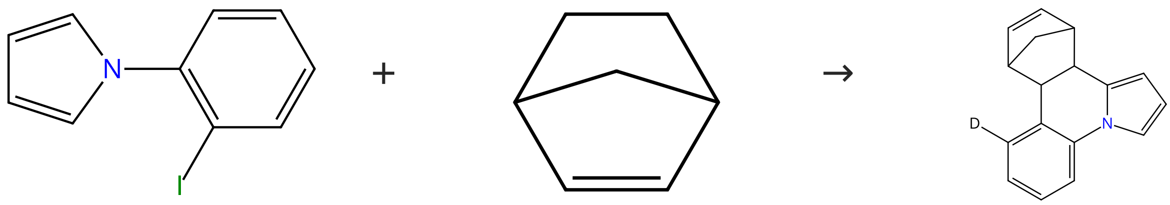
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 224 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (19)

Suppliers (73)

31-116-CAS-7650636

Steps: **1** Yield: **90%**

1.1 **Reagents:** Cesium carbonate, Water-d_2
Catalysts: Triphenylphosphine, Palladium diacetate
Solvents: Toluene; 6 h, 100 °C

Experimental Protocols

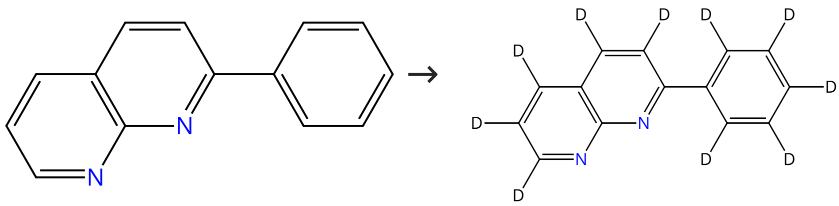
Mechanistic Studies of Pd-Catalyzed Regioselective Aryl C-H Bond Functionalization with Strained Alkenes: Origin of Regioselectivity

By: Chai, David I.; et al

Chemistry - A European Journal (2011), 17(29), 8175-8188, S8175/1-S8175/54.

Scheme 225 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (10)

31-116-CAS-17321199

Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-d_2; 12 h, 130 °C

Experimental Protocols

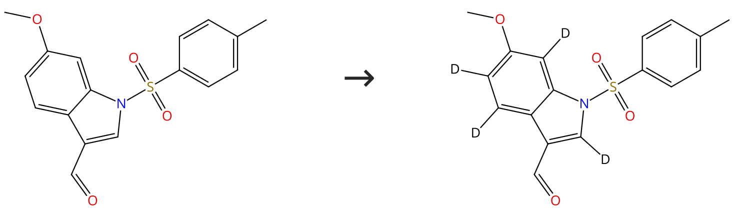
Direct Access to Nitrogen Bi-heteroarenes via Iridium-Catalyzed Hydrogen-Evolution Cross-Coupling Reaction

By: Chen, Chunlian; et al

Organic Letters (2017), 19(13), 3390-3393.

Scheme 226 (1 Reaction)

Steps: **1** Yield: **90%**



31-614-CAS-38370015

Steps: **1** Yield: **90%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

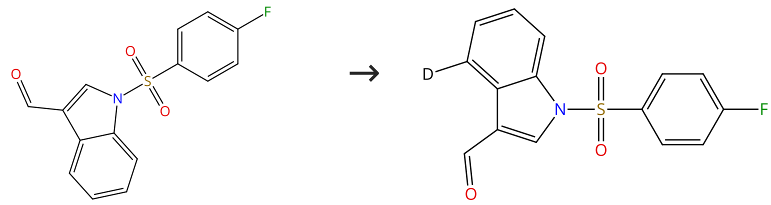
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 227 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (4)

31-614-CAS-38370034

Steps: **1** Yield: **90%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

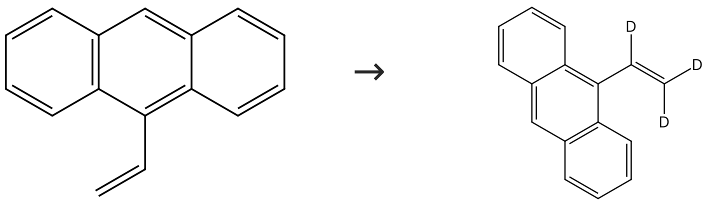
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 228 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (73)

31-116-CAS-22371280

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

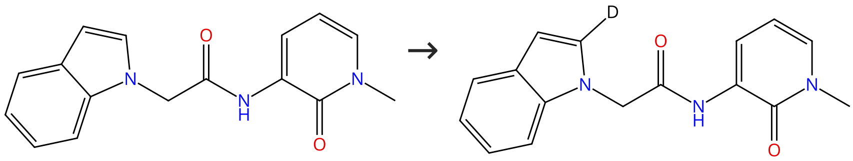
Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 229 (1 Reaction)

Steps: **1** Yield: **90%**



31-116-CAS-23999767

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

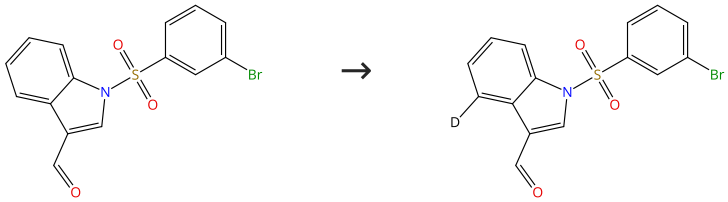
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 230 (1 Reaction)

Steps: **1** Yield: **90%**



31-614-CAS-38370036

Steps: **1** Yield: **90%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

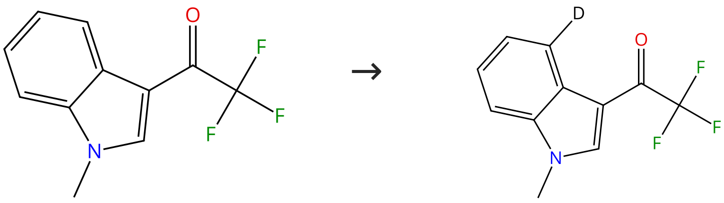
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 231 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (50)

31-614-CAS-35925380

Steps: **1** Yield: **90%**

1.1 **Reagents:** Trifluoroacetic acid, Potassium persulfate
Catalysts: Palladium diacetate
Solvents: Water-*d*$_2$; 12 h, rt

Experimental Protocols

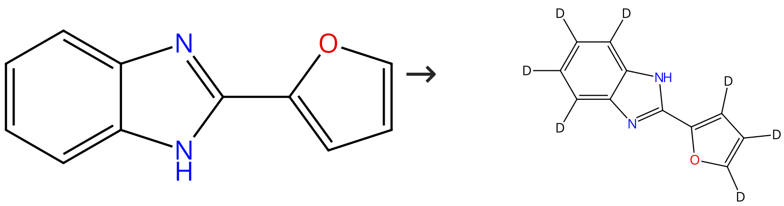
Weak Chelating-Group-Directed Palladium-Catalyzed C-4 Arylation of Indoles

By: Gupta, Sandip Kumar; et al

Journal of Organic Chemistry (2023), 88(7), 4254-4263.

Scheme 232 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (53)

31-614-CAS-40655044

Steps: **1** Yield: **90%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 90 °C

Experimental Protocols

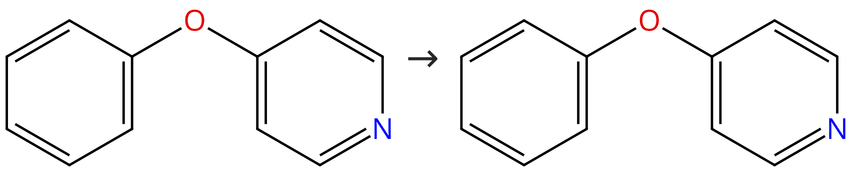
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 233 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (74)

31-614-CAS-41719924

Steps: **1** Yield: **90%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

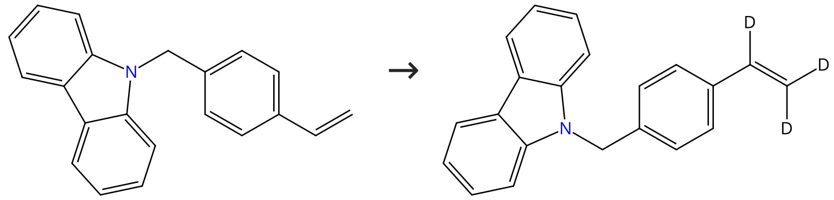
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 234 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (5)

31-116-CAS-22371276

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

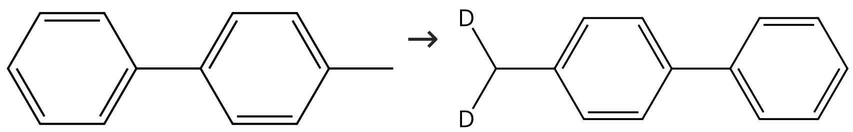
Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 235 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (86)

31-614-CAS-31315906

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium
Solvents: Dimethylacetamide; 10 h, 130 °C

Experimental Protocols

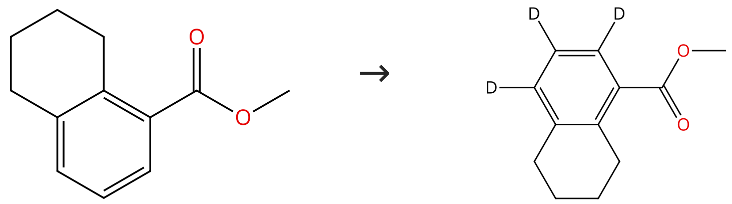
Selective Oxidation of Alkylarenes to the Aromatic Ketones or Benzaldehydes with Water

By: Zhang, Jin; et al

Organic Letters (2022), 24(5), 1152-1157.

Scheme 236 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (55)

31-614-CAS-24211353

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

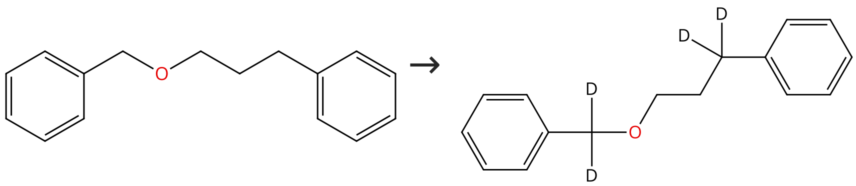
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 237 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (4)

31-116-CAS-7962341

Steps: **1** Yield: **90%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 6 h, 50 °C

Experimental Protocols

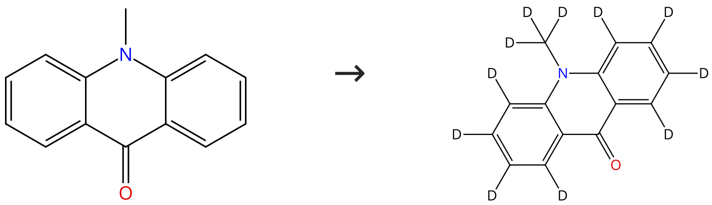
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 238 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (67)

31-614-CAS-41207372

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 12 h, 4 - 5 M Pa, rt → 250 °C

Experimental Protocols

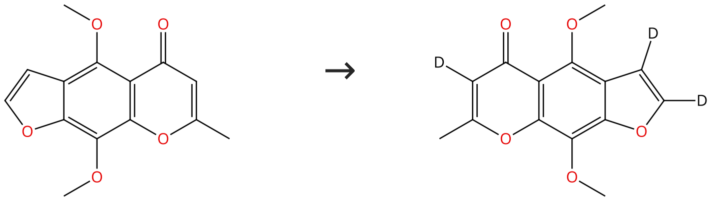
Intrinsic Narrowband Organic Afterglow

By: Wang, Guangming; et al

Chemistry of Materials (2024), 36(6), 3000-3012.

Scheme 239 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (78)

31-614-CAS-40655039

Steps: **1** Yield: **90%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

Experimental Protocols

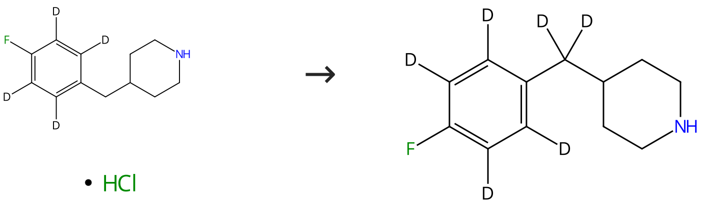
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 240 (1 Reaction)

Steps: **1** Yield: **90%**



31-116-CAS-4563156

Steps: **1** Yield: **90%**

1.1 **Reagents:** Deuterium chloride, Deuterium
Catalysts: Palladium
Solvents: Methanol-*d*, Water-d_2; 6 h, 3 bar, 60 °C

1.2 **Reagents:** Sodium hydroxide
Solvents: Water

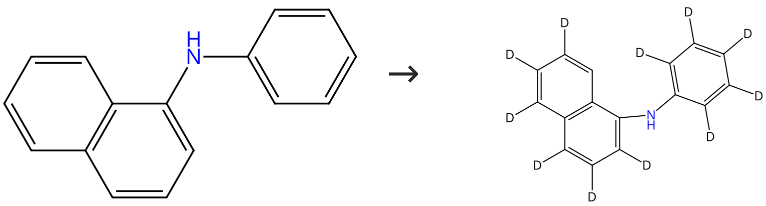
Convenient methods for the synthesis of d_4, d_2 and d_6 isotop omers of 4-(4-fluorobenzyl)piperidine

By: Proszenyak, Agnes; et al

Journal of Labelled Compounds & Radiopharmaceuticals (2005), 48(6), 421-427.

Scheme 241 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (91)

31-116-CAS-16726369

Steps: **1** Yield: **90%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Platinum; 4 h, 80 °C

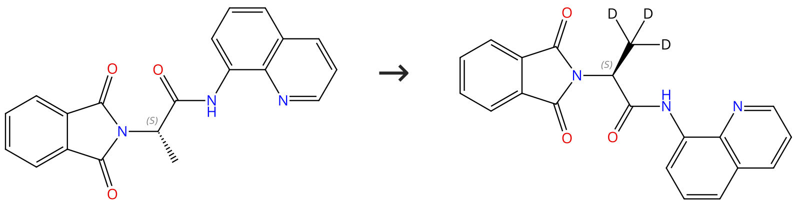
Mild conditions for deuteration of primary and secondary arylamines for the synthesis of deuterated optoelectronic organic molecules

By: Krause-Heuer, Anwen M.; et al

Molecules (2014), 19(11), 18604-18617, 14 pp..

Scheme 242 (1 Reaction)

Steps: **1** Yield: **90%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (4)

31-614-CAS-38253217

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

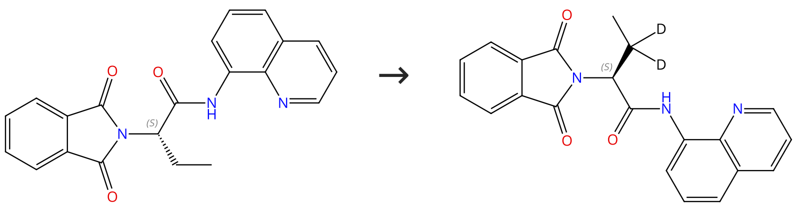
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 243 (1 Reaction)

Steps: **1** Yield: **90%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

31-614-CAS-38572139

Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

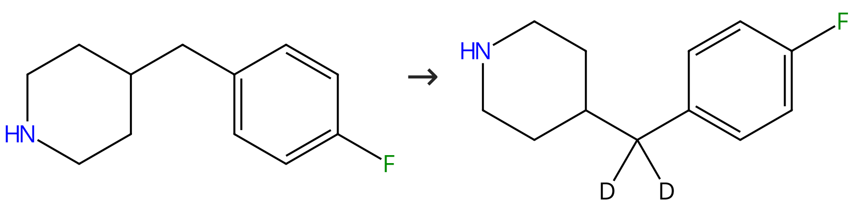
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 244 (1 Reaction)

Steps: **1** Yield: **90%**



Suppliers (79)

31-116-CAS-11564808

Steps: **1** Yield: **90%**

1.1 **Reagents:** Deuterium chloride, Deuterium
Catalysts: Palladium
Solvents: Methanol-*d*, Water-d_2; 6 h, 3 bar, 60 °C

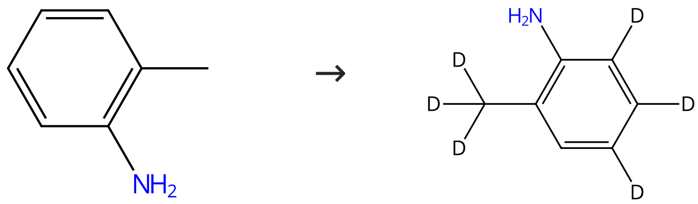
1.2 **Reagents:** Sodium hydroxide
Solvents: Water

Convenient methods for the synthesis of d_4, d_2 and d_6 isotopomers of 4-(4-fluorobenzyl)piperidine

By: Proszenyak, Agnes; et al

Journal of Labelled Compounds & Radiopharmaceuticals (2005), 48(6), 421-427.

Scheme 245 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (81)

31-116-CAS-1590220 Steps: **1** Yield: **90%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 24 h, 180 °C

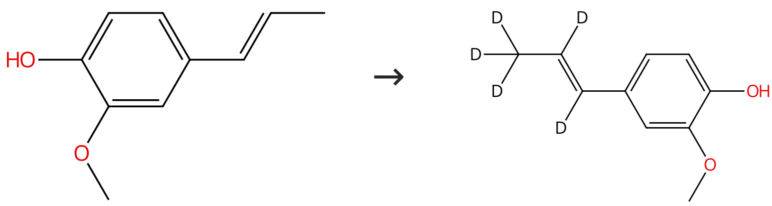
Experimental Protocols

Palladium catalyzed acetoxylation of benzylic C-H bonds using a bidentate picolinamide directing group

By: Cheng, Tao; et al

Organic & Biomolecular Chemistry (2014), 12(9), 1405-1411.

Scheme 246 (1 Reaction) Steps: **1** Yield: **90%**



Suppliers (95)

31-116-CAS-22371290 Steps: **1** Yield: **90%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

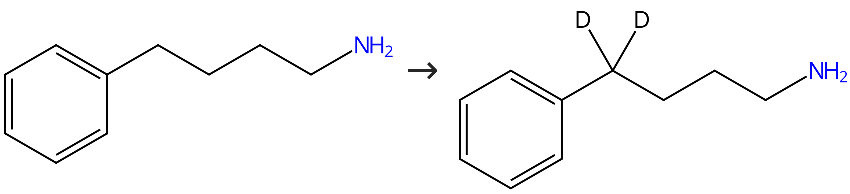
Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 247 (2 Reactions) Steps: **1** Yield: **89%**



Suppliers (73) Supplier (1)

31-116-CAS-3747901 Steps: **1** Yield: **89%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 48 h, 50 °C

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-19826191 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 48 h, 50 °C

Experimental Protocols

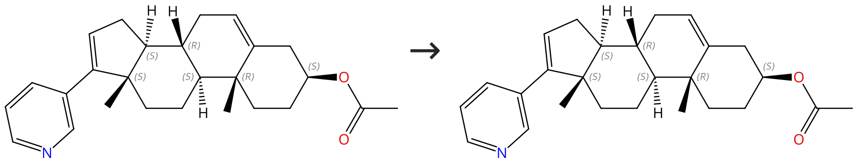
Electrochemical-Oxidation-Induced Site-Selective Intramo lecular C(sp^3)-H Amination

By: Hu, Xia; et al

ACS Catalysis (2018), 8(10), 9370-9375.

Scheme 248 (1 Reaction)

Steps: **1** Yield: **89%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (88)

31-614-CAS-41719944

Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium carbonate, Water- d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

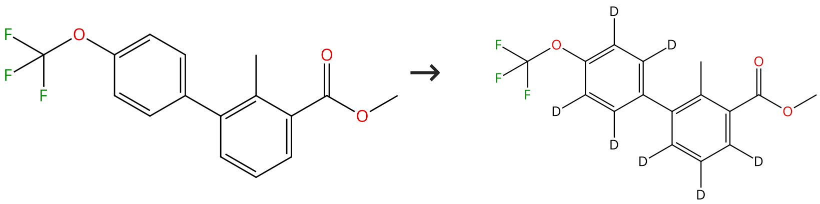
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 249 (1 Reaction)

Steps: **1** Yield: **89%**



Suppliers (16)

31-614-CAS-24211342

Steps: **1** Yield: **89%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2, 4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl) sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

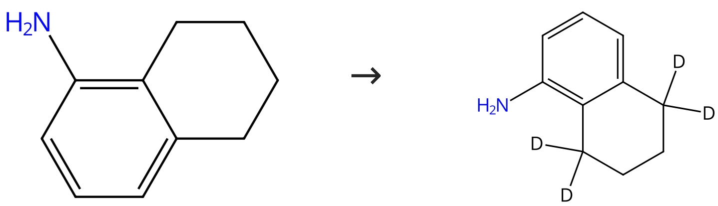
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 250 (1 Reaction)

Steps: **1** Yield: **89%**



Suppliers (62)

31-116-CAS-6169618

Steps: **1** Yield: **89%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 48 h, 50 °C

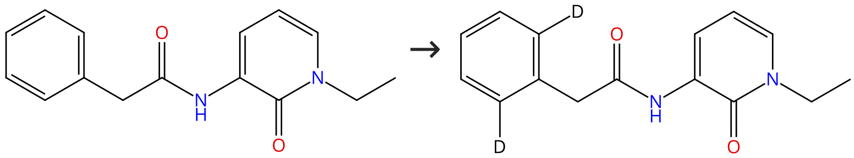
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 251 (1 Reaction) Steps: **1** Yield: **89%**



31-116-CAS-24000932 Steps: **1** Yield: **89%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

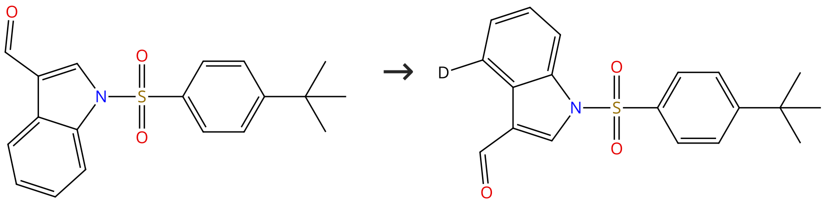
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 252 (1 Reaction) Steps: **1** Yield: **89%**



31-614-CAS-38370028 Steps: **1** Yield: **89%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

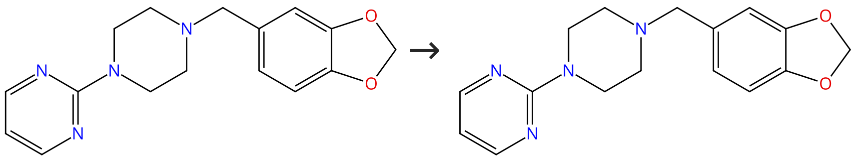
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 253 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (72)

31-614-CAS-41719948 Steps: **1** Yield: **89%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

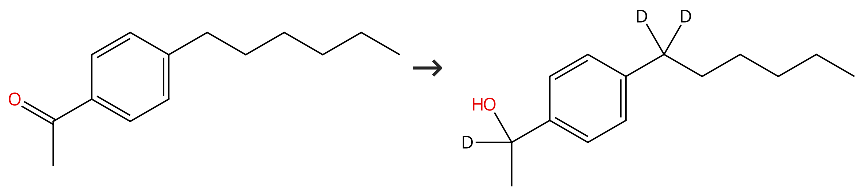
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 254 (1 Reaction) Steps: 1 Yield: 89%



Suppliers (68)

31-116-CAS-11902391 Steps: 1 Yield: 89%

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 50 °C

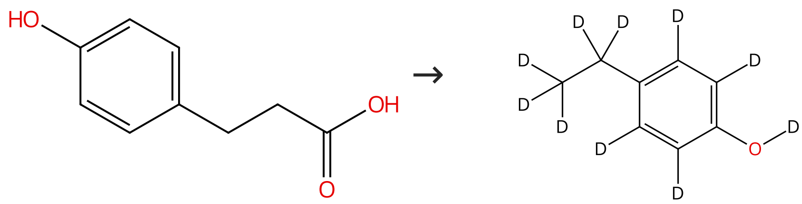
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 255 (1 Reaction) Steps: 1 Yield: 89%



Suppliers (116) Suppliers (19)

31-116-CAS-9363507 Steps: 1 Yield: 89%

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 12 h, 4000.0 - 5000.0 k Pa, 250 °C

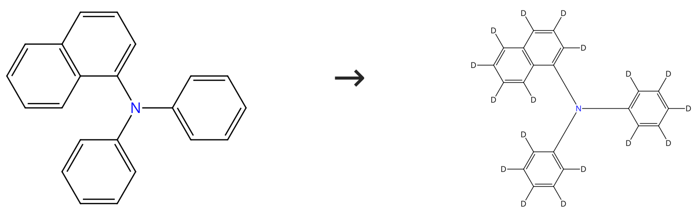
Experimental Protocols

Palladium-catalyzed decarboxylation and decarbonylation under hydrothermal conditions: decarboxylative deuteration

By: Matsubara, Seijiro; et al

Organic Letters (2004), 6(12), 2071-2073.

Scheme 256 (1 Reaction) Steps: 1 Yield: 89%



Suppliers (8)

31-116-CAS-22750362 Steps: 1 Yield: 89%

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C

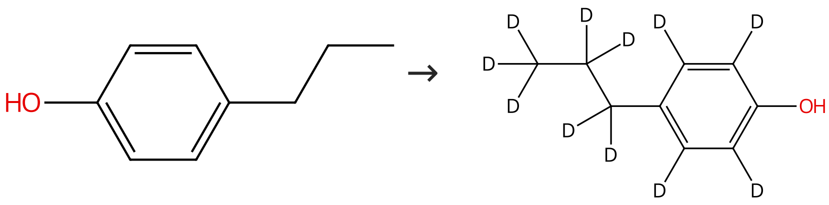
Experimental Protocols

Highly Efficient Persistent Room-Temperature Phosphor escence from Heavy Atom-Free Molecules Triggered by Hidden Long Phosphorescent Antenna

By: Bhattacharjee, Indranil; et al

Advanced Materials (Weinheim, Germany) (2020), 32(31), 2001348.

Scheme 257 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (87) Suppliers (3)

31-116-CAS-1065451 Steps: **1** Yield: **89%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 258 (1 Reaction) Steps: **1** Yield: **89%**

Suppliers (134) Suppliers (25)

31-614-CAS-26004329 Steps: **1** Yield: **89%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

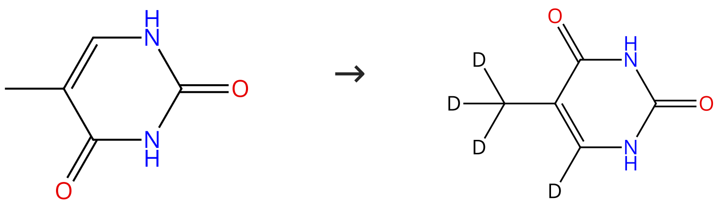
Experimental Protocols

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 259 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (134) Suppliers (27)

31-116-CAS-5498365 Steps: **1** Yield: **89%**

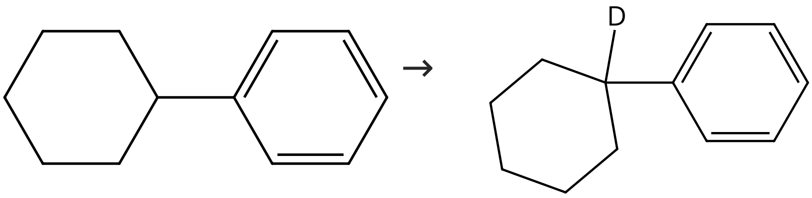
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

Scheme 260 (2 Reactions) Steps: **1** Yield: **55-89%**



Suppliers (83) Suppliers (2)

31-116-CAS-1289777 Steps: **1** Yield: **89%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 8 h, 50 °C

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-7505021 Steps: **1** Yield: **55%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$

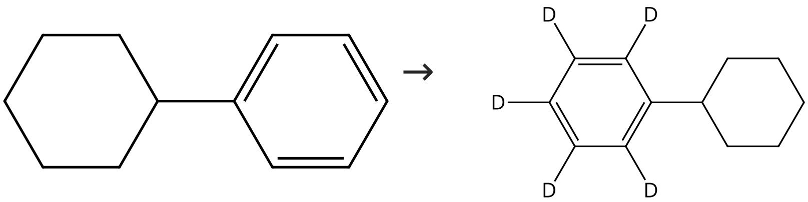
Experimental Protocols

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 261 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (83)

31-614-CAS-24211314 Steps: **1** Yield: **89%**

1.1 **Reagents:** Silver fluoride, Water-*d*$_2$
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

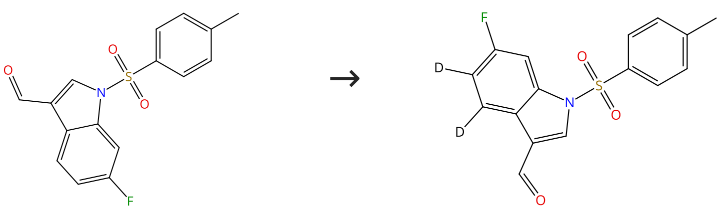
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

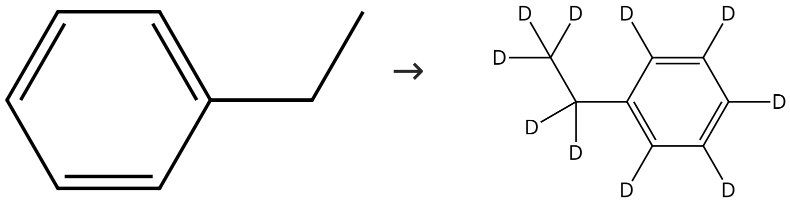
Scheme 262 (1 Reaction) Steps: **1** Yield: **89%**



Suppliers (2)

31-614-CAS-38370020	Steps: **1** Yield: **89%**	Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt	By: Zheng, Chenxu; et al Journal of Organic Chemistry (2023), 88(24), 17164-17171.
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt	
Experimental Protocols		

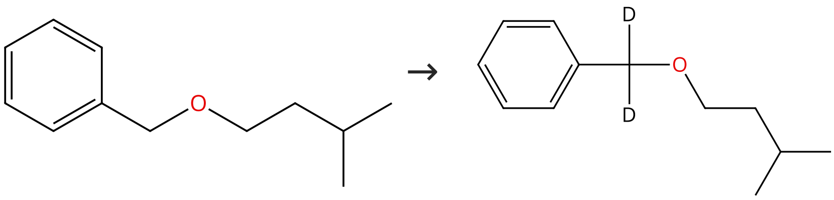
Scheme 263 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (136) Suppliers (38)

31-116-CAS-5399198	Steps: **1** Yield: **88%**	Polystyrene Brushes on Fully Deuterated Organic Nanoparticles by Surface-Initiated Nitroxide-Mediated Radical Polymerization
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 3 h, 2 bar, rt	By: Mazurowski, Markus; et al Macromolecular Chemistry and Physics (2013), 214(10), 1094-1106.
1.2	**Solvents:** Water-d_2; 24 h, 2 bar, 150 °C	
Experimental Protocols		

Scheme 264 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (43)

31-116-CAS-961891	Steps: **1** Yield: **88%**	Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Tetrahydrofuran, Water-d_2; 12 h, 50 °C	By: Kurita, Takanori; et al Chemistry - A European Journal (2008), 14(2), 664-673.
Experimental Protocols		

Scheme 265 (1 Reaction) Steps: **1** Yield: **88%**

Absolute stereochemistry shown Absolute stereochemistry shown

31-614-CAS-38572138 Steps: **1** Yield: **88%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

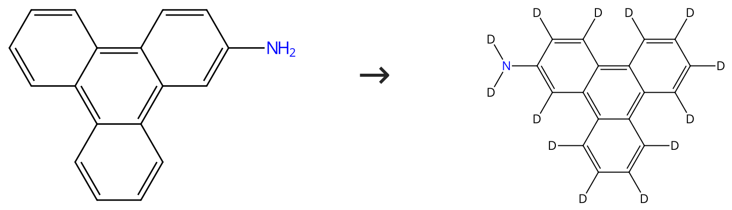
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 266 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (12)

31-116-CAS-6381653 Steps: **1** Yield: **88%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

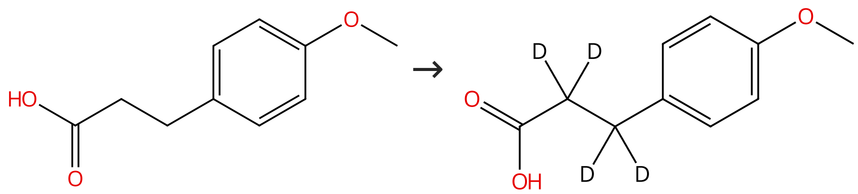
Experimental Protocols

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 267 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (101)

31-614-CAS-30423556 Steps: **1** Yield: **88%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

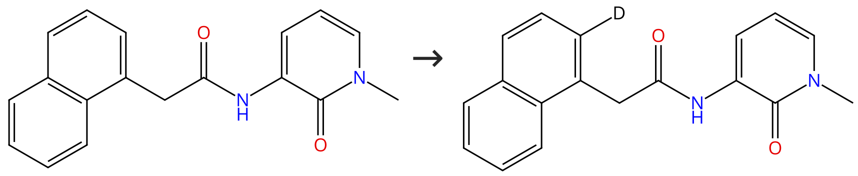
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 268 (1 Reaction) Steps: **1** Yield: **88%**



31-116-CAS-23998608 Steps: **1** Yield: **88%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

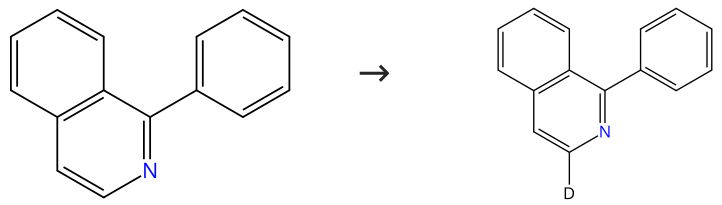
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 269 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (70)

31-614-CAS-41719939 Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 100 °C

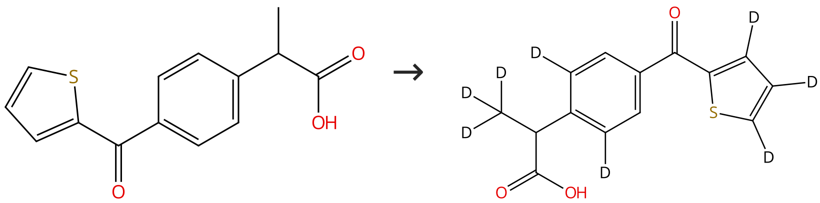
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 270 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (73)

31-614-CAS-40655052 Steps: **1** Yield: **88%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)- *N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 90 °C

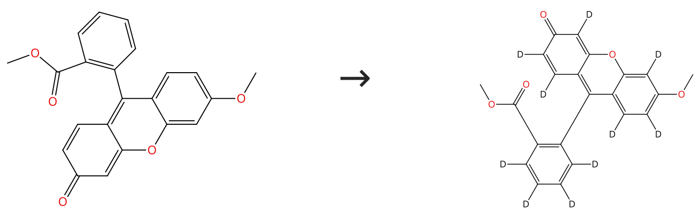
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 271 (1 Reaction) Steps: **1** Yield: **88%**



Suppliers (5)

31-614-CAS-24211360 Steps: **1** Yield: **88%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl) sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 272 (1 Reaction)

Steps: **1** Yield: **88%**

Suppliers (75)

31-614-CAS-41719931

Steps: **1** Yield: **88%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

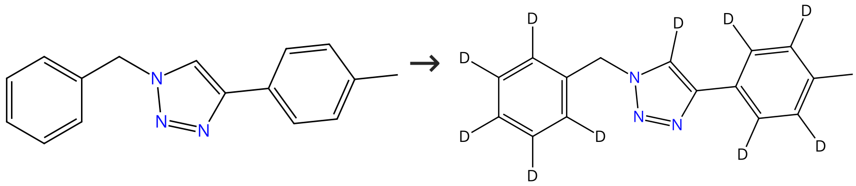
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 273 (1 Reaction)

Steps: **1** Yield: **88%**



Suppliers (3)

31-614-CAS-40655059

Steps: **1** Yield: **88%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 130 °C

Experimental Protocols

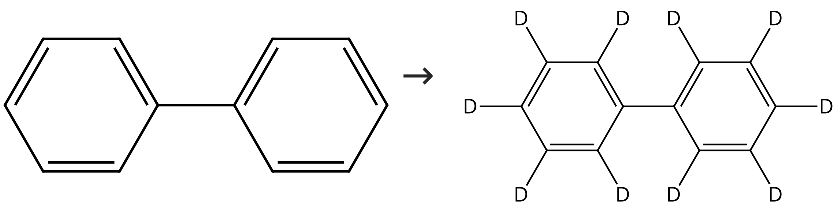
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 274 (1 Reaction)

Steps: **1** Yield: **88%**



Suppliers (119)

Suppliers (53)

31-116-CAS-10111785

Steps: **1** Yield: **88%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 14 h, 250 °C

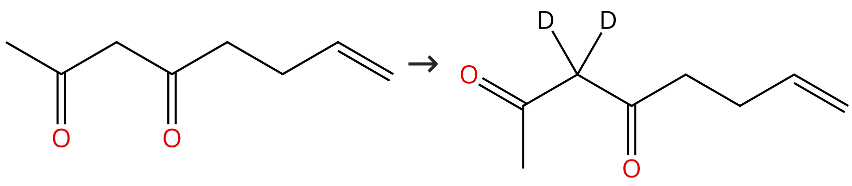
Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 275 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (5)

31-116-CAS-13645685

Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, bis(acetonitrile)dichloro-
Solvents: 1,4-Dioxane; 15 °C

Experimental Protocols

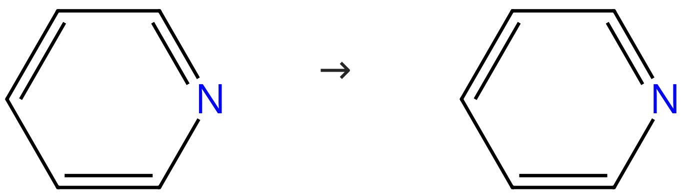
Mechanism of the Palladium-Catalyzed Intramolecular Hydroalkylation of 7-Octene-2,4-dione

By: Qian, Hua; et al

Journal of the American Chemical Society (2003), 125(8), 2056-2057.

Scheme 276 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (221)

31-614-CAS-41719925

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium carbonate, Water- d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

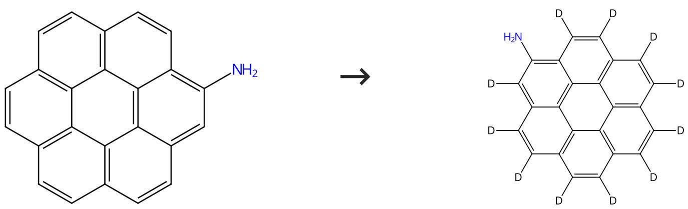
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 277 (1 Reaction)

Steps: **1** Yield: **87%**



31-116-CAS-23694780

Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 12 h, 4 - 5 M Pa, 250 °C

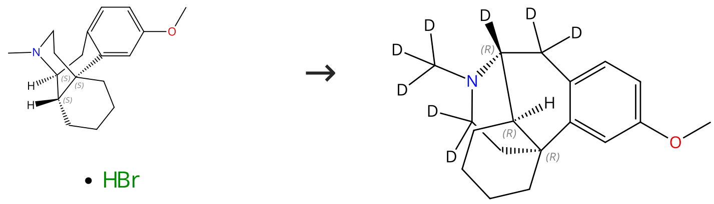
Experimental Protocols

Key of Suppressed Triplet Nonradiative Transition-Dependent Chemical Backbone for Spatial Self-Tunable Afterglow

By: Bhattacharjee, Indranil; et al

JACS Au (2021), 1(7), 945-954.

Scheme 278 (1 Reaction) Steps: **1** Yield: **87%**



• HBr

Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (12)

31-614-CAS-27766269 Steps: **1** Yield: **87%**

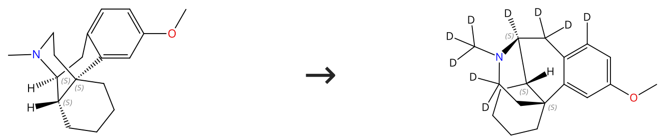
1.1 **Catalysts:** Palladium, Sodium borodeuteride
Solvents: Water-d_2; 2 h, 140 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 279 (1 Reaction) Steps: **1** Yield: **87%**



• HBr

Absolute stereochemistry shown

• HBr

Absolute stereochemistry shown

Suppliers (12)

31-116-CAS-2739780 Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-d_2; 2 h, 140 °C; 140 °C → rt

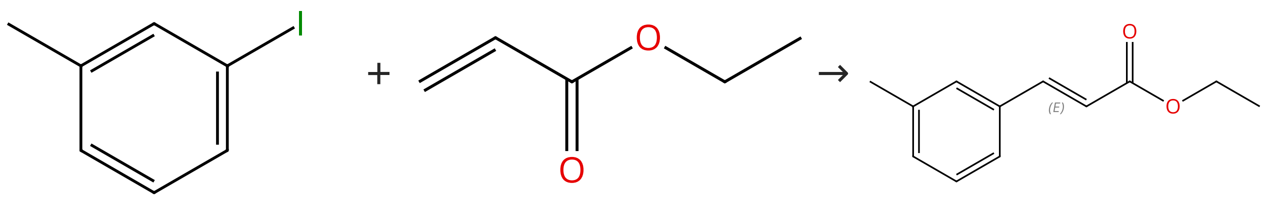
Experimental Protocols

Synthesis of stable isotope labelled internal standards for drug-drug interaction (DDI) studies

By: Atzrodt, J.; et al

Bioorganic & Medicinal Chemistry (2012), 20(18), 5658-5667.

Scheme 280 (1 Reaction) Steps: **1** Yield: **87%**



Suppliers (77)

Suppliers (76)

Double bond geometry shown

Suppliers (28)

31-614-CAS-35676195 Steps: **1** Yield: **87%**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Bis(dibenzylideneacetone)palladium, *N*-[2-[[2-(1-Methyl-2-cyclopenten-1-yl)ethyl]thio]ethyl]acetamide
Solvents: Dimethylacetamide; > 1 s, rt

1.2 **Solvents:** Dimethylacetamide; 24 h, 90 °C

Experimental Protocols

Functionalized Cycloolefin Ligand as a Solution to Ortho-Constraint in the Catellani-Type Reaction

By: Wang, Feng-Yuan; et al

Journal of the American Chemical Society (2023), 145(8), 4871-4881.

Scheme 281 (1 Reaction)

Steps: **1** Yield: **87%**

Suppliers (81)

31-614-CAS-33673184

Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium; 12 h, 4 - 5 M Pa, 240 °C

Experimental Protocols

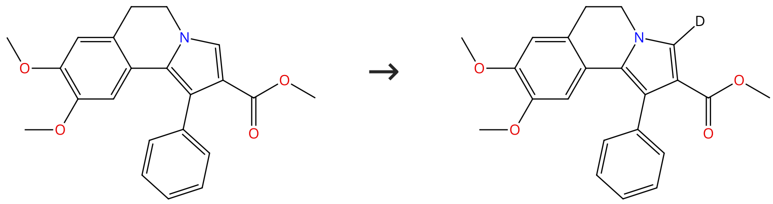
Merging photoinitiated bulk polymerization and the dopant-matrix design strategy for polymer- based organic afterglow materials

By: Chen, Xiuzheng; et al

Polymer Chemistry (2022), 13(32), 4641-4649.

Scheme 282 (1 Reaction)

Steps: **1** Yield: **87%**



31-116-CAS-22578648

Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 4 h, 100 °C

Experimental Protocols

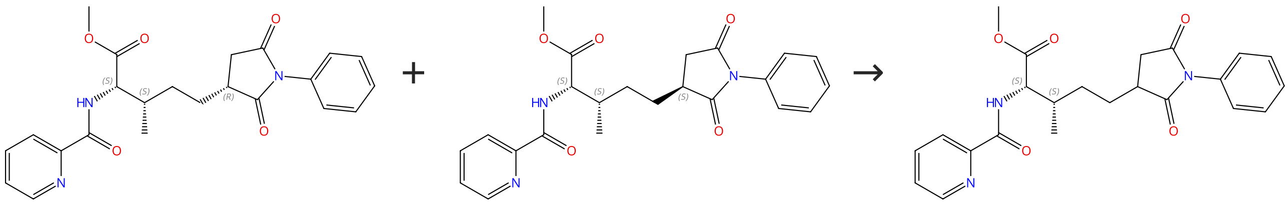
Palladium Catalyzed Direct Alkenylation of Dihydropyrrolo[2, 1-a]isoquinolines through the Oxidative Heck Reaction

By: Cui, Hai-Lei; et al

European Journal of Organic Chemistry (2020), 2020(35), 5729-5734.

Scheme 283 (1 Reaction)

Steps: **1** Yield: **87%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-26756737

Steps: **1** Yield: **87%**

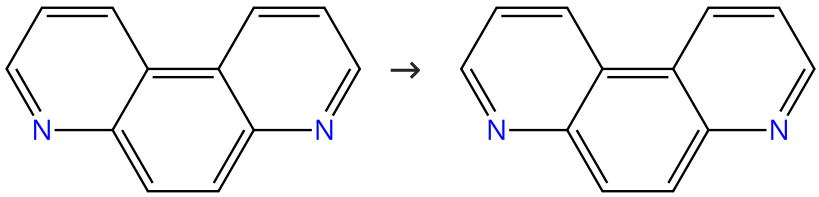
1.1 **Reagents:** Sodium carbonate, *N*-Phenylmaleimide, Water-*d*$_2$
Catalysts: Quinone, 1-Adamantanecarboxylic acid, Palladium diacetate
Solvents: 1,1,2-Trichloroethane; 24 h, 100 °C

Site-selective δ-C(sp^3)-H alkylation of amino acids and peptides with maleimides via a six-membered palladacycle

By: Zhan, Bei-Bei; et al

Angewandte Chemie, International Edition (2018), 57(20), 5858-5862.

Scheme 284 (1 Reaction) Steps: **1** Yield: **87%**



Suppliers (62)

31-614-CAS-41719940 Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium carbonate, Water-*d*2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 12 h, 100 °C

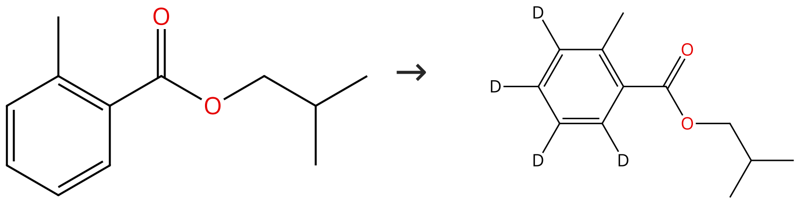
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 285 (1 Reaction) Steps: **1** Yield: **87%**



Suppliers (3)

31-614-CAS-24211322 Steps: **1** Yield: **87%**

1.1 **Reagents:** Water-*d*2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

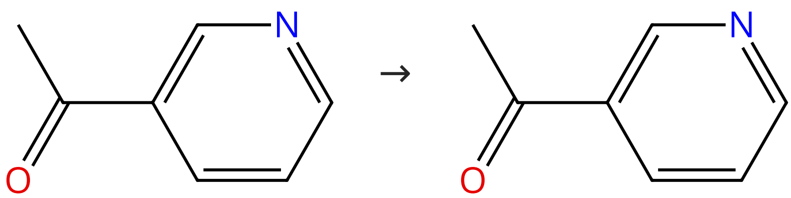
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 286 (1 Reaction) Steps: **1** Yield: **87%**



Suppliers (106)

31-614-CAS-41719927 Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium carbonate, Water-*d*2
Catalysts: Palladium trifluoroacetate, Bis(3,5-dimethylphenyl)phosphine oxide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 287 (1 Reaction)

Steps: **1** Yield: **87%**

Suppliers (99)

31-614-CAS-34527022

Steps: **1** Yield: **87%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

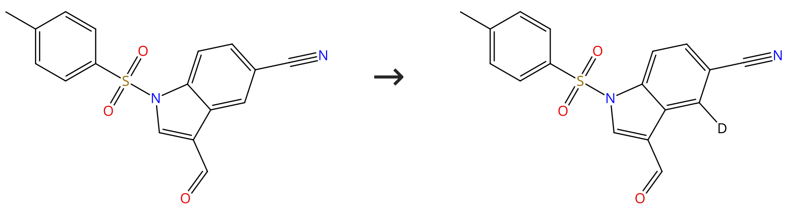
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 288 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (28)

31-614-CAS-38370017

Steps: **1** Yield: **87%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

Experimental Protocols

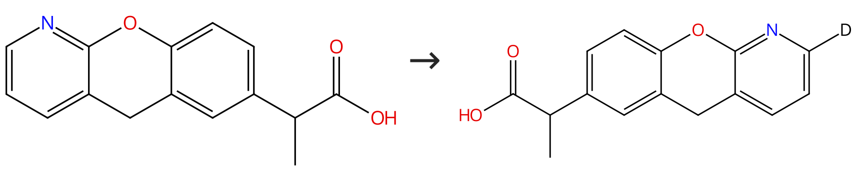
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 289 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (76)

31-614-CAS-41719950

Steps: **1** Yield: **87%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

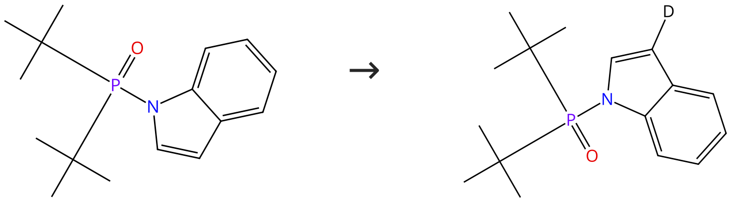
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 290 (1 Reaction)

Steps: **1** Yield: **87%**



Suppliers (2)

31-116-CAS-12407338

Steps: **1** Yield: **87%**

1.1 **Reagents:** Copper oxide (CuO), Water-d_2, Silver oxide (Ag_2O), Copper(II) triflate
Catalysts: 2-Chloropyridine, Palladium diacetate
Solvents: 1,4-Dioxane; 12 h, 120 °C

Experimental Protocols

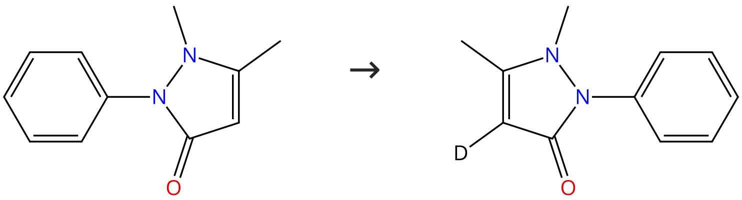
Palladium-Catalyzed C-H Arylation of Indoles at the C7 Position

By: Yang, Youqing; et al

Journal of the American Chemical Society (2016), 138(2), 495-498.

Scheme 291 (2 Reactions)

Steps: **1** Yield: **87%**



Suppliers (99)

31-116-CAS-23615505

Steps: **1** Yield: **87%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Palladium chloride
Solvents: 2-Methyl-2-butanol; 6 h, 100 °C

Experimental Protocols

Pd(II)-Catalyzed regioselective functionalization of antipyrines: synthesis of pyrazolono-maleimides and pyrazolono-quinones

By: Sonowal, Priya; et al

Organic & Biomolecular Chemistry (2021), 19(24), 5333-5341.

31-116-CAS-23755650

Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 2-Methyl-2-butanol; 4 h, 90 °C

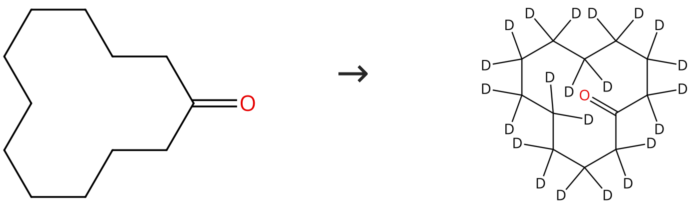
Pd(II)-Catalyzed alkyne annulation through allylic isomeri zation: synthesis of spiro-cyclopentadiene pyrazolones

By: Changmai, Sumi; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(49), 6027-6030.

Scheme 292 (2 Reactions)

Steps: **1** Yield: **87%**



Suppliers (67)

31-116-CAS-15152436	Steps: **1** Yield: **87%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium; 4 h, 250 °C	
Experimental Protocols	

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

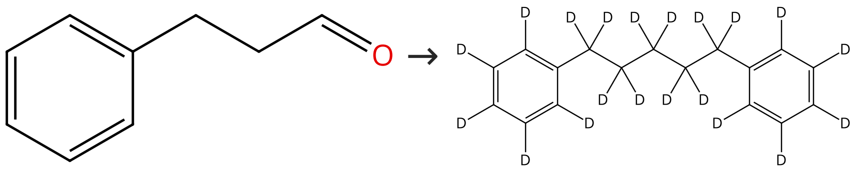
31-116-CAS-9838960	Steps: **1** Yield: **87%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 4 h, 250 °C	

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 293 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (90)

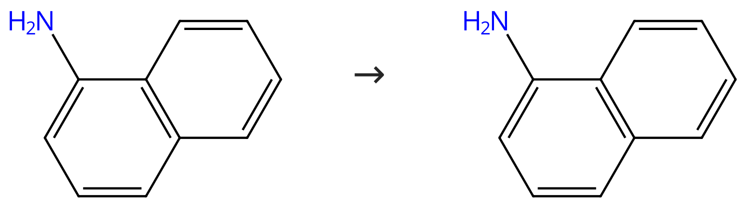
31-116-CAS-4752741	Steps: **1** Yield: **86%**
1.1 **Reagents:** Sodium hydroxide, Water-d_2 **Catalysts:** Palladium; 12 h, 4000.0 - 5000.0 k Pa, 250 °C	
Experimental Protocols	

Palladium-catalyzed decarboxylation and decarbonylation under hydrothermal conditions: decarboxylative deuteration

By: Matsubara, Seijiro; et al

Organic Letters (2004), 6(12), 2071-2073.

Scheme 294 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (73)

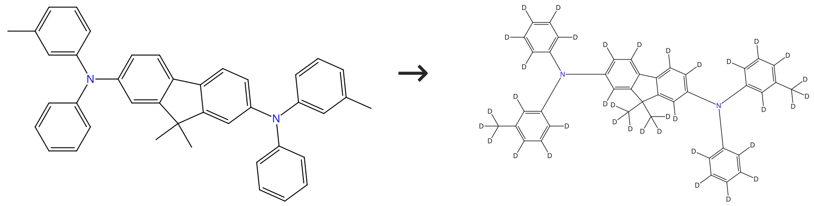
31-614-CAS-24937088	Steps: **1** Yield: **86%**
1.1 **Reagents:** Sodium borodeuteride **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 2 h, 150 °C	
Experimental Protocols	

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 295 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (42)

31-116-CAS-6727397 Steps: **1** Yield: **86%**

1.1 **Catalysts:** Palladium
Solvents: Water-*d*$_2$; 12 h, 4 - 5 M Pa, 240 °C

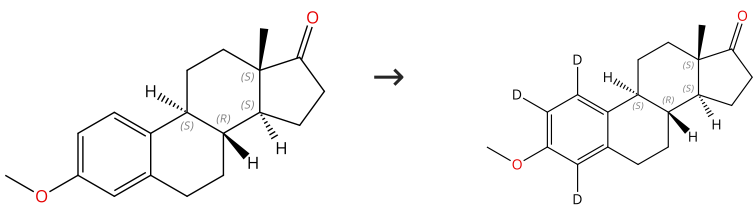
Experimental Protocols

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 296 (1 Reaction) Steps: **1** Yield: **86%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (68)

31-614-CAS-24211334 Steps: **1** Yield: **86%**

1.1 **Reagents:** Silver fluoride, Water-*d*$_2$
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

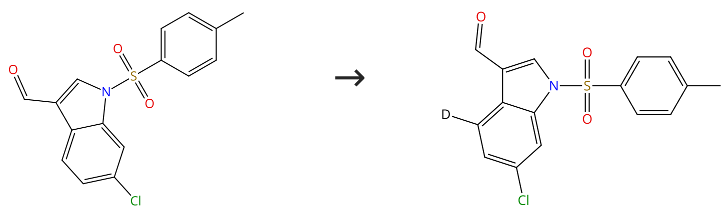
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 297 (1 Reaction) Steps: **1** Yield: **86%**



31-614-CAS-38370024 Steps: **1** Yield: **86%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

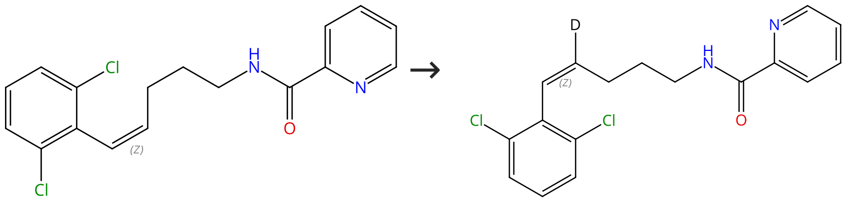
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 298 (1 Reaction) Steps: **1** Yield: **86%**



Double bond geometry shown

Double bond geometry shown

31-116-CAS-20227585 Steps: **1** Yield: **86%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: Acetonitrile-d_3; 6 h, 90 °C; 90 °C → rt

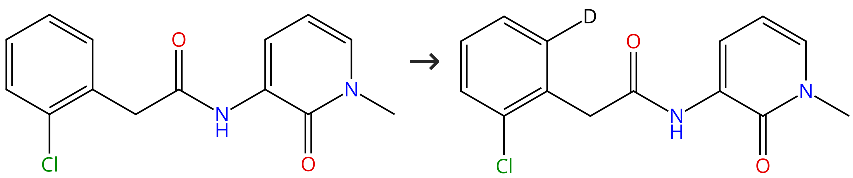
1.2 **Reagents:** Sodium thiosulfate
Solvents: Water; 9065 h, rt

Palladium-Catalyzed Regioselective C-H Iodination of Unactivated Alkenes

By: Schreib, Benedikt S.; et al

Journal of the American Chemical Society (2019), 141(22), 8758-8763.

Scheme 299 (1 Reaction) Steps: **1** Yield: **86%**



31-116-CAS-24000820 Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

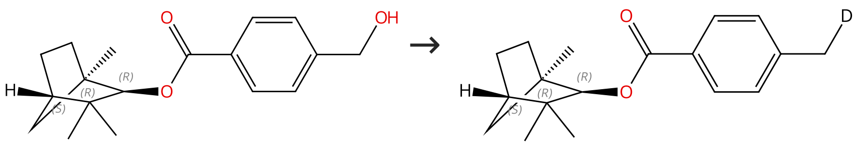
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 300 (1 Reaction) Steps: **1** Yield: **86%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-116-CAS-23328181 Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Chlorobenzene; 14 h, 1 atm, rt

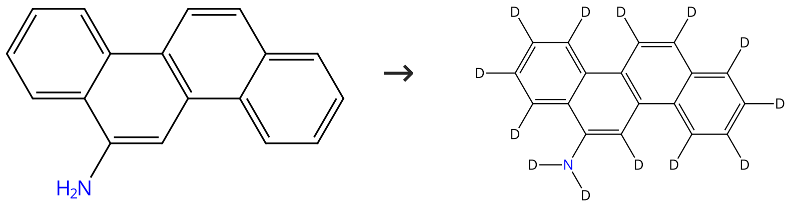
Experimental Protocols

Room-Temperature Palladium-Catalyzed Deuterogenolysis of Carbon Oxygen Bonds towards Deuterated Pharmaceuticals

By: Ou, Wei; et al

Angewandte Chemie, International Edition (2021), 60(12), 6357-6361.

Scheme 301 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (43)

31-116-CAS-22750370 Steps: **1** Yield: **86%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C

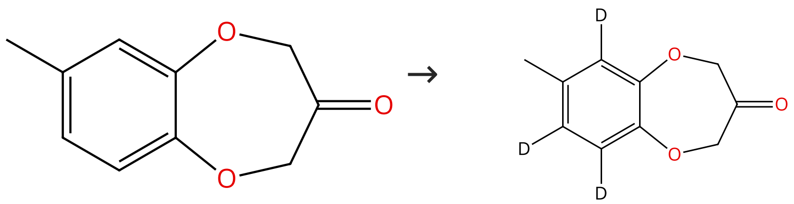
Experimental Protocols

Highly Efficient Persistent Room-Temperature Phosphorescence from Heavy Atom-Free Molecules Triggered by Hidden Long Phosphorescent Antenna

By: Bhattacharjee, Indranil; et al

Advanced Materials (Weinheim, Germany) (2020), 32(31), 2001348.

Scheme 302 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (55)

31-614-CAS-24211340 Steps: **1** Yield: **86%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

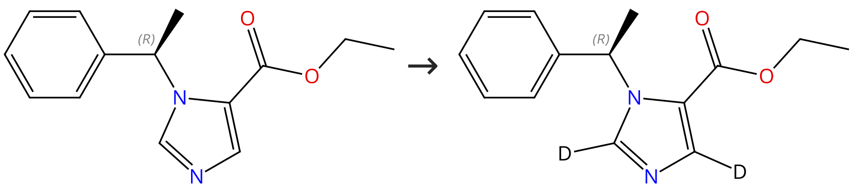
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 303 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (71)

31-614-CAS-40655054 Steps: **1** Yield: **86%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 130 °C

Experimental Protocols

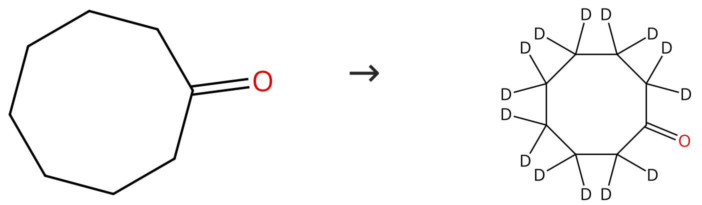
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 304 (2 Reactions)

Steps: **1** Yield: **86%**



Suppliers (86)

31-116-CAS-13023065

Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 10 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-5566691

Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 10 h, 250 °C

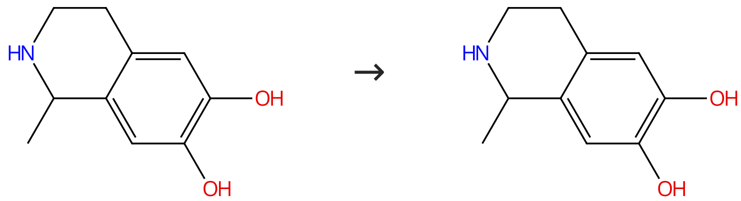
Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 305 (2 Reactions)

Steps: **1** Yield: **86%**



Suppliers (19)

31-614-CAS-28678426

Steps: **1** Yield: **86%**

1.1 **Catalysts:** Palladium, Sodium borodeuteride
Solvents: Water-d_2; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

31-614-CAS-26332240

Steps: **1** Yield: **86%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Sodium borodeuteride
Solvents: Water-d_2; 30 s, rt; 18 h, 130 °C

Experimental Protocols

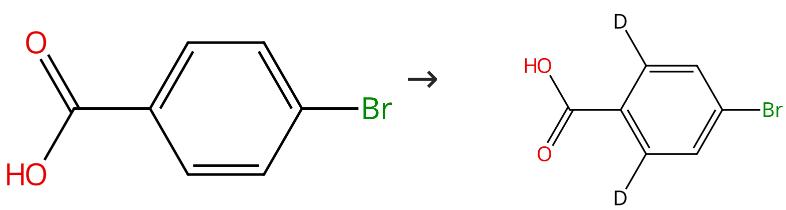
C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 306 (1 Reaction)

Steps: **1** Yield: **86%**



Suppliers (107)

31-614-CAS-34527007	Steps: **1** Yield: **86%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 307 (1 Reaction) Steps: **1** Yield: **86%**

Suppliers (69) Suppliers (3)

31-614-CAS-26857533	Steps: **1** Yield: **86%**
1.1	**Reagents:** Sodium borodeuteride **Catalysts:** Palladium **Solvents:** Water-*d*2; 2 h, 150 °C

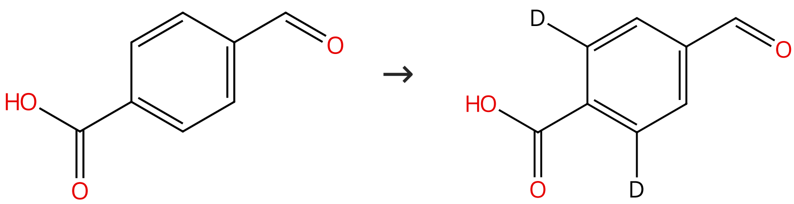
Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 308 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (111)

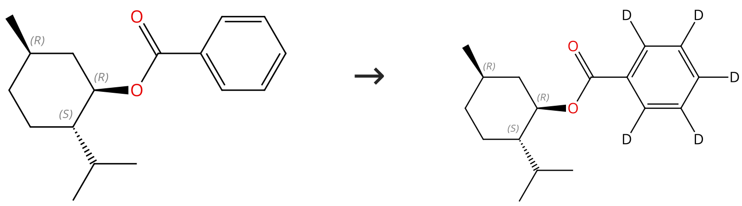
31-614-CAS-34527005	Steps: **1** Yield: **86%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 309 (1 Reaction) Steps: **1** Yield: **86%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

Suppliers (5)

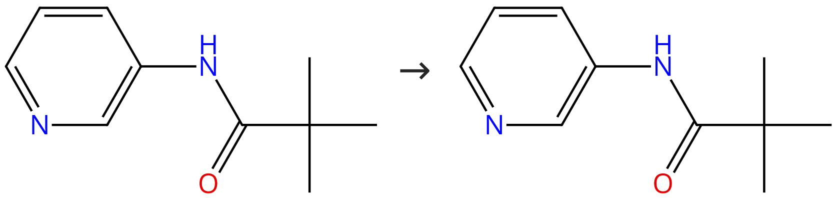
31-614-CAS-24211350	Steps: **1** Yield: **86%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 310 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (77)

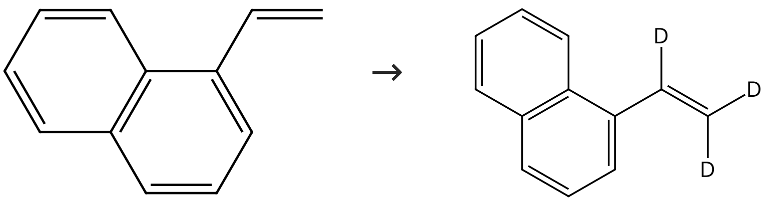
31-614-CAS-41719926	Steps: **1** Yield: **86%**
1.1	**Reagents:** Sodium carbonate, Water- *d*$_2$ **Catalysts:** Palladium trifluoroacetate, Bis(3,5-dimethylphenyl)phosphine oxide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 311 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (75)

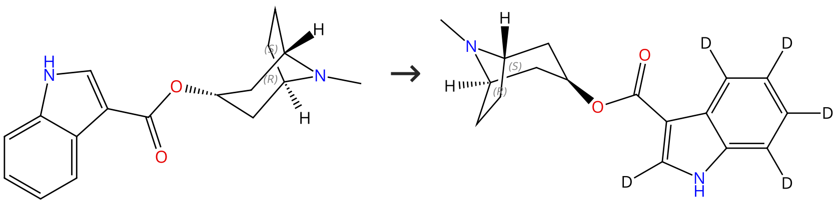
31-116-CAS-22371279	Steps: **1** Yield: **86%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 312 (1 Reaction) Steps: **1** Yield: **86%**



Relative stereochemistry shown

Relative stereochemistry shown

Suppliers (59)

Suppliers (8)

31-614-CAS-40655075	Steps: **1** Yield: **86%**
1.1	**Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 100 °C

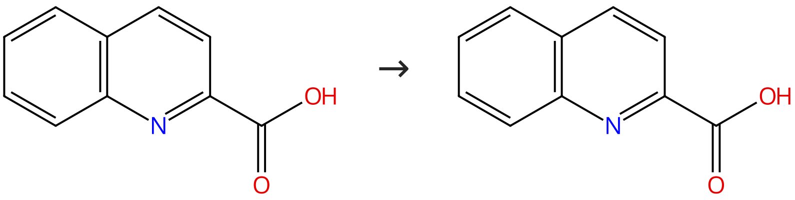
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 313 (1 Reaction) Steps: **1** Yield: **86%**



Suppliers (112) Suppliers (8)

31-614-CAS-27668293	Steps: **1** Yield: **86%**
1.1	**Reagents:** Sodium borodeuteride **Catalysts:** Palladium **Solvents:** Water-d_2; 2 h, 150 °C

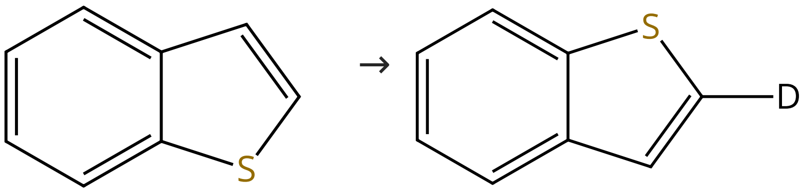
Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by NaBD$_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 314 (3 Reactions) Steps: **1** Yield: **86%**



Suppliers (99) Supplier (1)

31-614-CAS-41719942	Steps: **1** Yield: **86%**
1.1	**Reagents:** Sodium carbonate, Water-d_2 **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

31-116-CAS-13162442	Steps: **1**
1.1	**Reagents:** Silver carbonate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Toluene; 18 h, 100 °C

Experimental Protocols

Palladium-catalyzed oxidative C-H/C-H cross-coupling of 1-substituted 1,2,3-triazoles with furans and thiophenes

By: Yu, Xin; et al

Organic & Biomolecular Chemistry (2015), 13(15), 4459-4465.

31-116-CAS-7096444 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide, 1,4-Dioxane; 16 h, 120 °C

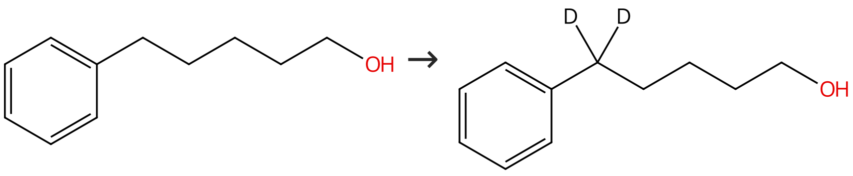
Experimental Protocols

Palladium-catalyzed oxidative CH/CH cross-coupling of pyridine N-oxides with five-membered heterocycles

By: Liu, Wei; et al

Chemical Communications (Cambridge, United Kingdom) (2014), 50(66), 9291-9294.

Scheme 315 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (72)

31-614-CAS-31006037 Steps: **1** Yield: **85%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 160 °C

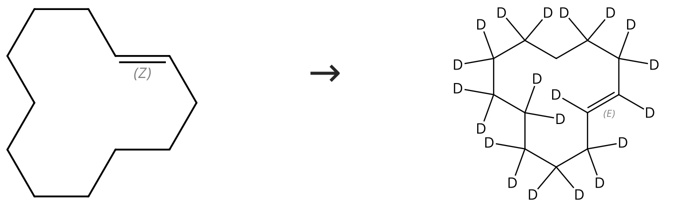
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 316 (1 Reaction) Steps: **1** Yield: **85%**



E/Z labels describe double bond geometry

Double bond geometry shown

Suppliers (14)

31-116-CAS-10443181 Steps: **1** Yield: **85%**

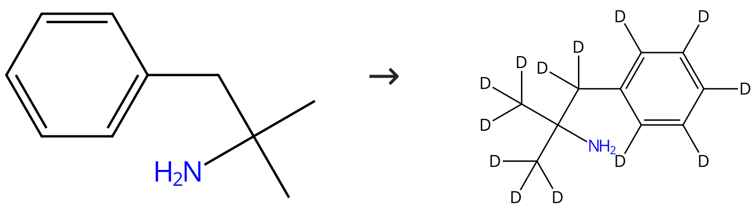
1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 12 h, 250 °C

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 317 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (24)

31-116-CAS-14059481 Steps: **1** Yield: **85%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

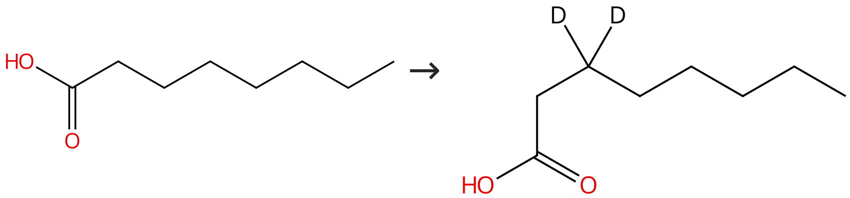
Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 318 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (142)

31-614-CAS-39495797 Steps: **1** Yield: **85%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

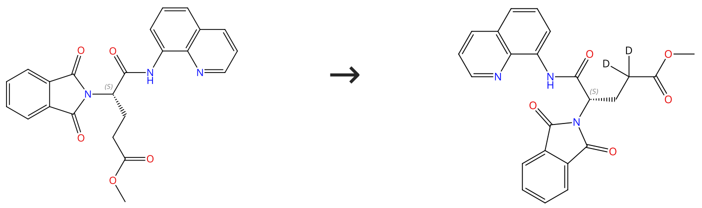
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 319 (1 Reaction) Steps: **1** Yield: **85%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-38572143 Steps: **1** Yield: **85%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

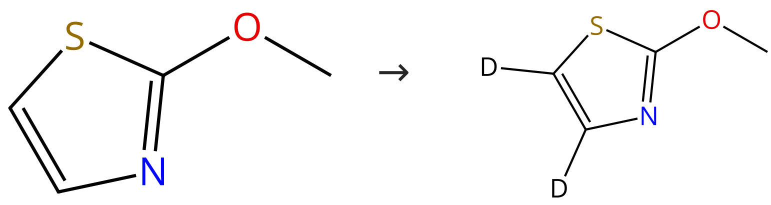
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 320 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (70)

31-614-CAS-24211351 Steps: **1** Yield: **85%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

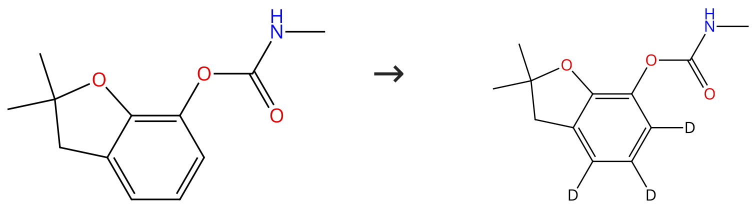
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 321 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (40)

31-614-CAS-24211337 Steps: **1** Yield: **85%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

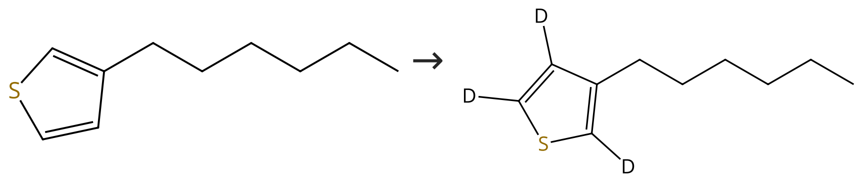
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 322 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (86)

31-614-CAS-40655045 Steps: **1** Yield: **85%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

Experimental Protocols

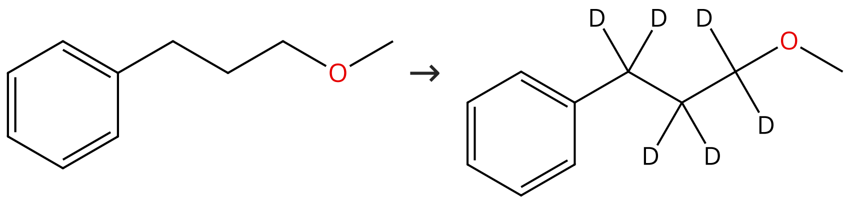
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 323 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (5)

31-116-CAS-4470383

Steps: **1** Yield: **85%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

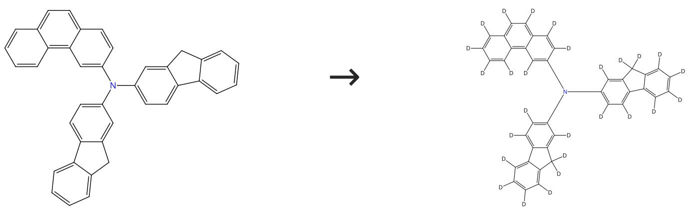
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 324 (1 Reaction)

Steps: **1** Yield: **85%**



31-116-CAS-22750364

Steps: **1** Yield: **85%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C

Experimental Protocols

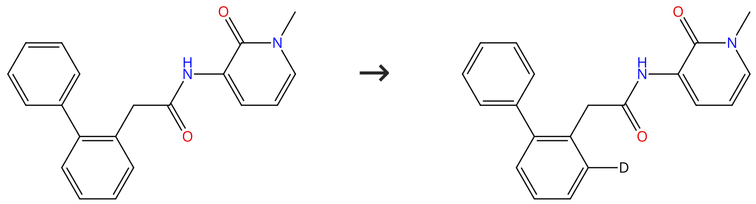
Highly Efficient Persistent Room-Temperature Phosphor escence from Heavy Atom-Free Molecules Triggered by Hidden Long Phosphorescent Antenna

By: Bhattacharjee, Indranil; et al

Advanced Materials (Weinheim, Germany) (2020), 32(31), 2001348.

Scheme 325 (1 Reaction)

Steps: **1** Yield: **85%**



31-116-CAS-23999157

Steps: **1** Yield: **85%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

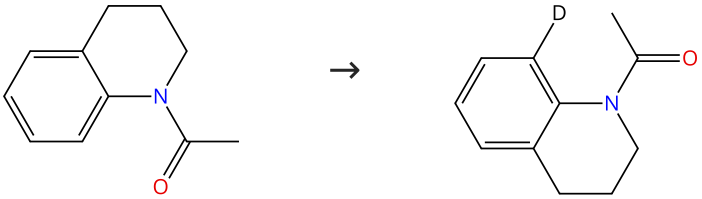
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 326 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (63)

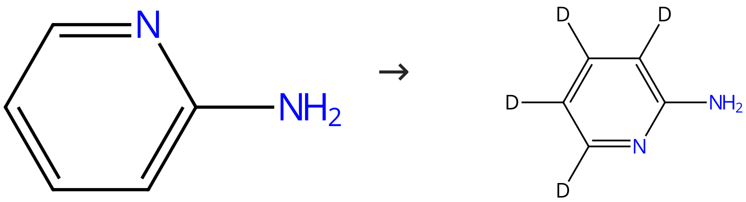
31-614-CAS-38970913	Steps: **1** Yield: **85%**
1.1	**Reagents:** Water-d_2 **Catalysts:** 2,6-Lutidine, Palladium diacetate **Solvents:** Acetic acid, 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 h, 100 °C
Experimental Protocols	

Palladium-Catalyzed Electrooxidative Double C-H Arylation

By: Lin, Zhipeng; et al

Journal of the American Chemical Society (2024), 146(1), 228-239.

Scheme 327 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (96) Suppliers (21)

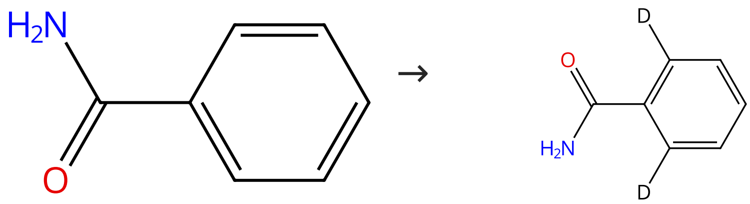
31-116-CAS-19198263	Steps: **1** Yield: **85%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 24 h, 180 °C
Experimental Protocols	

Design, synthesis and biological evaluation of deuterated Vismodegib for improving pharmacokinetic properties

By: Wang, Fangying; et al

Bioorganic & Medicinal Chemistry Letters (2018), 28(14), 2399-2402.

Scheme 328 (1 Reaction) Steps: **1** Yield: **85%**



Suppliers (115)

31-614-CAS-34527028	Steps: **1** Yield: **85%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

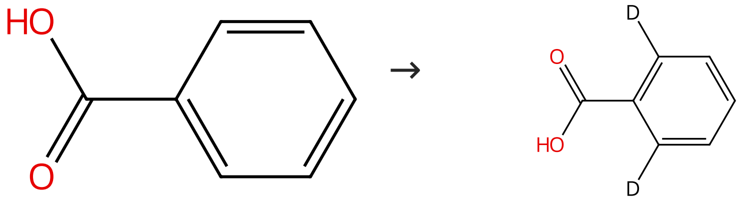
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 329 (1 Reaction)

Steps: **1** Yield: **85%**



Suppliers (193)

Suppliers (6)

31-614-CAS-34526994

Steps: **1** Yield: **85%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 330 (1 Reaction)

Steps: **1** Yield: **85%**

Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (185)

31-614-CAS-24938075

Steps: **1** Yield: **85%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 2 h, 150 °C

Experimental Protocols

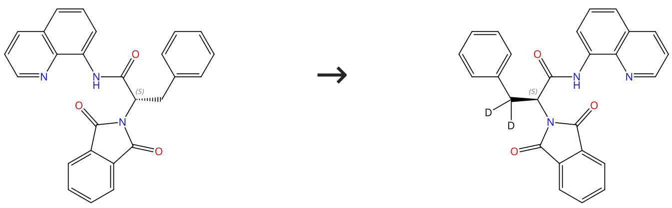
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 331 (1 Reaction)

Steps: **1** Yield: **85%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

31-614-CAS-38572142

Steps: **1** Yield: **85%**

1.1 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

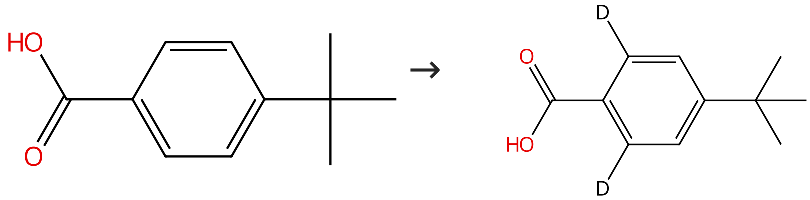
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 332 (1 Reaction)

Steps: 1 Yield: 85%



Suppliers (92)

31-614-CAS-34526996

Steps: 1 Yield: 85%

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

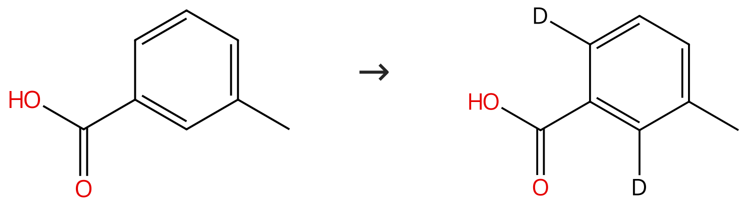
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 333 (1 Reaction)

Steps: 1 Yield: 85%



Suppliers (92)

31-614-CAS-34527003

Steps: 1 Yield: 85%

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

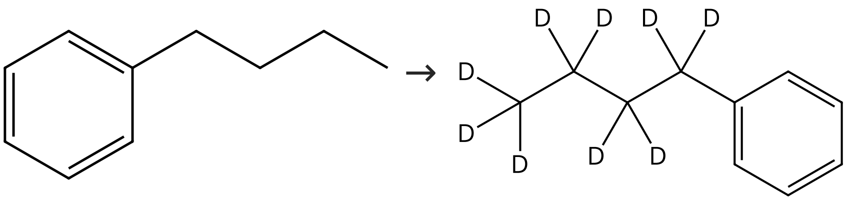
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 334 (1 Reaction)

Steps: 1 Yield: 84%



Suppliers (76)

31-614-CAS-28827796

Steps: 1 Yield: 84%

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium, Carbon
Solvents: Water-*d*$_2$; 24 h, 110 °C

Experimental Protocols

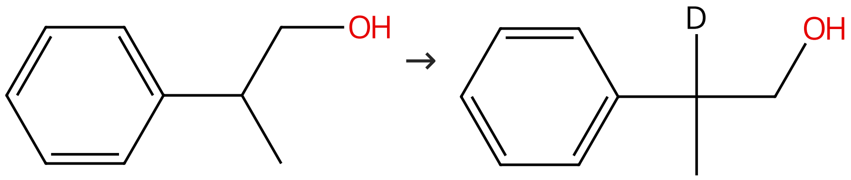
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 335 (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (76)

Supplier (1)

31-116-CAS-570653

Steps: **1** Yield: **84%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

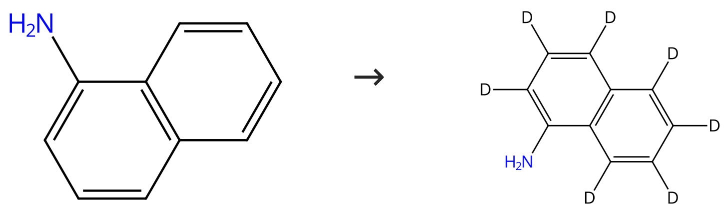
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 336 (2 Reactions)

Steps: **1** Yield: **83-84%**



Suppliers (73)

Suppliers (33)

31-116-CAS-16726371

Steps: **1** Yield: **84%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Platinum; 4 h, 80 °C; 80 °C → rt

1.2 **Reagents:** Ammonia
Solvents: Water; basified, rt

Mild conditions for deuteration of primary and secondary arylamines for the synthesis of deuterated optoelectronic organic molecules

By: Krause-Heuer, Anwen M.; et al

Molecules (2014), 19(11), 18604-18617, 14 pp..

31-116-CAS-17168567

Steps: **1** Yield: **83%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-d_2; rt; 4 h, 85 °C

1.2 **Reagents:** Ammonia
Solvents: Water; basified

Experimental Protocols

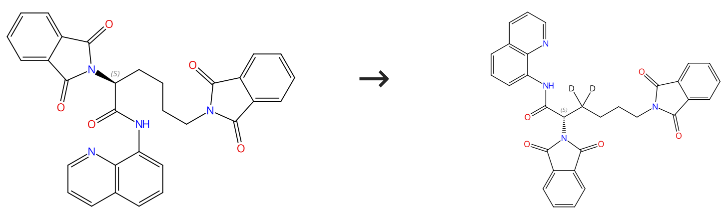
Dependence of Organic Interlayer Diffusion on Glass-Transition Temperature in OLEDs

By: McEwan, Jake A.; et al

ACS Applied Materials & Interfaces (2017), 9(16), 14153-14161.

Scheme 337 (1 Reaction)

Steps: **1** Yield: **84%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

31-614-CAS-38572140	Steps: **1** Yield: **84%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water

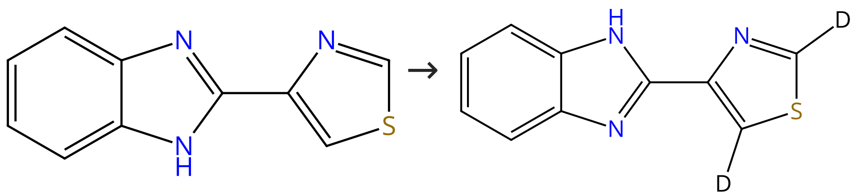
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 338 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (114)

31-614-CAS-40655049	Steps: **1** Yield: **84%**
1.1	**Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-*d*$_2$; 18 h, 130 °C

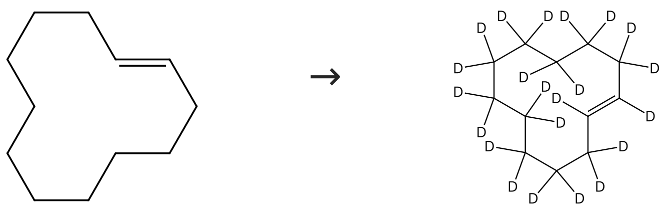
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 339 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (45)

31-116-CAS-12732225	Steps: **1** Yield: **84%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium; 4 h, 250 °C

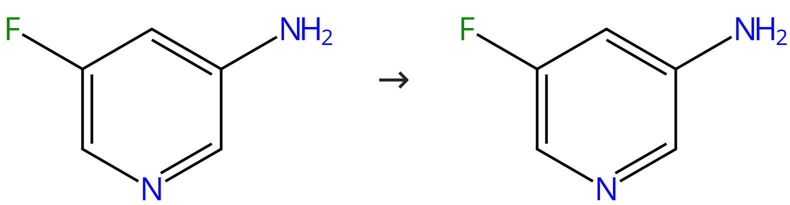
Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

Scheme 340 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (90)

31-614-CAS-41719934	Steps: **1** Yield: **84%**
1.1	**Reagents:** Sodium carbonate, Water-d_2 **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

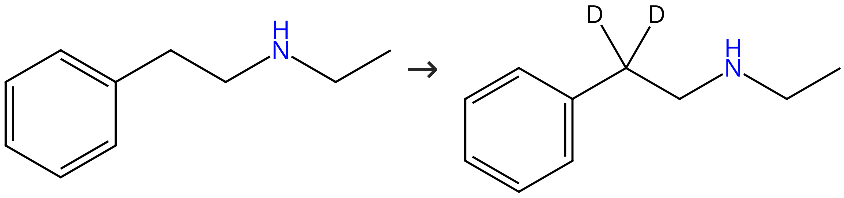
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 341 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (34)

31-116-CAS-8018682	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 72 h, rt

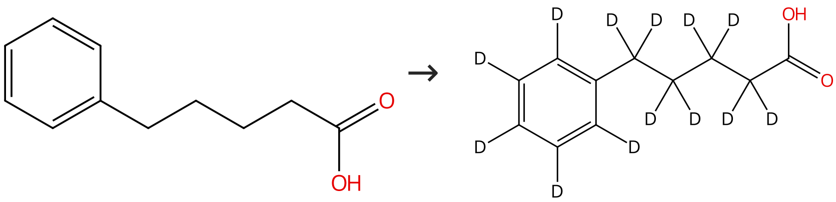
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 342 (3 Reactions) Steps: **1** Yield: **80-84%**



Suppliers (86)

31-116-CAS-7176781	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-13305973	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

31-116-CAS-8488125	Steps: **1** Yield: **80%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 180 °C

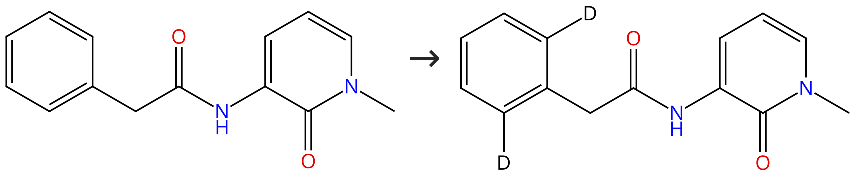
Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 343 (1 Reaction)

Steps: **1** Yield: **84%**



31-116-CAS-23999592

Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

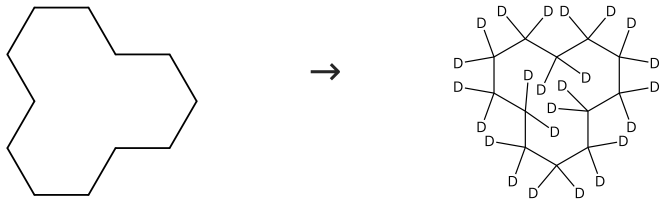
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 344 (2 Reactions)

Steps: **1** Yield: **84%**



Suppliers (58)

Suppliers (2)

31-116-CAS-14864403

Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 6 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-14700769

Steps: **1** Yield: **84%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 6 h, 250 °C

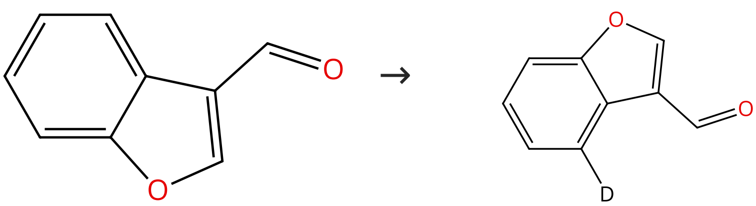
Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 345 (1 Reaction)

Steps: **1** Yield: **84%**



Suppliers (76)

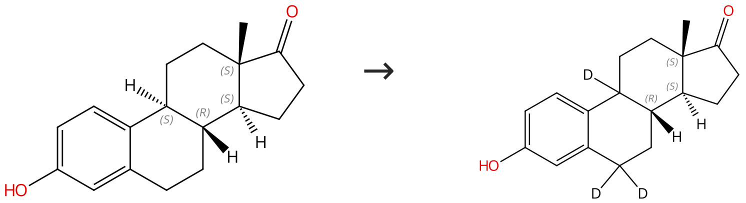
31-614-CAS-38370027	Steps: **1** Yield: **84%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 346 (1 Reaction) Steps: **1** Yield: **84%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (115)

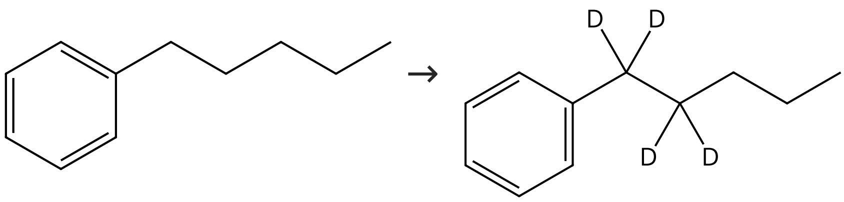
31-116-CAS-5838322	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 50 °C
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 347 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (78)

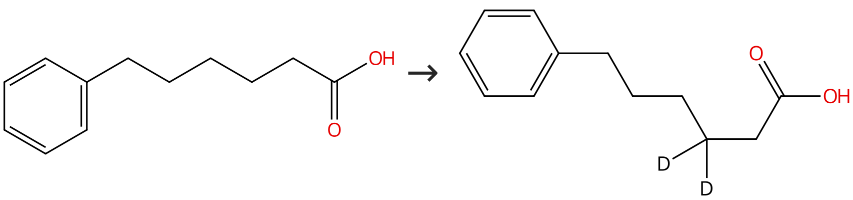
31-614-CAS-29642475	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 348 (1 Reaction) Steps: **1** Yield: **84%**



Suppliers (70)

31-614-CAS-39495805	Steps: **1** Yield: **84%**
1.1	**Reagents:** 8-Aminoquinoline **Catalysts:** Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3) **Solvents:** Toluene; 48 h, reflux; reflux → rt
1.2	**Reagents:** Acetic anhydride; 2 h, rt
1.3	**Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 90 °C; cooled
1.4	**Catalysts:** Triacylglycerol lipase **Solvents:** Water; 24 h, 50 °C

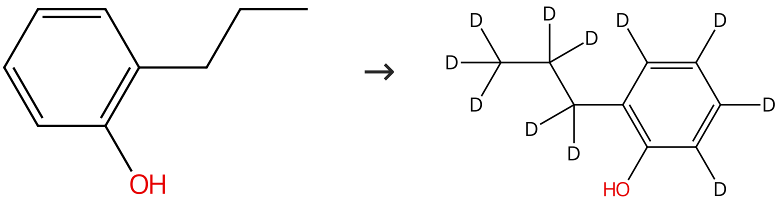
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 349 (3 Reactions) Steps: **1** Yield: **84%**



Suppliers (60)

31-116-CAS-4041179	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-15435997	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

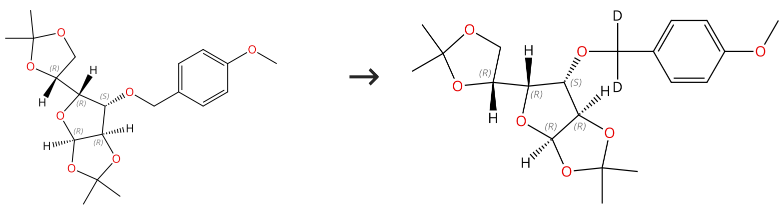
31-116-CAS-4274346	Steps: **1** Yield: **84%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 350 (1 Reaction) Steps: **1** Yield: **84%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

Supplier (1)

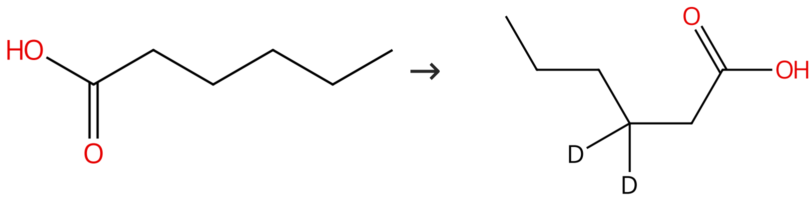
31-116-CAS-3354763	Steps: **1** Yield: **84%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Tetrahydrofuran, Water-d_2; 48 h, 50 °C	
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 351 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (87)

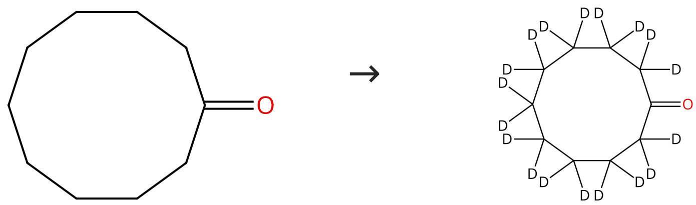
31-614-CAS-39495799	Steps: **1** Yield: **83%**
1.1 **Reagents:** 8-Aminoquinoline **Catalysts:** Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3) **Solvents:** Toluene; 48 h, reflux; reflux → rt	
1.2 **Reagents:** Acetic anhydride; 2 h, rt	
1.3 **Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 90 °C; cooled	
1.4 **Catalysts:** Triacylglycerol lipase **Solvents:** Water; 24 h, 50 °C	
Experimental Protocols	

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 352 (2 Reactions) Steps: **1** Yield: **83%**



Suppliers (57)

31-116-CAS-8476575	Steps: **1** Yield: **83%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium; 12 h, 250 °C	
Experimental Protocols	

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-7707825	Steps: **1** Yield: **83%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 250 °C	

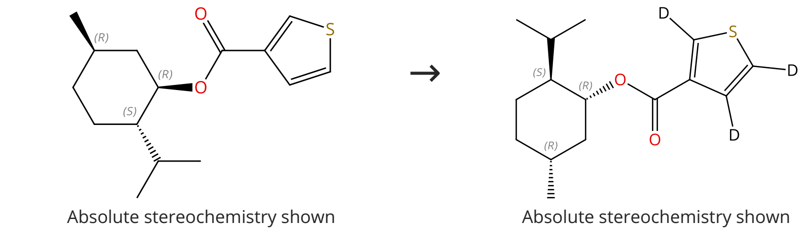
Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

Scheme 353 (1 Reaction)

Steps: **1** Yield: **83%**



31-614-CAS-24211347

Steps: **1** Yield: **83%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

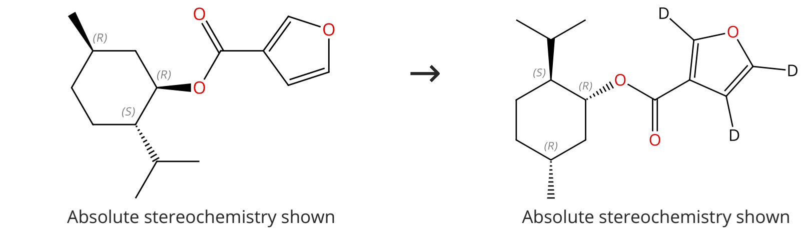
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 354 (1 Reaction)

Steps: **1** Yield: **83%**



31-614-CAS-40655038

Steps: **1** Yield: **83%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 90 °C

Experimental Protocols

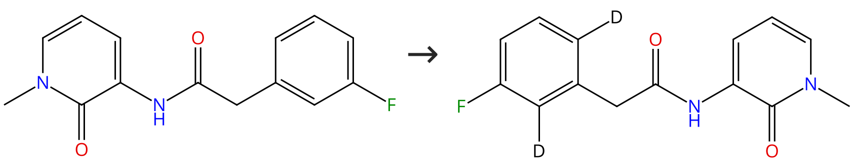
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 355 (1 Reaction)

Steps: **1** Yield: **83%**



31-116-CAS-23999338

Steps: **1** Yield: **83%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

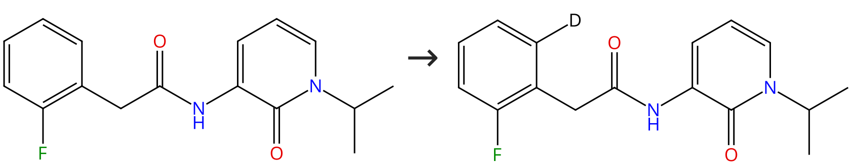
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 356 (1 Reaction)

Steps: **1** Yield: **83%**



31-116-CAS-24000198 Steps: **1** Yield: **83%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

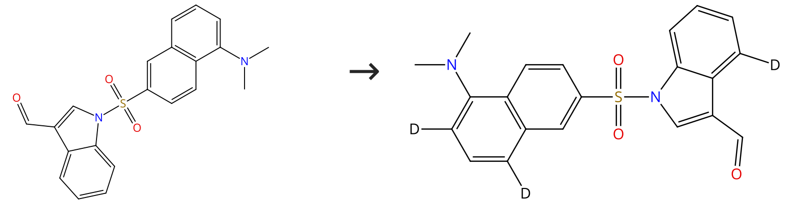
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 357 (1 Reaction) Steps: **1** Yield: **83%**



31-614-CAS-38370035 Steps: **1** Yield: **83%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

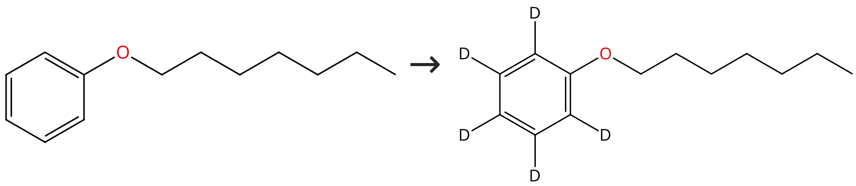
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 358 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (9)

31-614-CAS-24211330 Steps: **1** Yield: **83%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

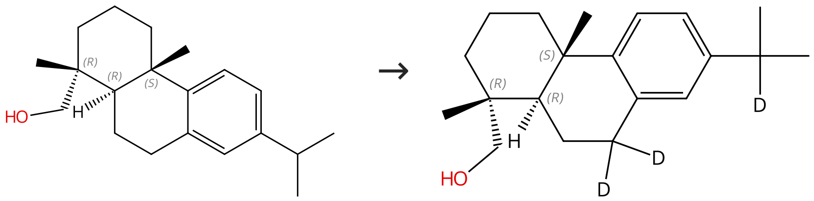
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 359 (1 Reaction) Steps: **1** Yield: **83%**



Absolute stereochemistry shown, Rotation (+)

Suppliers (30)

Absolute stereochemistry shown

Supplier (1)

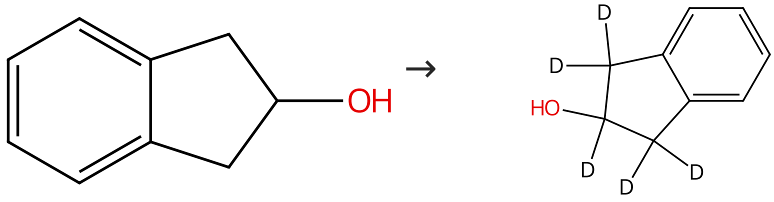
31-116-CAS-12287213	Steps: **1** Yield: **83%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium **Solvents:** Tetrahydrofuran; 36 h, rt → 50 °C
Experimental Protocols	

Evaluation of the efficiency of Pd/H_2-catalyzed benzylic H/D exchange of dehydroabietinal with D_2O and synthesis of a tritium-labeled analogue

By: Petros, Robby A.; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2014), 57(1), 53-56.

Scheme 360 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (77)

31-614-CAS-30395846	Steps: **1** Yield: **83%**
1.1	**Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 361 (1 Reaction) Steps: **1** Yield: **83%**

Suppliers (74)

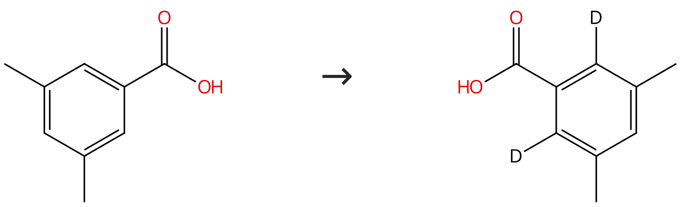
31-614-CAS-24154352	Steps: **1** Yield: **83%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 362 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (94)

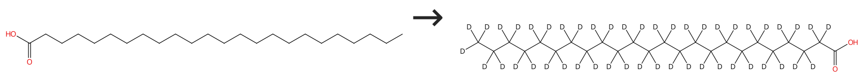
31-614-CAS-34527018	Steps: **1** Yield: **83%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 363 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (81) Suppliers (30)

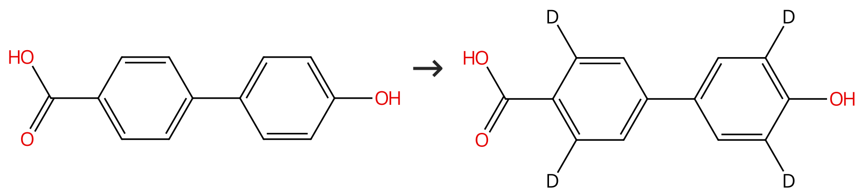
31-116-CAS-16236714	Steps: **1** Yield: **83%**
1.1	**Reagents:** Potassium hydroxide **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 100 h, 15 bar, 195 °C
Experimental Protocols	

Synthesis of ceramides N S and N P with perdeuterated and specifically ω-deuterated N-acyl residues

By: Sonnenberger, Stefan; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2016), 59(12), 531-542.

Scheme 364 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (102)

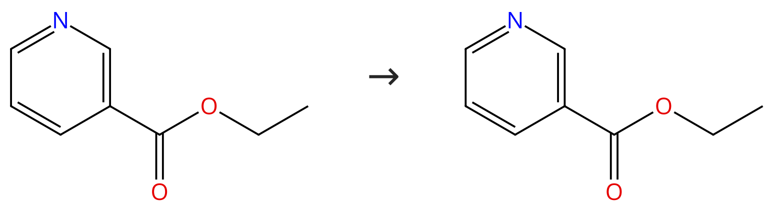
31-614-CAS-34527027	Steps: **1** Yield: **83%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 365 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (109)

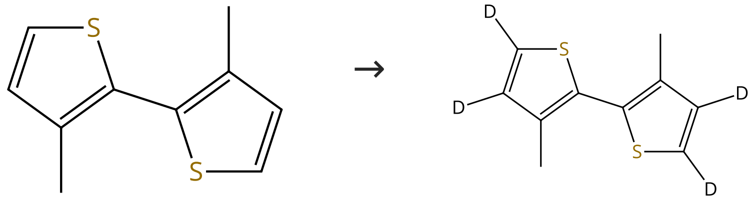
31-614-CAS-41719929	Steps: **1** Yield: **83%**
1.1	**Reagents:** Sodium carbonate, Water- d_2 **Catalysts:** Palladium trifluoroacetate, Bis(3,5-dimethylphenyl) phosphine oxide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 366 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (49)

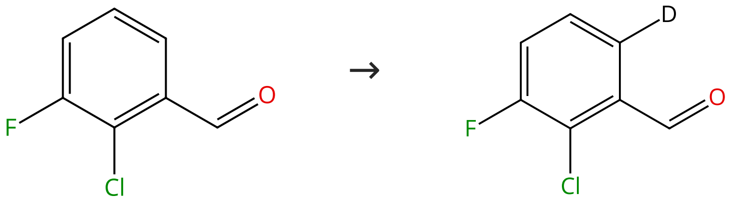
31-614-CAS-40655055	Steps: **1** Yield: **83%**
1.1	**Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 90 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 367 (1 Reaction) Steps: **1** Yield: **83%**



Suppliers (71)

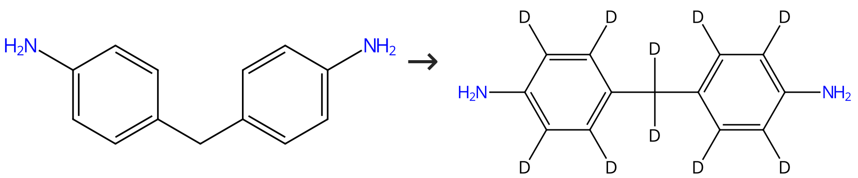
31-614-CAS-24154343	Steps: **1** Yield: **83%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 368 (2 Reactions) Steps: **1** Yield: **79-82%**



Suppliers (75)

31-116-CAS-4461810 Steps: **1** Yield: **82%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

31-116-CAS-424649 Steps: **1** Yield: **79%**

1.1 **Catalysts:** Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

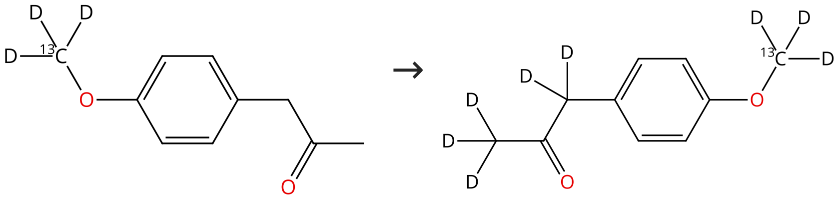
Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 369 (1 Reaction) Steps: **1** Yield: **82%**



31-116-CAS-2644408 Steps: **1** Yield: **82%**

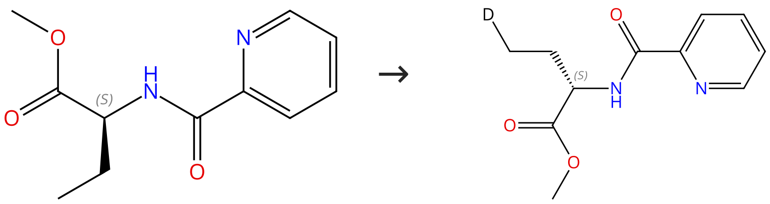
1.1 **Catalysts:** Palladium, Sodium borodeuteride
Solvents: Water-*d*$_2$; 12 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 370 (1 Reaction) Steps: **1** Yield: **82%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (5)

31-116-CAS-18776165 Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium carbonate, *N*-Phenylmaleimide, Water-*d*$_2$
Catalysts: Quinone, 1-Adamantanecarboxylic acid, Palladium diacetate
Solvents: 1,1,2-Trichloroethane; 24 h, 100 °C

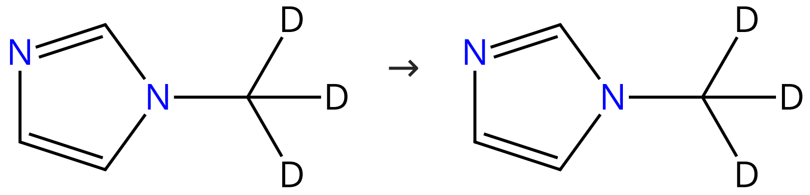
Site-selective δ-C(sp^3)-H alkylation of amino acids and peptides with maleimides via a six-membered palladacycle

By: Zhan, Bei-Bei; et al

Angewandte Chemie, International Edition (2018), 57(20), 5858-5862.

Scheme 371 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (29)

31-614-CAS-29236604

Steps: **1** Yield: **82%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium; 1 h, rt

1.2 **Reagents:** Water-d_2
Solvents: Water-d_2; rt → 100 °C; 2 h, 100 °C

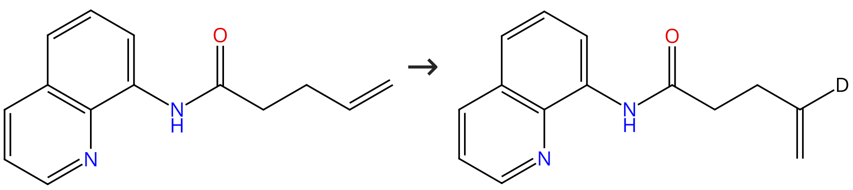
Characterization of nonderivatized plant cell walls using high-resolution solution-state NMR spectroscopy

By: Yelle, Daniel J.; et al

Magnetic Resonance in Chemistry (2008), 46(6), 508-517.

Scheme 372 (1 Reaction)

Steps: **1** Yield: **82%**



Supplier (1)

31-614-CAS-41970568

Steps: **1** Yield: **82%**

1.1 **Reagents:** Iodobenzene diacetate, Dipotassium phosphate
Catalysts: Triphenylphosphine, Palladium diacetate
Solvents: Water-d_2; 0.5 h, 80 °C

Experimental Protocols

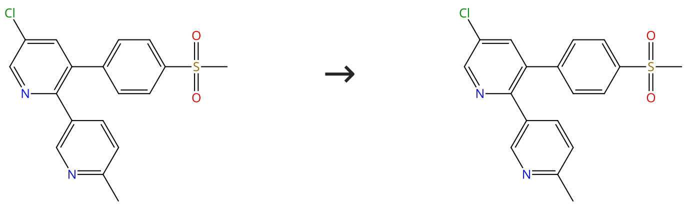
Palladium-Catalyzed Amide Directed Regioselective γ-Alkenylation of Unactivated Alkenes with Vinylcyclopropanes

By: Keerthana, Meledath Sudhakaran; et al

European Journal of Organic Chemistry (2024), 27(42), e202400749.

Scheme 373 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (94)

31-614-CAS-41719947

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

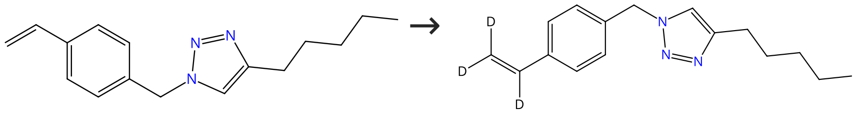
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 374 (2 Reactions)

Steps: **1** Yield: **82%**



31-116-CAS-22371273

Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

31-116-CAS-20880698

Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Benzoic acid, Triphenylphosphine, Tetrakis (triphenylphosphine)palladium
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

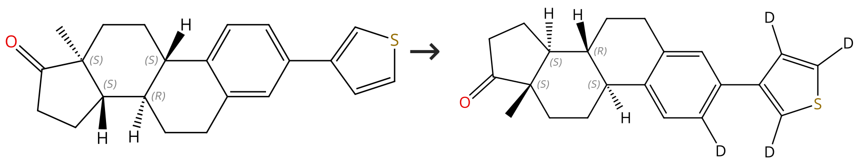
Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

Scheme 375 (1 Reaction)

Steps: **1** Yield: **82%**



31-614-CAS-40655043

Steps: **1** Yield: **82%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

Experimental Protocols

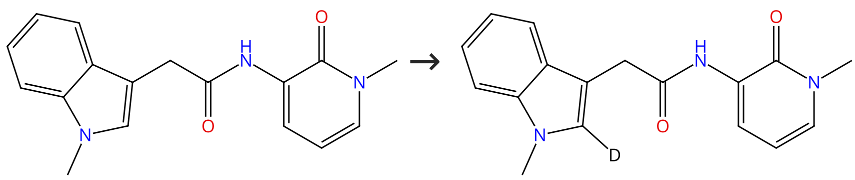
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 376 (1 Reaction)

Steps: **1** Yield: **82%**



31-116-CAS-24000642

Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

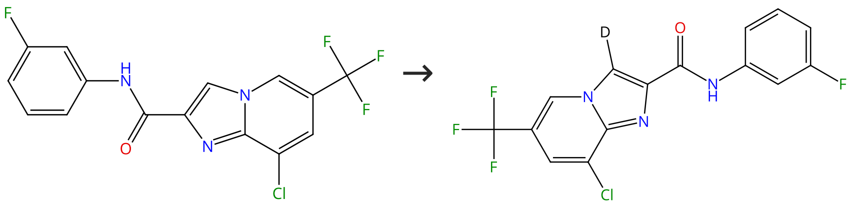
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 377 (1 Reaction)

Steps: **1** Yield: **82%**



31-614-CAS-38336478

Steps: **1** Yield: **82%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Acetylglycine, Palladium diacetate
Solvents: 1,2-Dichloroethane; 14 h, 100 °C

Experimental Protocols

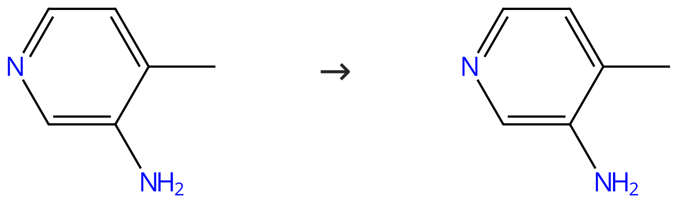
Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes

By: Mohite, Sachin Balaso; et al

Chemistry - A European Journal (2023), 29(70), e202302759.

Scheme 378 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (110)

31-614-CAS-41719930

Steps: **1** Yield: **82%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

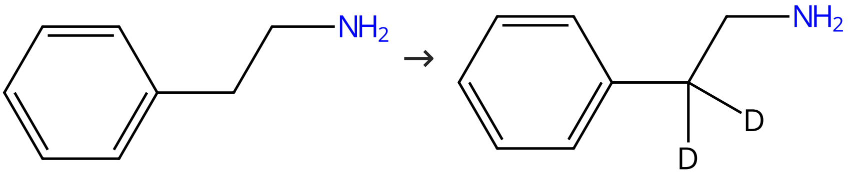
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 379 (1 Reaction)

Steps: **1** Yield: **82%**



Suppliers (62)

Suppliers (2)

31-116-CAS-15017771

Steps: **1** Yield: **82%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, 50 °C

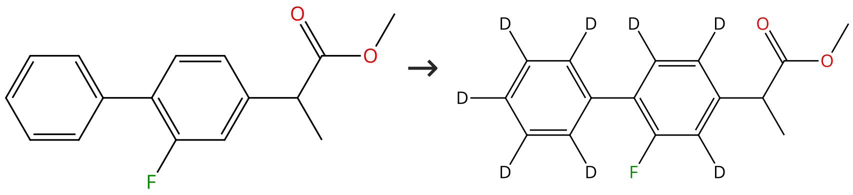
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 380 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (42)

31-614-CAS-24211352 Steps: **1** Yield: **82%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

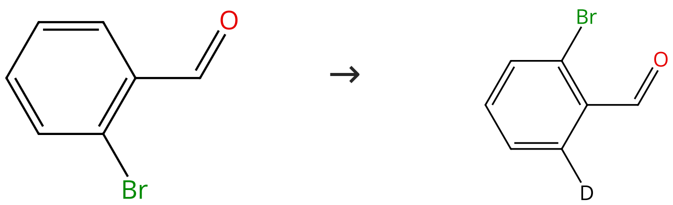
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 381 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (98)

31-614-CAS-24154331 Steps: **1** Yield: **82%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

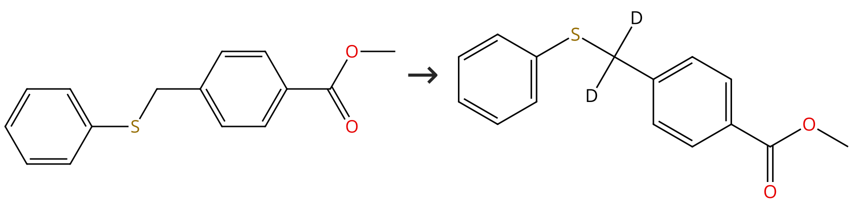
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 382 (1 Reaction) Steps: **1** Yield: **82%**



Suppliers (13)

31-614-CAS-34077465 Steps: **1** Yield: **82%**

1.1 **Reagents:** *N*-Bromosuccinimide, Water-d_2
Catalysts: Palladium trifluoroacetate
Solvents: Acetonitrile; 8 h, 90 °C

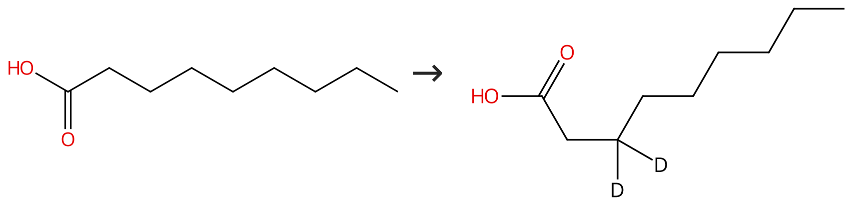
Pd(II)-Catalyzed Non-Directed Benzylic C(sp^3)-H Activation: Cascade C(sp^3)-S Bond Cleavage to Access Benzaldehydes from Benzylphenyl Sulfides and Sulfoxides

By: Joshi, Asha; et al

Asian Journal of Organic Chemistry (2022), 11(12), e202200400.

Scheme 383 (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (106)

31-614-CAS-39495798

Steps: **1** Yield: **81%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

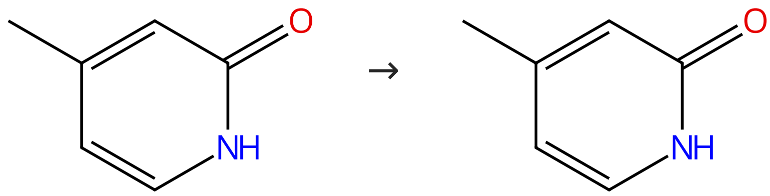
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 384 (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (102)

31-614-CAS-41719920

Steps: **1** Yield: **81%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

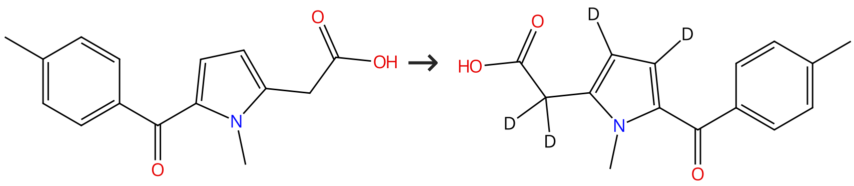
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 385 (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (83)

31-614-CAS-40655064	Steps: **1** Yield: **81%**
1.1	**Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 60 °C

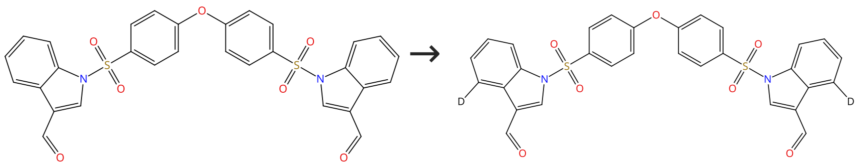
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 386 (1 Reaction) Steps: **1** Yield: **81%**



31-614-CAS-38370048	Steps: **1** Yield: **81%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** 1,2-Dichloroethane, Water; rt

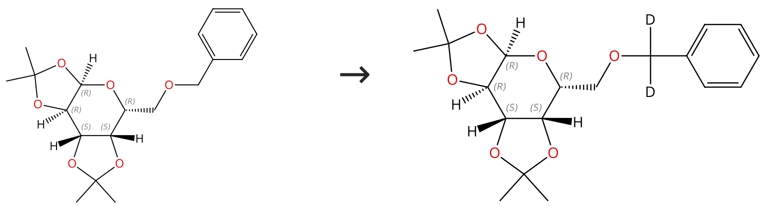
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 387 (1 Reaction) Steps: **1** Yield: **81%**



Absolute stereochemistry shown, Rotation (-)

Absolute stereochemistry shown

Suppliers (9)

31-116-CAS-1239966	Steps: **1** Yield: **81%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Tetrahydrofuran, Water-d_2; 24 h, 50 °C

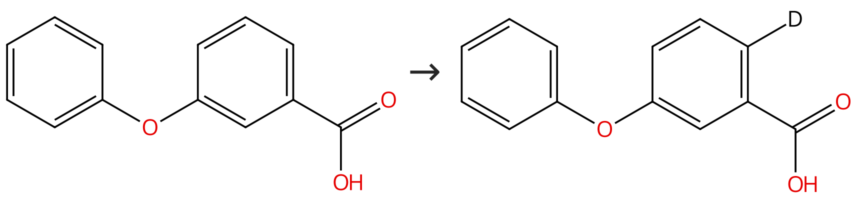
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 388 (1 Reaction) Steps: **1** Yield: **81%**



Suppliers (101)

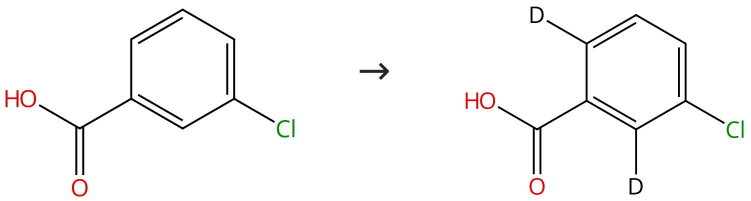
31-614-CAS-34527012	Steps: **1** Yield: **81%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 389 (1 Reaction) Steps: **1** Yield: **81%**



Suppliers (95)

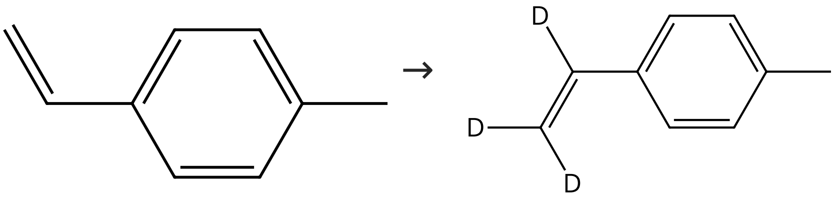
31-614-CAS-34527017	Steps: **1** Yield: **81%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 390 (3 Reactions) Steps: **1** Yield: **63-81%**



Suppliers (70)

31-116-CAS-20880695	Steps: **1** Yield: **81%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Benzoic acid, Triphenylphosphine, Tetrakis(triphenylphosphine)palladium **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

31-116-CAS-22371281	Steps: **1** Yield: **63%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

31-614-CAS-35550385	Steps: **1**
1.1	**Reagents:** Water-*d*$_2$, (*S*)-Mandelic acid **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium **Solvents:** Toluene; 16 h, 120 °C

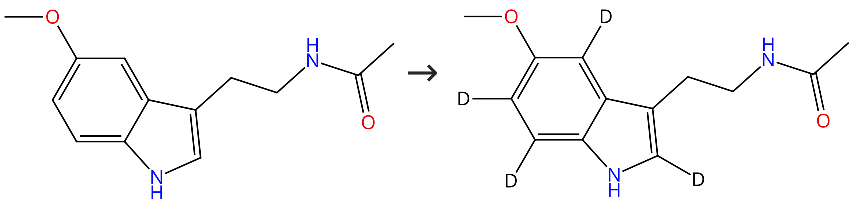
Atomically Dispersed Co-N/C Catalyst for Divergent Synthesis of Nitrogen-Containing Compounds from Alkenes

By: Xue, Wenxuan; et al

Journal of the American Chemical Society (2023), 145(7), 4142-4149.

Scheme 391 (1 Reaction)

Steps: **1** Yield: **81%**



Suppliers (139)

31-614-CAS-40655066

Steps: **1** Yield: **81%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 100 °C

Experimental Protocols

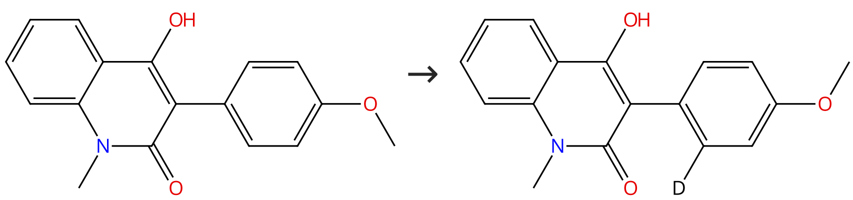
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 392 (1 Reaction)

Steps: **1** Yield: **81%**



Supplier (1)

31-116-CAS-1842690

Steps: **1** Yield: **81%**

1.1 **Reagents:** Water-d_2
Catalysts: Cupric acetate, (*SP*-4-1)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]dichloro(3-chloropyridine-κ*N*)palladium
Solvents: Dimethylformamide; 15 min, 120 °C

Experimental Protocols

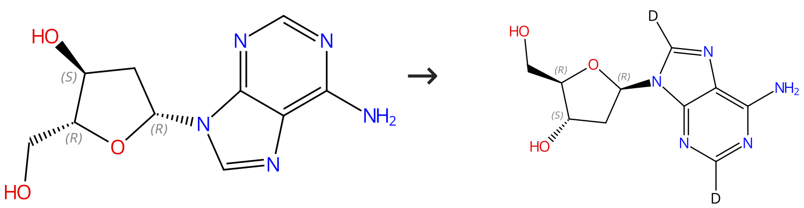
Catalyst-Controlled Divergent C-H Functionalization of Unsymmetrical 2-Aryl Cyclic 1,3-Dicarbonyl Compounds with Alkynes and Alkenes

By: Dooley, Johnathon D.; et al

Journal of the American Chemical Society (2013), 135(29), 10829-10836.

Scheme 393 (2 Reactions)

Steps: **1** Yield: **81%**



Absolute stereochemistry shown

Absolute stereochemistry shown, Rotation (-)

Suppliers (95)

31-116-CAS-3946248

Steps: **1** Yield: **81%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 110 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

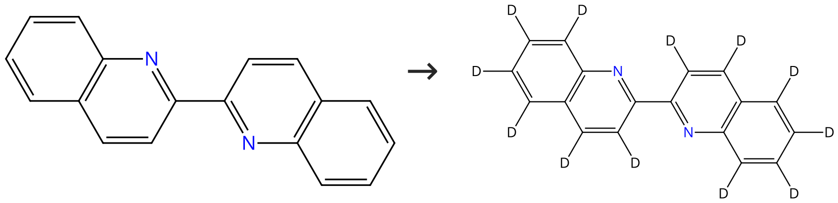
31-116-CAS-8567855	Steps: **1** Yield: **81%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 160 °C; cooled	
Experimental Protocols	

Palladium-catalyzed base-selective H-D exchange reaction of nucleosides in deuterium oxide

By: Sajiki, Hironao; et al

Synlett (2005), (9), 1385-1388.

Scheme 394 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (90)

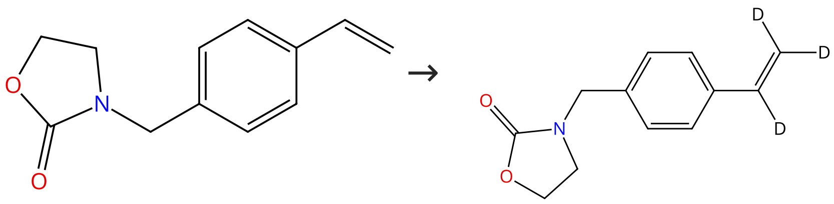
31-116-CAS-165518	Steps: **1** Yield: **80%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium	
Experimental Protocols	

Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 395 (2 Reactions) Steps: **1** Yield: **80%**



Supplier (1)

31-116-CAS-22371274	Steps: **1** Yield: **80%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C	
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

31-116-CAS-20880697	Steps: **1** Yield: **80%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Benzoic acid, Triphenylphosphine, Tetrakis (triphenylphosphine)palladium **Solvents:** Toluene; 16 h, 120 °C	
Experimental Protocols	

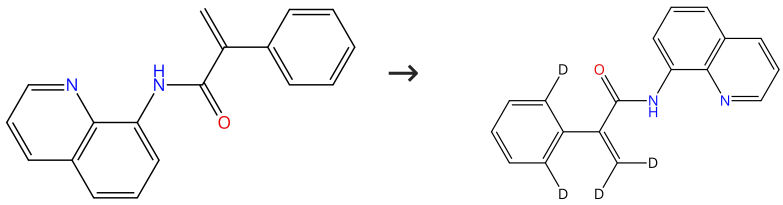
Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

Scheme 396 (1 Reaction)

Steps: **1** Yield: **80%**



Supplier (1)

31-116-CAS-19041727

Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Water-d_2; 48 h, 140 °C; 140 °C → rt

Experimental Protocols

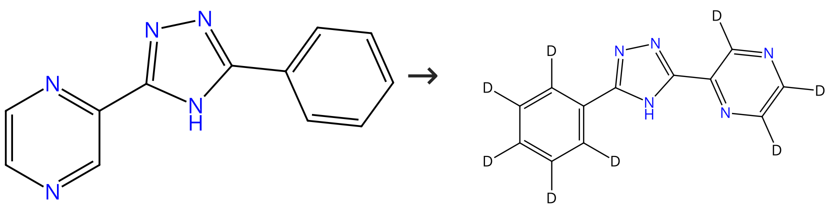
Palladium-Catalyzed H/D Exchange Reaction with 8-Aminoquinoline as the Directing Group: Access to ortho-Selective Deuterated Aromatic Acids and β-Selective Deuterated Aliphatic Acids

By: Zhao, Donghong; et al

Journal of Organic Chemistry (2018), 83(15), 7860-7866.

Scheme 397 (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (8)

31-116-CAS-3840295

Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium

Experimental Protocols

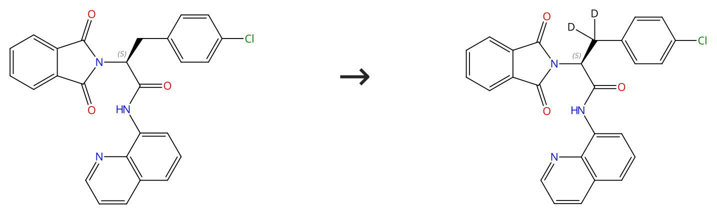
Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 398 (1 Reaction)

Steps: **1** Yield: **80%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-38572151

Steps: **1** Yield: **80%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

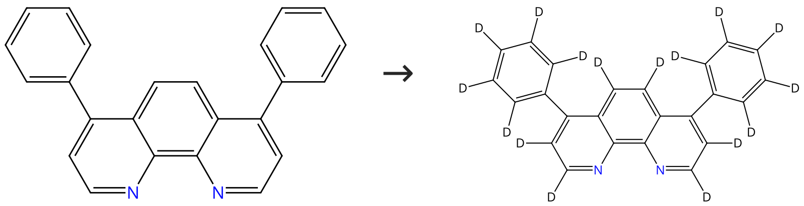
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 399 (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (126)

Suppliers (4)

31-116-CAS-6308146

Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium

1.2 **Reagents:** Sodium, Water-*d*$_2$

1.3 **Reagents:** Hydrochloric acid
Solvents: Water

Experimental Protocols

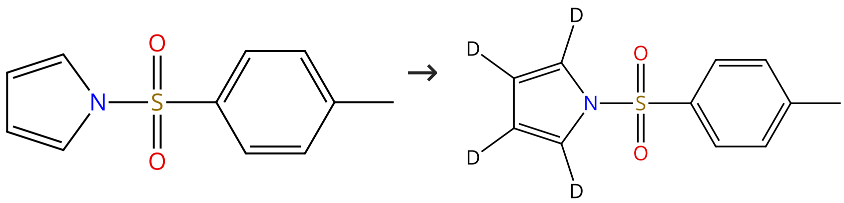
Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 400 (1 Reaction)

Steps: **1** Yield: **80%**



Suppliers (88)

31-614-CAS-40655062

Steps: **1** Yield: **80%**

1.1 **Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methyl ethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 60 °C

Experimental Protocols

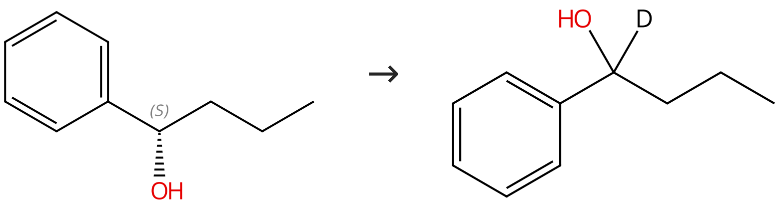
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 401 (1 Reaction)

Steps: **1** Yield: **80%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (49)

31-116-CAS-4888643

Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium, Sodium borodeuteride
Solvents: Water-*d*$_2$; 30 s, rt; 18 h, 130 °C

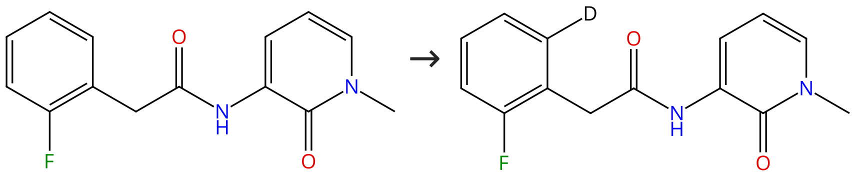
Experimental Protocols

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 402 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-23999546 Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

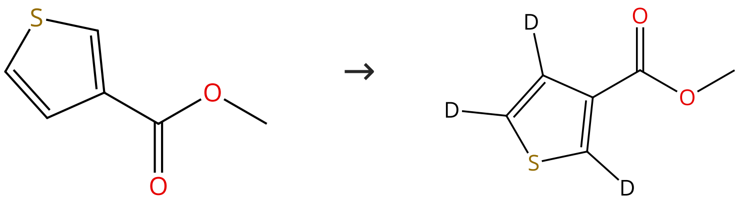
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 403 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (75)

31-614-CAS-40655041 Steps: **1** Yield: **80%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris (1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

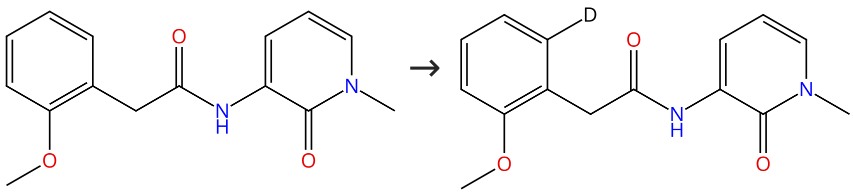
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 404 (1 Reaction) Steps: **1** Yield: **80%**



31-116-CAS-24000208 Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

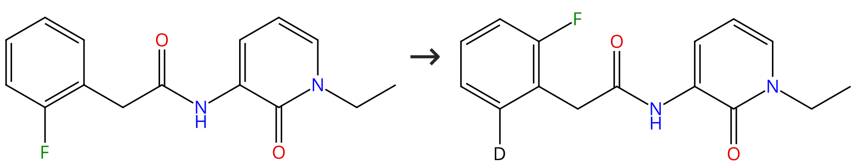
Experimental Protocols

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 405 (1 Reaction) Steps: **1** Yield: **80%**



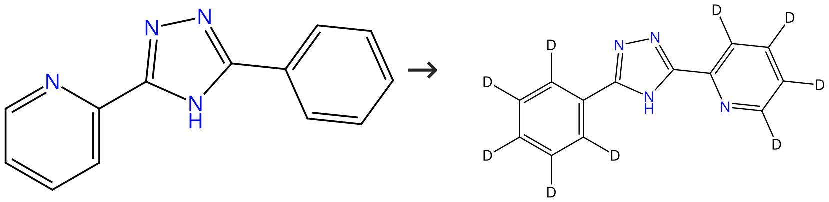
31-116-CAS-23999205	Steps: **1** Yield: **80%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C	
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 406 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (12)

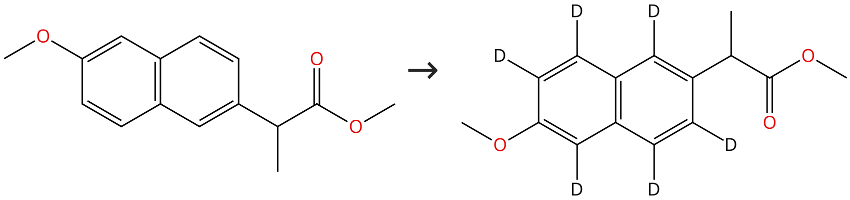
31-116-CAS-12924846	Steps: **1** Yield: **80%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium	
Experimental Protocols	

Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 407 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (42)

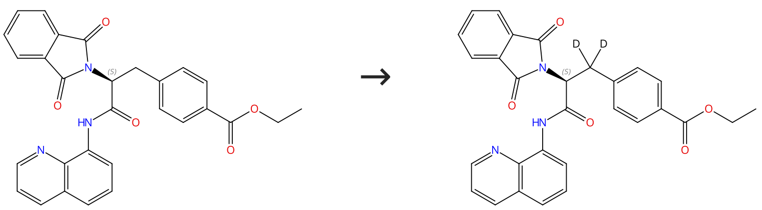
31-614-CAS-24211343	Steps: **1** Yield: **80%**
1.1 **Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C	
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 408 (1 Reaction) Steps: **1** Yield: **80%**



Absolute stereochemistry shown

Absolute stereochemistry shown

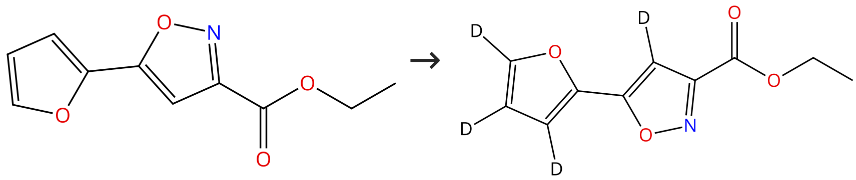
31-614-CAS-38572152	Steps: **1** Yield: **80%**
1.1	**Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 409 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (61)

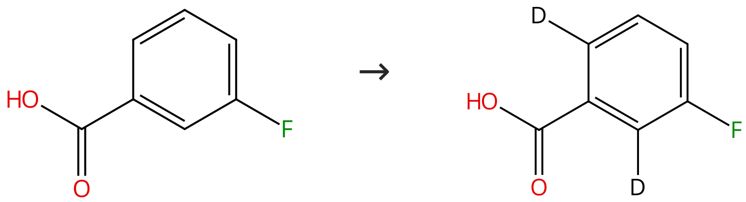
31-614-CAS-40655050	Steps: **1** Yield: **80%**
1.1	**Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 130 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 410 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (101)

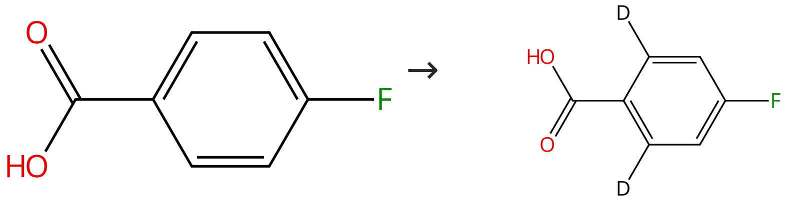
31-614-CAS-34527013	Steps: **1** Yield: **80%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 411 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (105)

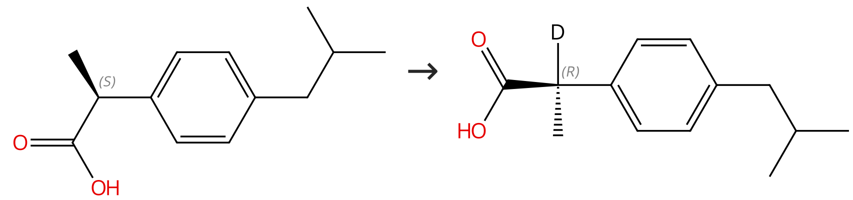
31-614-CAS-34527000	Steps: **1** Yield: **80%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 412 (1 Reaction) Steps: **1** Yield: **80%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (90)

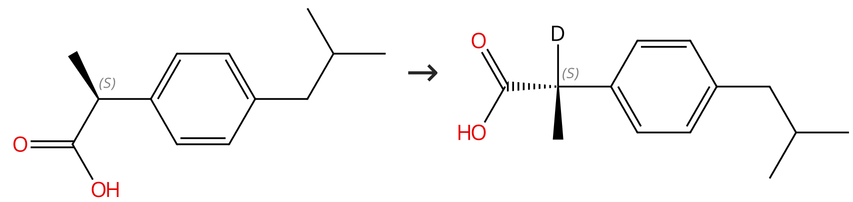
31-614-CAS-27784985	Steps: **1** Yield: **80%**
1.1	**Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 413 (1 Reaction) Steps: **1** Yield: **80%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (90)

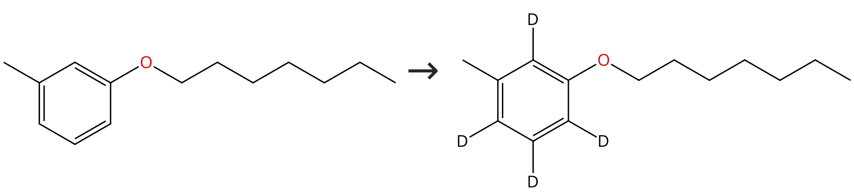
31-116-CAS-2768560	Steps: **1** Yield: **80%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 30 s, rt; 18 h, 130 °C
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 414 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (3)

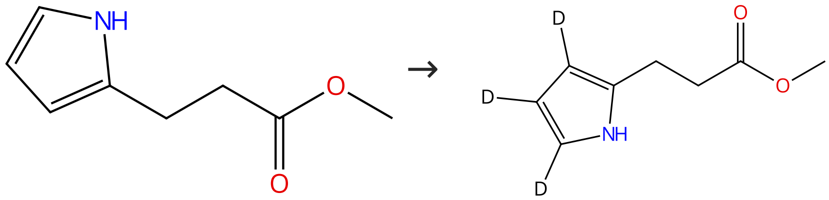
31-614-CAS-24211333	Steps: **1** Yield: **80%**
1.1	**Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 415 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (70)

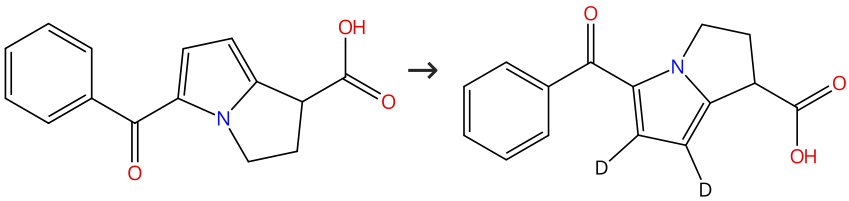
31-614-CAS-40655063	Steps: **1** Yield: **80%**
1.1	**Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 60 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 416 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (78)

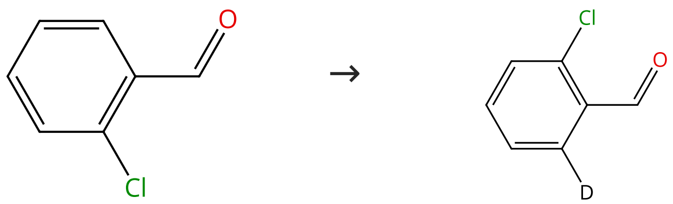
31-614-CAS-40655077	Steps: **1** Yield: **80%**
1.1	**Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 60 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 417 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (101)

31-614-CAS-24154334	Steps: **1** Yield: **80%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

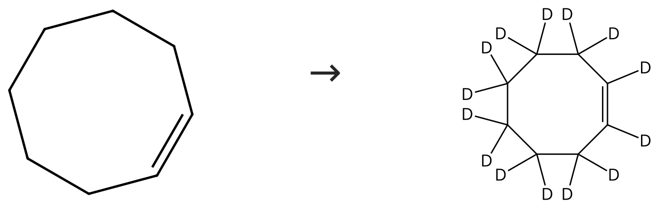
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 418 (3 Reactions) Steps: **1** Yield: **80%**



Suppliers (27)

31-116-CAS-10614541	Steps: **1** Yield: **80%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium; 4 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-12557382	Steps: **1** Yield: **80%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 4 h, 250 °C

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

31-614-CAS-40324966	Steps: **1**
1.1	**Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 3 d, 190 °C

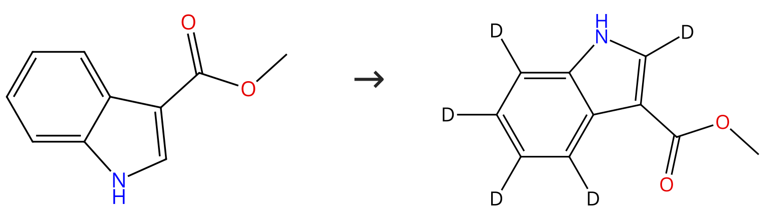
Experimental Protocols

Reprocessability in Engineering Thermosets Achieved Through Frontal Ring Opening Metathesis Polymerization

By: Cooper, Julian C.; et al

Advanced Materials (Weinheim, Germany) (2024), 36(28), 2402627.

Scheme 419 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (92)

31-614-CAS-40655079 Steps: **1** Yield: **80%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 100 °C

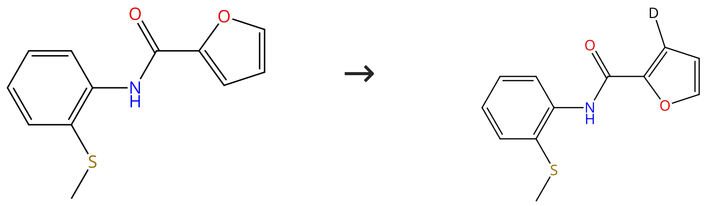
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 420 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (9)

31-614-CAS-37694386 Steps: **1** Yield: **80%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, Copper bromide ($CuBr_2$)
Solvents: Dimethylformamide; 24 h, 100 °C

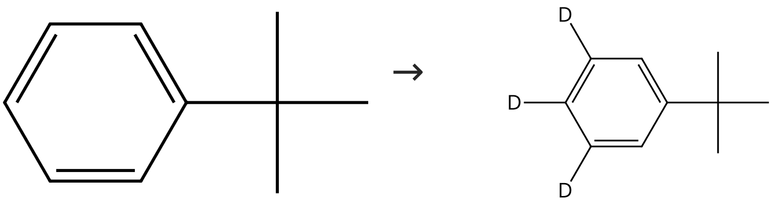
Experimental Protocols

Palladium-Catalyzed Direct Selanylation of Chalcogenophenes and Arenes Assisted by 2-(Methylthio)amide

By: Badshah, Gul; et al

Journal of Organic Chemistry (2023), 88(19), 14033-14047.

Scheme 421 (1 Reaction) Steps: **1** Yield: **80%**



Suppliers (77)

31-116-CAS-7982227 Steps: **1** Yield: **80%**

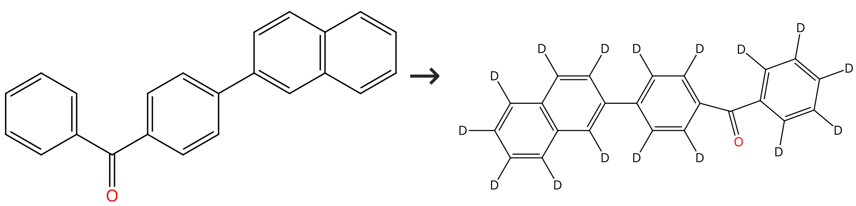
1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 10 h, 250 °C

Palladium-catalyzed H-D exchange reaction under hydrot hermal condition

By: Matsubara, Seijiro; et al

Chemistry Letters (2004), 33(3), 294-295.

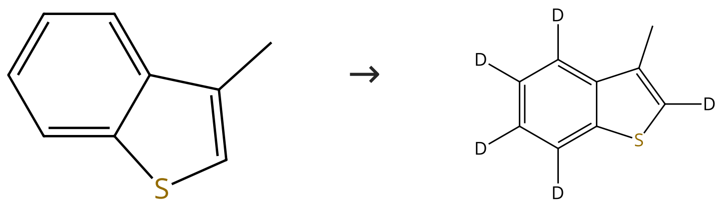
Scheme 422 (1 Reaction) Steps: **1** Yield: **79%**



Supplier (1)

31-614-CAS-36058851	Steps: **1** Yield: **79%**	**Benzophenone-containing phosphors with an unprecedented long lifetime of 1.8 s under ambient conditions**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium; 25 h, 19.73 - 24.67 atm, 250 °C	By: Su, Yuming; et al
Experimental Protocols		Chemical Communications (Cambridge, United Kingdom) (2023), 59(11), 1525-1528.

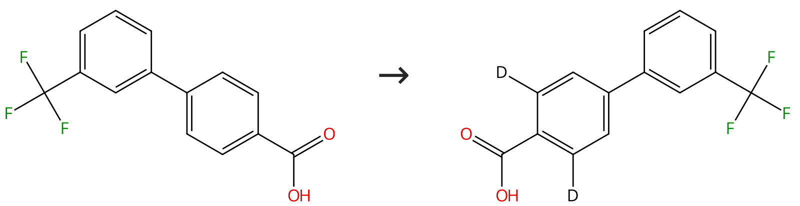
Scheme 423 (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (83)

31-614-CAS-40655071	Steps: **1** Yield: **79%**	**Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach**
1.1	**Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt	By: Dey, Jyotirmoy; et al
1.2	**Reagents:** Water-*d*$_2$; 18 h, 100 °C	Angewandte Chemie, International Edition (2024), 63(27), e202404421.
Experimental Protocols		

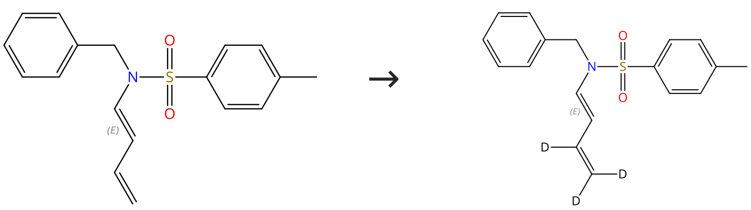
Scheme 424 (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (79)

31-614-CAS-34527026	Steps: **1** Yield: **79%**	**Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D$_2$O**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C	By: Zhang, Ziyin; et al Synthesis (2022), 54(22), 4907-4916.

Scheme 425 (1 Reaction) Steps: **1** Yield: **79%**



Double bond geometry shown

Double bond geometry shown

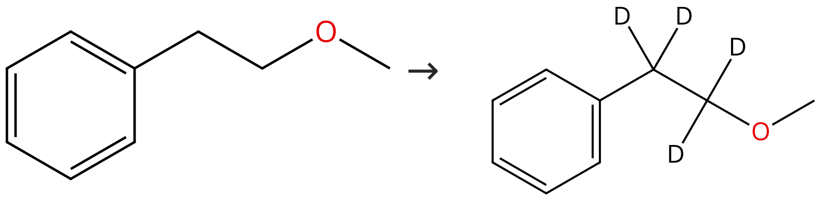
31-116-CAS-20880694	Steps: **1** Yield: **79%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Benzoic acid, Tricyclohexylphosphine, Tetrakis (triphenylphosphine)palladium **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

Scheme 426 (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (57)

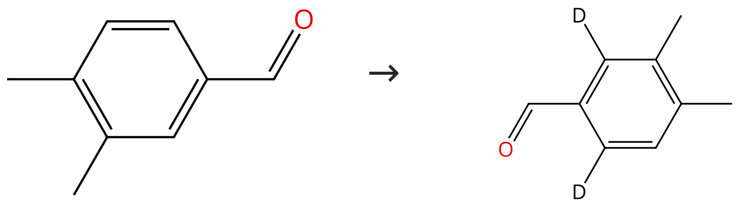
31-116-CAS-2335059	Steps: **1** Yield: **79%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 427 (1 Reaction) Steps: **1** Yield: **79%**



Suppliers (91)

31-614-CAS-24154327	Steps: **1** Yield: **79%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

SciFinder

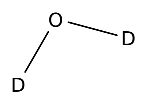
Task History

Initiating Search

February 21, 2025, 1:05 PM

Substances:

Filtered By:



Structure Match: **As Drawn**

Search Tasks

Task	Search Type	View
Returned Substance Results + Filters (1,728)	Substances	View Results
Exported: Retrieved Related Reaction Results + Filters (2,025)	Reactions	View Results

Filtered By:

Substance Role: **Reagent, Solvent**

Catalyst: **[1,1'-Bis(diphenylphosphino)ferrocene]dichloropalladium, [(1,2,5,6-η)-1,5-Cyclooctadiene][(3,4-η)-2,5-furandione]palladium, [1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]chloro(η^3-2-propen-1-yl)palladium, [[2',6'-Bis(1-methylethoxy)[1,1'-biphenyl]-2-yl]dicyclohexylphosphine-κ*P*]bromo[3-[(3*S*)-3,7-dimethyloctyl]-2-thienyl]palladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*](methanesulfonato-κ*O*)[tris(1,1-dimethylethyl)phosphine]palladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*]chloro[[5-(diphenylphosphino)-9,9-dimethyl-9*H*-xanthen-4-yl]diphenylphosphine-κ*P*]palladium, [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*][[2',6'-bis(1-methylethoxy)[1,1'-biphenyl]-2-yl]dicyclohexylphosphine-κ*P*]chloropalladium, Bis[(2,3-η)-bicyclo[2.2.1]hept-2-ene]bis[μ-[(2,3-η:5,6-η)-2,5-cyclohexadiene-1,4-dione]]dipalladium, Bis(acetato-κ*O*)bis(*N*,*N*-dimethylguanidine-κ*N*'')palladium, Bis(acetato-κ*O*)bis(*N*,*N*,*N*',*N*'-tetramethylguanidine-κ*N*'')palladium, Bis[μ-(acetato-κ*O*:κ*O*')]bis(2,9-dimethyl-1,10-phenanthroline-κN^1,κN^{10})dipalladium(2+), Bis(benzonitrile)dichloropalladium, Bis(dibenzylideneacetone)palladium,** Bis(hexafluoroacetylacetonato)palladium, Bis(tri-*tert*-butylphosphine)palladium, Di-μ-bromobis(tri-*tert*-butylphosphine)dipalladium, Dichloro[1,1'-bis(diphenylphosphino)ferrocene]palladium(II) dichloromethane adduct, Dichloro[(1,2,5,6-η)-1,5-cyclooctadiene]palladium, Di-μ-chlorobis[(1,2,3-η)-1-phenyl-2-propen-1-yl]dipalladium, Di-μ-chlorobis(η^3-2-propenyl)dipalladium, Dichlorobis(glycinato-κ*N*)palladate(2-), Dichlorobis(tricyclohexylphosphine)palladium, Dichlorobis(triphenylphosphine)palladium, Hexakis[2,9-bis(2,4,6-trimethylphenyl)-1,10-phenanthroline-κ*N*^{1},κ*N*^{10}]tetrakis[μ$_3$-[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-triazine]]hexapalladium(12+), Methanesulfonic acid, 1,1,1-trifluoro-, palladium(2+) salt (2:1), Palladate(2-), bis[μ-(acetato-κ*O*:κ*O'*)]tetrakis[(1,1-dimethylethyl)phenylphosphinito-κ*P*]di-, dihydrogen, Palladate(4-), bis(acetato-κ*O*)bis[2-amino-6-(hydroxy-κ*O*)-4(3*H*)-pyrimidinonato(2-)]-, sodium (1:4), Palladate(4-), bis(acetato-κ*O*)bis[2-(dimethylamino)-6-(hydroxy-κ*O*)-4(3*H*)-pyrimidinonato(2-)]-, sodium (1:4), Palladate(9-), tris[[3,3',3''-(phosphinidyne-κ*P*)tris[benzenesulfonato]](3-)]-, sodium (1:9), Palladium, Palladium, [1,1'-bis(diphenylphosphino)ferrocene-*P*,*P'*]dichloro-, (*SP*-4-2)-, compd. with 2-propanone (2:1), Palladium(12+), hexakis(1,2-ethanediamine-κ*N*^{1},κ*N*^{2})tetrakis[μ$_3$-[2,4,6-tri(3-pyridinyl-κ*N*)-1,3,5-triazine]]hexa-, nitrate (1:12), Palladium(12+), hexakis(1,2-ethanediamine-κ*N*^{1},κ*N*^{2})tetrakis[μ$_3$-[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-triazine]]hexa-, nitrate (1:12), Palladium(12+), hexakis(1,2-ethanediamine-*N*,*N'*)tetrakis[μ$_3$-[2,4,6-tris[4-(4-pyridinyl)phenyl]-1,3,5-triazine-*N*^{2}:*N*^{4}:*N*^{6}]]hexa-, dodecanitrate, Palladium(12+), hexakis(*N*^{1},*N*^{1},*N*^{2},*N*^{2}-tetramethyl-1,2-ethanediamine-κ*N*^{1},κ*N*^{2})tetrakis[μ$_3$-[2,4,6-tri(4-pyridinyl-κ*N*)-1,3,5-triazine]]hexa-, nitrate (1:12), Palladium(1+), (acetonitrile)[2,3-dihydro-3-[2-(hydroxy-κ*O*)ethyl]-*N*-phenyl-1*H*-benzimidazole-1-acetamidato(3-)-κ*C*^{2},κ*N*^{N1}]-, (*SP*-4-3)-, tetrafluoroborate(1-) (1:1), Palladium(1+), (acetonitrile)[2,3-dihydro-3-methyl-*N*-[2-methyl-1-[(phenylmethoxy-κ*O*)methyl]propyl]-1*H*-benzimidazole-1-acetamidato(3-)-κ*C*^{2},κ*N*^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1), Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κ*C*^{2},κ*N*^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1), Palladium(1+), diaqua(L-methioninato-κ*N*,κ*S*)-, monohydrogen, (*SP*-4-2)-, Palladium(1+), diaqua(*S*-methyl-L-cysteinato-κ*N*,κ*S*)-, hydrogen, (*SP*-4-2)-, Palladium(1+), tris[μ-(methanethiolato)]tris(triphenylphosphine)tri-, *triangulo*, stereoisomer, (*OC*-6-11)-hexafluoroantimonate(1-) (1:1), Palladium(24+), tetracosakis[μ-[(2*S*,5*S*)-3-[2-[2,6-bis[2-(4-pyridinyl-κ*N*)ethynyl]phenoxy]ethyl]-2-(1,1-dimethylethyl)-5-(phenylmethyl)-4-imidazolidinone]]dodeca-, tetrafluoroborate(1-) (1:24), Palladium(24+), tetracosakis[μ-[4-[[2-[2,6-bis[2-(4-pyridinyl-κ*N*)ethynyl]phenoxy]acetyl]oxy]-2,2,6,6-tetramethyl-1-piperidinyloxy]]dodeca-, tetrafluoroborate(1-)

(1:24), Palladium(24+), tetracosakis[μ-[4,4'-[(2-methoxy-1,3-phenylene)di-2,1-ethynediyl]bis[pyridine-κ*N*]]dodeca-, tetrafluoroborate(1-) (1:24), Palladium(2+), bis(1,10-phenanthroline-κN^1,κN^{10})-, (*SP*-4-1)-, hexafluorophosphate(1-) (1:2), Palladium(2+), bis[1,1'-(1*S*)-[1,1'-binaphthalene]-2,2'-diylbis[1,1-diphenylphosphine-κ*P*]]di-μ-hydroxydi-, tetrafluoroborate(1-) (1:2), Palladium(2+), bis[μ-(acetato-κ*O*:κ*O*')]bis[2-[(4*S*)-4-(1,1-dimethylethyl)-4,5-dihydro-2-oxazolyl-κN^3]-6-methylpyridine-κ*N*]di-, stereoisomer, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis[μ-(acetato-κ*O*:κ*O*')]bis(2,9-dimethyl-1,10-phenanthroline-κN^1,κN^{10})di-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis(acetonitrile)[2-(2-pyridinyl-κ*N*)benzoxazole-κN^3]-, (*SP*-4-2)-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), bis(acetonitrile)(2,9-dimethyl-1,10-phenanthroline-κN^1,κN^{10})-, (*SP*-4-2)-, 1,1,1-trifluoromethanesulfonate (1:2), Palladium(2+), diaqua(1,2-cyclohexanediamine-κ*N*,κ*N*')-, (*SP*-4-2)-, Palladium(2+), diaqua(1,2-propanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(2-methyl-1,2-propanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(*N*-methyl-1,2-ethanediamine-κ*N*,κ*N*')-, (*SP*-4-3)-, Palladium(2+), diaqua(*N*,*N*,*N*',*N*'-tetramethyl-1,2-ethanediamine-κ*N*,κ*N*')-, (*SP*-4-2)-, Palladium(2+), di-μ-hydroxytetrakis(triphenylphosphine)di-, tetrafluoroborate(1-) (1:2), Palladium(2+), tetraaqua-, (*SP*-4-1)-, Palladium(2+), tetrakis(acetonitrile)-, (*SP*-4-1)-, tetrafluoroborate(1-) (1:2), Palladium acetylacetonate, Palladium, bis(acetonitrile)dichloro-, Palladium bromide, Palladium chloride, Palladium diacetate, Palladium, dichlorobis[tris(3,5-difluorophenyl)phosphine-κ*P*]-, Palladium dihydroxide, Palladium diiodide, Palladium dipivalate, Palladium, hexakis[μ-(acetato-κ*O*:κ*O*')]tri-, *cyclo*, Palladium hydroxide, Palladium nitrate, Palladium oxide (PdO), Palladium trifluoroacetate, Palladium, tris[μ-[(1,2-η:4,5-η)-(1*E*,4*E*)-1,5-diphenyl-1,4-pentadien-3-one]]di-, compd. with trichloromethane (1:1), Poly(oxy-1,2-ethanediyl), α-hydroxy-ω-methoxy-, ether with (*SP*-4-3)-[2,6-bis[[(2-hydroxyethyl)thio-κ*S*]methyl]phenyl-κ*C*]chloropalladium (2:1), Potassium tetrachloropalladate, (*SP*-4-1)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]dichloro(3-chloropyridine-κ*N*)palladium, (*SP*-4-1)-Chloro[*rel*-2,6-bis[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Chloro[*rel*-4-methoxy-2,6-bis[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Chloro[*rel*-4-methoxy-2,6-bis[[(*R*)-phenylseleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-1)-Dichlorobis[1-(phenylmethyl)-1*H*-imidazole-κN^3]palladium, (*SP*-4-2)-[1,1'-(1,3-Propanediyl)bis[1,1-diphenylphosphine-κ*P*]]bis(1,1,1-trifluoromethanesulfonato-κ*O*)palladium, (*SP*-4-2)-(1,2-Ethanediamine-κN^1,κN^2)bis(nitrato-κ*O*)palladium, (*SP*-4-2)-Chloro[*rel*-2-[[(*R*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]-6-[[(*S*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Chloro[*rel*-4-methoxy-2-[[(*R*)-

(4-methoxyphenyl)seleno-κ*Se*]methyl]-6-[[(*S*)-(4-methoxyphenyl)seleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Chloro[*rel*-4-methoxy-2-[[(*R*)-phenylseleno-κ*Se*]methyl]-6-[[(*S*)-phenylseleno-κ*Se*]methyl]phenyl-κ*C*]palladium, (*SP*-4-2)-Diaqua[1,2-bis(methylthio-κ*S*)ethane]palladium(2+), (*SP*-4-2)-Diaqua(1,2-ethanediamine-κN^1,κN^2)palladium(2+), (*SP*-4-2)-Dibromobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]decane-κP^7)palladium, (*SP*-4-2)-Dichloro[1,1'-(1,3-propanediyl)bis[1,1-diphenylphosphine-κ*P*]]palladium, (*SP*-4-2)-Dichloro(1,2-ethanediamine-κN^1,κN^2)palladium, (*SP*-4-2)-Dichlorobis(1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]decane-κP^7)palladium, (*SP*-4-3)-[1-[Bis(1,1-dimethylethyl)phosphino]-1'-[bis(tricyclo[3.3.1.1^{3,7}]dec-1-yl)phosphino]ferrocene]dichloropalladium, (*SP*-4-3)-Chloro[4-[(4*S*)-4-[[2-(1,1-dimethylethoxy)-2-oxoacetyl]amino]-5-oxo-5-(undecylamino)pentyl]-2,6-di(2-pyridinyl-κ*N*)phenyl-κ*C*]palladium, (*SP*-4-3)-[Dicyclohexyl[2',4',6'-tris(1-methylethyl)[1,1'-biphenyl]-2-yl]phosphine](methanesulfonato-κ*O*)[2'-(methylamino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*]palladium, stereoisomer of (η^5-2,4-Cyclopentadien-1-yl)[(1,2,3-η)-1-phenyl-2-propen-1-yl]palladium, Stereoisomer of tetrachlorobis[μ-[*O*,*O*-diethyl *N*-(7λ^5-1,3,5-triaza-7-phosphatricyclo[3.3.1.1^{3,7}]dec-7-ylidene-κN^1)phosphoramidothioate-κ*S*]]dipalladium, Tetrakis(triphenylphosphine)palladium, Tris[(1,2-η)-1,5-diphenyl-1,4-pentadien-3-one]palladium, Tris(dibenzylideneacetone)dipalladium

Document Type: Journal

Language: English

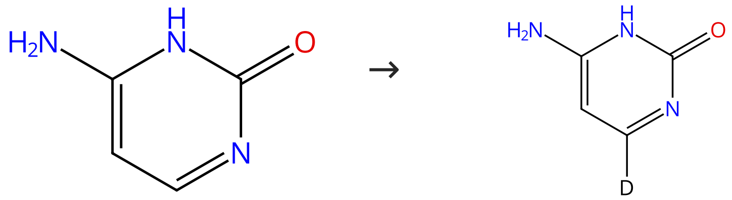
CAS SciFinder

Reactions (500)

View in CAS SciFinder

Scheme 1 (1 Reaction)

Steps: **1** Yield: **79%**



Suppliers (129)

31-116-CAS-7264406	Steps: **1** Yield: **79%**
1.1	**Reagents:** Deuterium, Sodium hydroxide-*d* **Catalysts:** Calcium carbonate, Palladium **Solvents:** Water-d_2

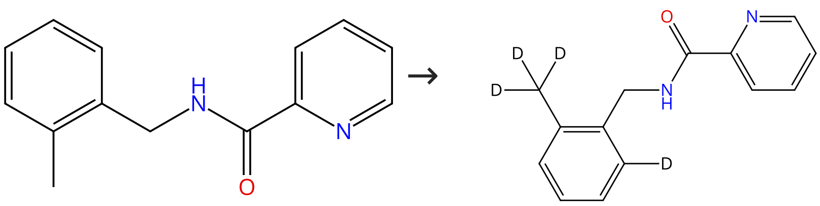
Syntheses of [5-^{2}H]-uracil, [5-^{2}H]-cytosine, [6-^{2}H]-uracil and [6-^{2}H]-cytosine

By: Kiritani, Reiko; et al

Journal of Labelled Compounds and Radiopharmaceuticals (1986), 23(2), 207-14.

Scheme 2 (2 Reactions)

Steps: **1** Yield: **79%**



Suppliers (7)

31-116-CAS-23613634	Steps: **1** Yield: **79%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** *o*-Xylene; 12 h, 130 °C

Experimental Protocols

Rh(II)-Catalyzed C-H Alkylation of Benzylamines with Unactivated Alkenes: The Influence of Acid on Linear and Branch Selectivity

By: Das, Amrita; et al

Organic Letters (2021), 23(11), 4273-4278.

31-116-CAS-23373390	Steps: **1** Yield: **79%**
1.1	**Catalysts:** Palladium diacetate **Solvents:** *o*-Xylene, Water-d_2; 12 h, 130 °C

Experimental Protocols

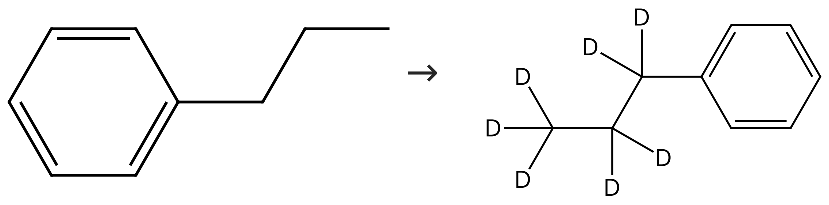
Rh(I)- and Rh(II)-catalyzed C-H alkylation of benzylamines with alkenes and its application in flow chemistry

By: Das, Amrita; et al

Chemical Science (2021), 12(9), 3202-3209.

Scheme 3 (1 Reaction)

Steps: **1** Yield: **78%**



Suppliers (70)

31-614-CAS-28038047

Steps: **1** Yield: **78%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

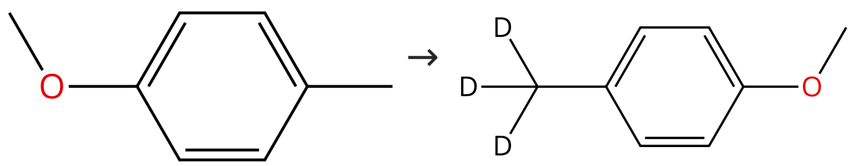
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 4 (2 Reactions)

Steps: **1** Yield: **74-78%**



Suppliers (80) Suppliers (26)

31-116-CAS-23137142

Steps: **1** Yield: **78%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Tetrahydrofuran; 4 d, rt; 4 d, rt

Experimental Protocols

Mechanistic Studies on Photoinduced Catalytic Olefin Migration Reactions at the Pd(II) Centers of a Porous Crystal, Metal-Macrocycle Framework

By: Yonezawa, Hirotaka; et al

Chemistry - An Asian Journal (2021), 16(3), 202-206.

31-116-CAS-7417656

Steps: **1** Yield: **74%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

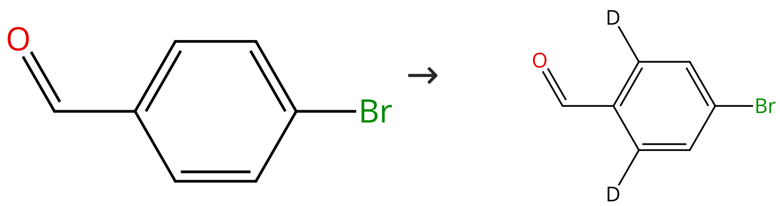
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 5 (1 Reaction)

Steps: **1** Yield: **78%**



Suppliers (98)

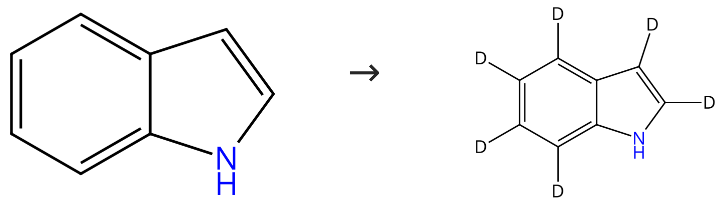
31-614-CAS-24154336	Steps: **1** Yield: **78%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 6 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (117)

Suppliers (27)

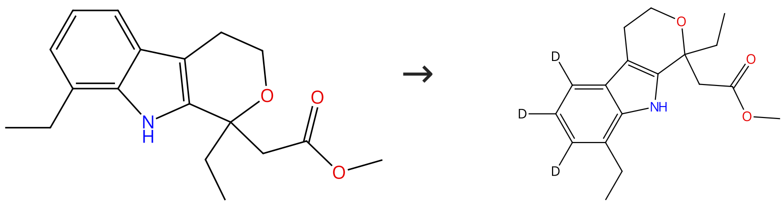
31-614-CAS-40655078	Steps: **1** Yield: **78%**
1.1	**Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-*d*$_2$; 18 h, 100 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 7 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (54)

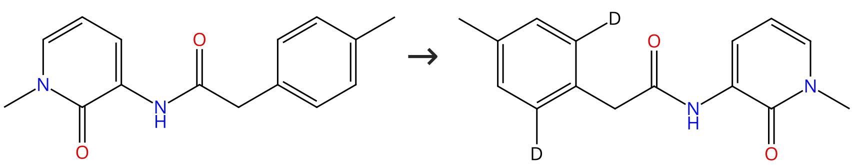
31-614-CAS-24211365	Steps: **1** Yield: **78%**
1.1	**Reagents:** Silver fluoride, Water-*d*$_2$ **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 8 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (2)

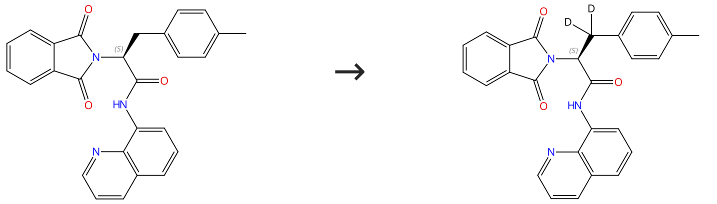
31-116-CAS-23998426	Steps: **1** Yield: **78%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 9 (1 Reaction) Steps: **1** Yield: **78%**



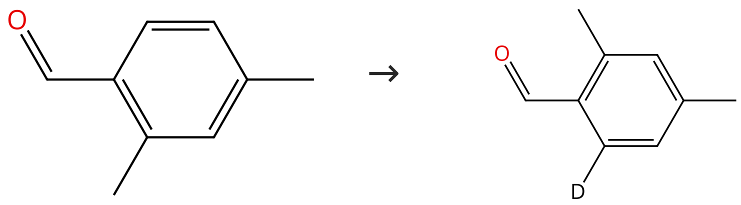
31-614-CAS-38572147	Steps: **1** Yield: **78%**
1.1	**Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 10 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (97)

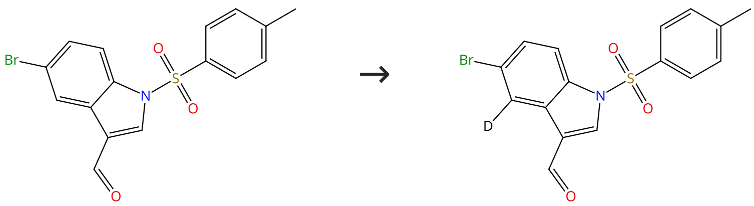
31-614-CAS-24154319	Steps: **1** Yield: **78%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 11 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (2)

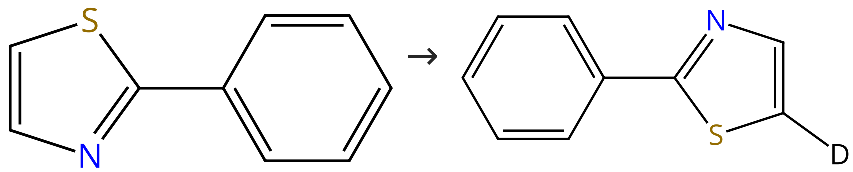
31-614-CAS-38370023	Steps: **1** Yield: **78%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** 1,2-Dichloroethane, Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 12 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (79) Supplier (1)

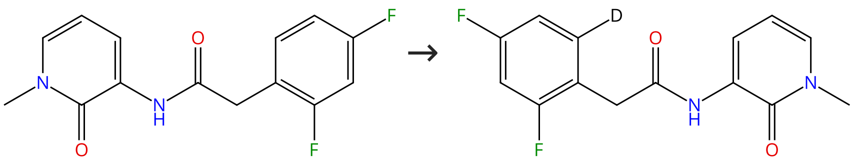
31-614-CAS-40744650	Steps: **1** Yield: **78%**
1.1	**Reagents:** Sodium acetate, Potassium carbonate, Silver triflate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Toluene; 12 h, 120 °C
Experimental Protocols	

Regiodivergent C-H alkynylation of 2-arylthiazoles switched by Ru^{II} and Pd^{II} catalysis

By: Zhou, Pengfei; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(52), 6679-6682.

Scheme 13 (1 Reaction) Steps: **1** Yield: **78%**



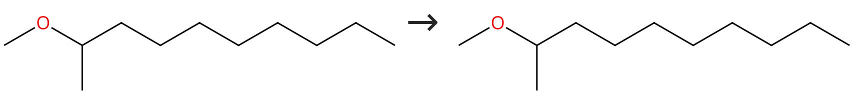
31-116-CAS-24000734	Steps: **1** Yield: **78%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 14 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (3) deuterated

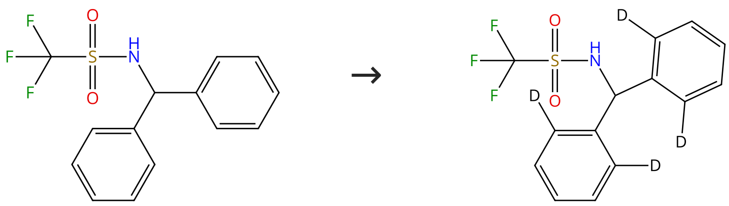
31-614-CAS-26515766	Steps: **1** Yield: **78%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 160 °C

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 15 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (3)

31-614-CAS-38030076	Steps: **1** Yield: **78%**
1.1	**Reagents:** Cupric acetate, Cesium carbonate **Catalysts:** Benzyloxycarbonyl-L-phenylalanine, Palladium diacetate **Solvents:** Toluene; 10 min, rt
1.2	**Reagents:** Water-*d*$_2$; 10 h, rt → 60 °C

Experimental Protocols

A palladium catalyzed asymmetric desymmetrization approach to enantioenriched 1,3-disubstituted isoindolines

By: Dethe, Dattatraya H.; et al

Chemical Science (2023), 14(40), 11267-11272.

Scheme 16 (1 Reaction) Steps: **1** Yield: **78%**

Suppliers (107)

31-614-CAS-24154329	Steps: **1** Yield: **78%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 17 (1 Reaction) Steps: **1** Yield: **78%**

Suppliers (69)

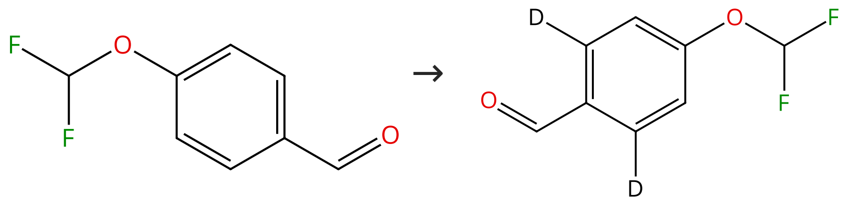
31-614-CAS-40655056	Steps: **1** Yield: **78%**
1.1	**Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 130 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 18 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (82)

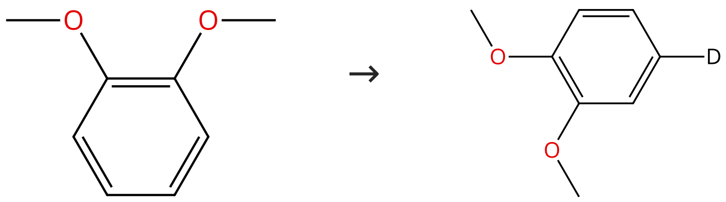
31-614-CAS-24154341	Steps: **1** Yield: **78%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 19 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (100)

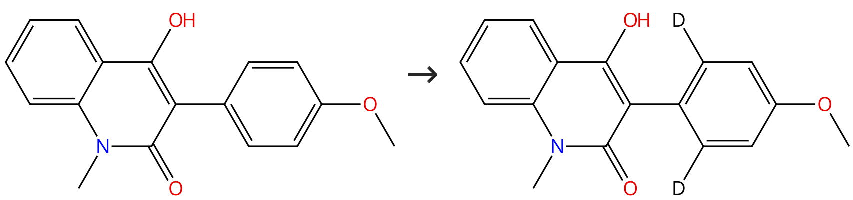
31-614-CAS-38970914	Steps: **1** Yield: **78%**
1.1	**Reagents:** Water-d_2 **Catalysts:** 2,6-Lutidine, Palladium diacetate **Solvents:** Acetic acid, 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 h, 100 °C
Experimental Protocols	

Palladium-Catalyzed Electrooxidative Double C-H Arylation

By: Lin, Zhipeng; et al

Journal of the American Chemical Society (2024), 146(1), 228-239.

Scheme 20 (1 Reaction) Steps: **1** Yield: **78%**



Supplier (1)

31-116-CAS-3973637	Steps: **1** Yield: **78%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Cupric acetate, (*SP*-4-1)-[1,3-Bis[2,6-bis(1-methylethyl)phenyl]-1,3-dihydro-2*H*-imidazol-2-ylidene]dichloro(3-chloropyridine-κ*N*)palladium
Solvents: Dimethylformamide; 120 min, 120 °C

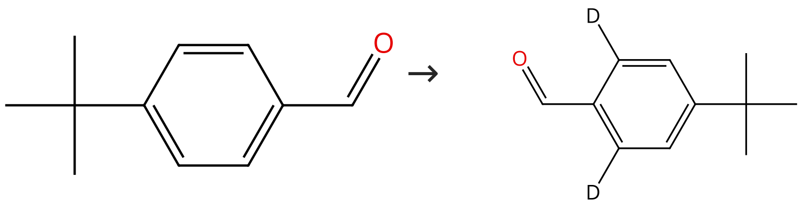
Experimental Protocols

Catalyst-Controlled Divergent C-H Functionalization of Unsymmetrical 2-Aryl Cyclic 1,3-Dicarbonyl Compounds with Alkynes and Alkenes

By: Dooley, Johnathon D.; et al

Journal of the American Chemical Society (2013), 135(29), 10829-10836.

Scheme 21 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (78)

31-614-CAS-24154318	Steps: **1** Yield: **78%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

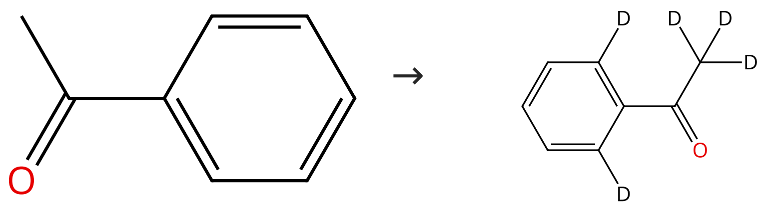
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 22 (1 Reaction) Steps: **1** Yield: **78%**



Suppliers (109)

31-614-CAS-24154363	Steps: **1** Yield: **78%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

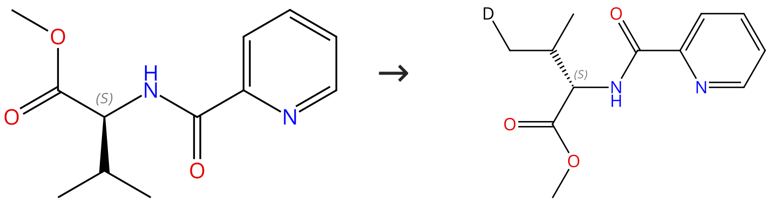
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 23 (1 Reaction)

Steps: **1** Yield: **77%**



Suppliers (3)

31-116-CAS-18776164

Steps: **1** Yield: **77%**

1.1 **Reagents:** Sodium carbonate, *N*-Phenylmaleimide, Water-d_2
Catalysts: Quinone, 1-Adamantanecarboxylic acid, Palladium diacetate
Solvents: 1,1,2-Trichloroethane; 24 h, 100 °C

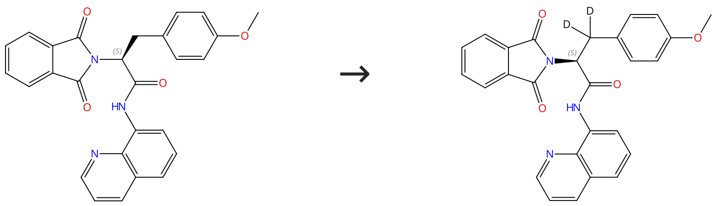
Site-selective δ-C(sp^3)-H alkylation of amino acids and peptides with maleimides via a six-membered palladacycle

By: Zhan, Bei-Bei; et al

Angewandte Chemie, International Edition (2018), 57(20), 5858-5862.

Scheme 24 (1 Reaction)

Steps: **1** Yield: **77%**



31-614-CAS-38572146

Steps: **1** Yield: **77%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

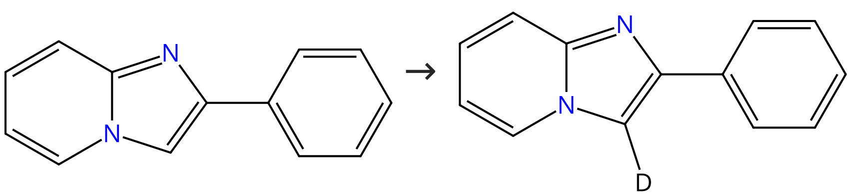
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 25 (2 Reactions)

Steps: **1** Yield: **34-77%**



Suppliers (83)

31-614-CAS-37556008

Steps: **1** Yield: **77%**

1.1 **Reagents:** Potassium carbonate, Copper diacetate monohydrate, Water-d_2
Catalysts: Palladium diacetate, X-Phos
Solvents: Dimethylacetamide; 24 h, 140 °C

Experimental Protocols

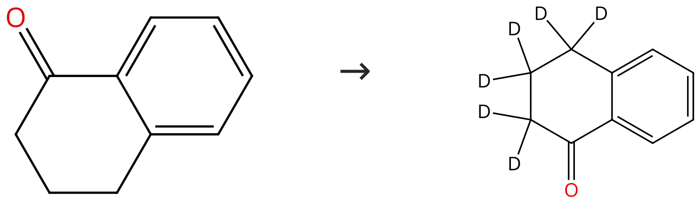
Catalyst-Controlled Regiodivergent Oxidative Annulation of 2-Arylimidazo[1,2-a]pyridines with Cinnamaldehyde Derivatives for Construction of Fused N-Heterocyclic Frameworks

By: Meena, Neha; et al

Journal of Organic Chemistry (2023), 88(18), 12902-12913.

31-614-CAS-35417370	Steps: **1** Yield: **34%**	**Palladium-Catalyzed Regioselective C3-Allylic Alkylation of 2-Aryl Imidazopyridines with MBH Carbonates**
1.1	**Reagents:** Sodium bicarbonate, Water-*d*$_2$ **Catalysts:** Bis(dibenzylideneacetone)palladium **Solvents:** Toluene; 24 h, 120 °C	By: Murugesan, Tamilarasu; et al
Experimental Protocols		Journal of Organic Chemistry (2023), 88(4), 2655-2665.

Scheme 26 (2 Reactions) Steps: **1** Yield: **53-77%**

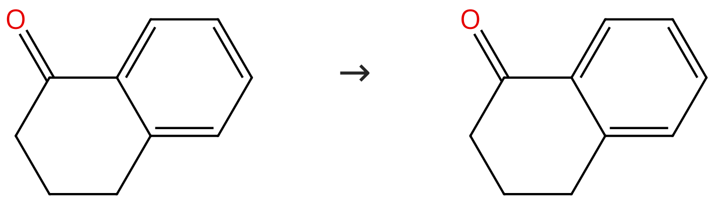


Suppliers (101)

31-116-CAS-2921080	Steps: **1** Yield: **77%**	**H/D-exchange reactions with hydride-activated catalysts**
1.1	**Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 18 h, 130 °C	By: Derdau, Volker; et al
		Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

31-614-CAS-39024377	Steps: **1** Yield: **53%**	**TfOH-catalyzed transfer hydrogenation reaction using 1-tetralone as a novel dihydrogen source**
1.1	**Reagents:** Water-*d*$_2$, Sodium borodeuteride **Catalysts:** Palladium; 18 h, rt → 130 °C	By: Bao, Yishu; et al
Experimental Protocols		Green Chemistry (2024), 26(3), 1356-1362.

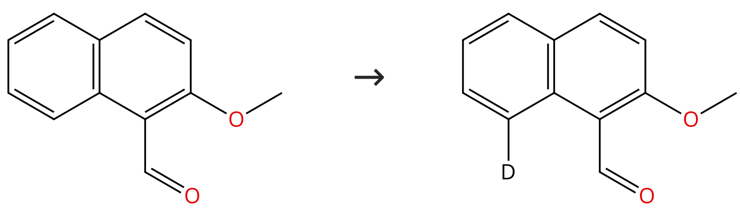
Scheme 27 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (101)

31-614-CAS-25502473	Steps: **1** Yield: **77%**	**C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 30 s, rt; 18 h, 130 °C	By: Derdau, Volker; et al
Experimental Protocols		Synlett (2006), (12), 1918-1922.

Scheme 28 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (85)

31-614-CAS-24154361	Steps: **1** Yield: **77%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d_2* **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

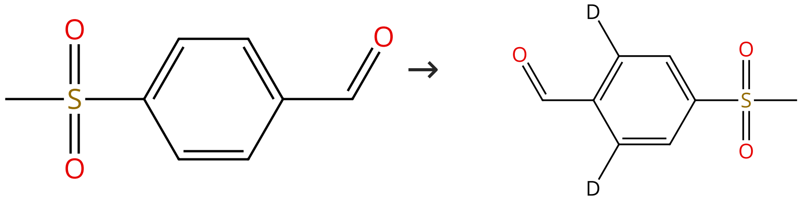
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 29 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (86)

31-614-CAS-24154337	Steps: **1** Yield: **77%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d_2* **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

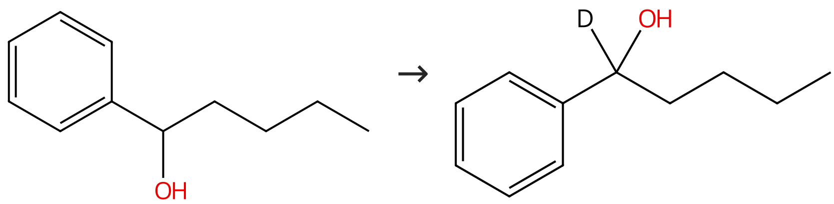
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 30 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (64)

Supplier (1)

31-116-CAS-7641125	Steps: **1** Yield: **77%**
1.1	**Reagents:** Hydrogen, Water-*d_2* **Catalysts:** Palladium **Solvents:** Water-*d_2*; 72 h, 50 °C

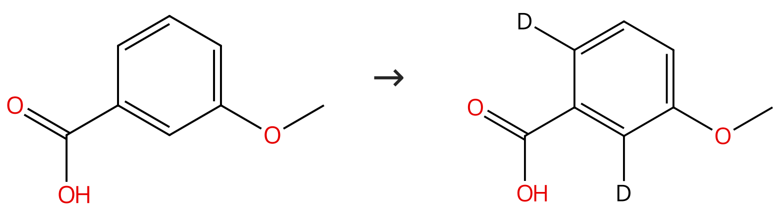
Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 31 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (96)

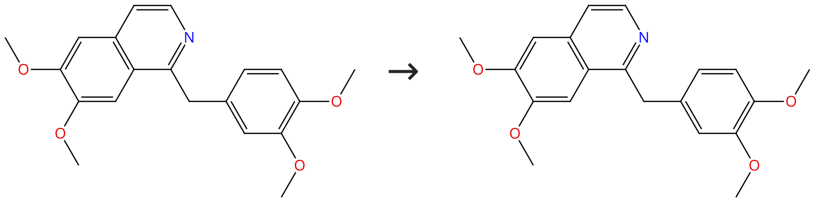
31-614-CAS-34527011	Steps: **1** Yield: **77%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 32 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (33)

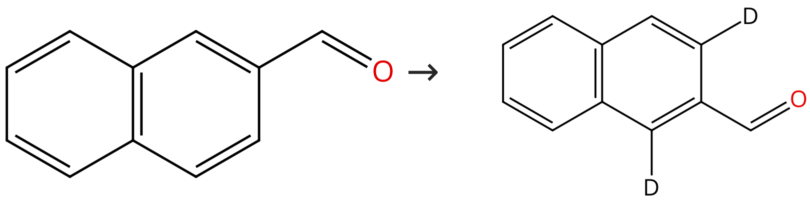
31-614-CAS-25808283	Steps: **1** Yield: **77%**
1.1	**Reagents:** Sodium borodeuteride **Catalysts:** Palladium, Platinum **Solvents:** Water-*d*$_2$; 2 h, 150 °C
Experimental Protocols	

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 33 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (92)

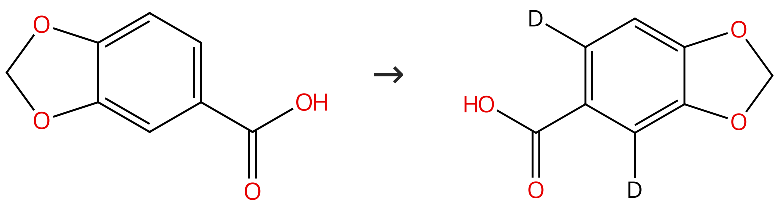
31-614-CAS-24154353	Steps: **1** Yield: **77%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 34 (1 Reaction) Steps: **1** Yield: **77%**



Suppliers (110)

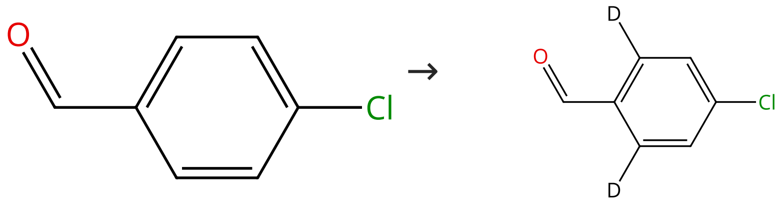
31-614-CAS-34527014	Steps: **1** Yield: **77%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 35 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (107)

31-614-CAS-24154335	Steps: **1** Yield: **76%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

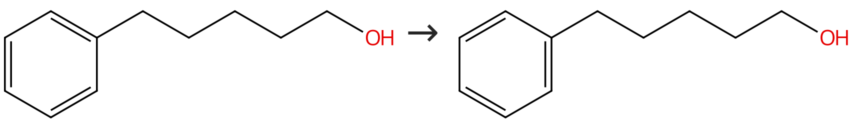
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 36 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (72)

31-614-CAS-27558415	Steps: **1** Yield: **76%**
1.1	**Reagents:** Hydrogen, Water-*d*2 **Catalysts:** Palladium; 24 h, 160 °C

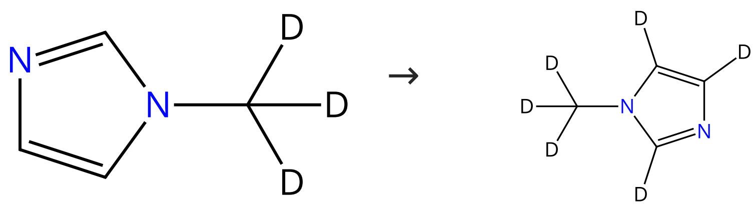
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 37 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (34)

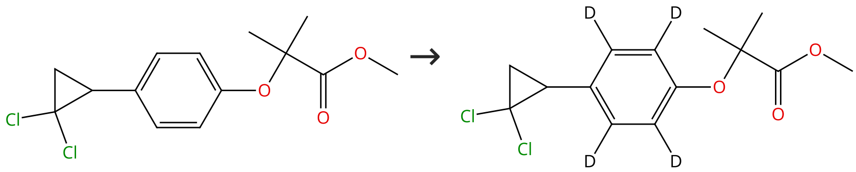
31-614-CAS-25947131	Steps: **1** Yield: **76%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; rt → 160 °C; 24 h, 160 °C; cooled	

Characterization of nonderivatized plant cell walls using high-resolution solution-state NMR spectroscopy

By: Yelle, Daniel J.; et al

Magnetic Resonance in Chemistry (2008), 46(6), 508-517.

Scheme 38 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (30)

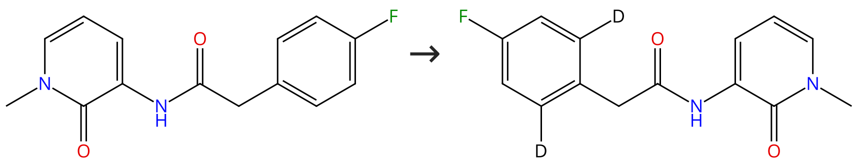
31-614-CAS-24211335	Steps: **1** Yield: **76%**
1.1 **Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C	
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 39 (1 Reaction) Steps: **1** Yield: **76%**



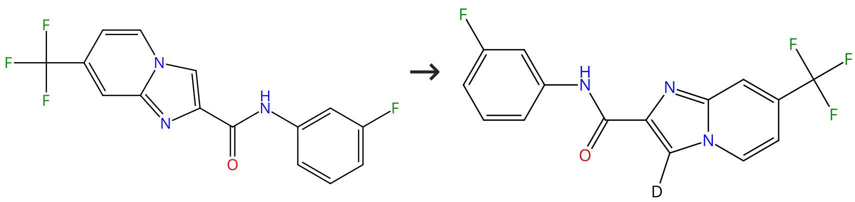
31-116-CAS-23999977	Steps: **1** Yield: **76%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C	
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 40 (2 Reactions) Steps: **1** Yield: **72-76%**



31-614-CAS-38336473	Steps: **1** Yield: **76%**
1.1 **Reagents:** Cupric acetate, Water-d_2 **Catalysts:** Acetylglycine, Palladium diacetate **Solvents:** 1,2-Dichloroethane; 14 h, 100 °C	
Experimental Protocols	

Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes

By: Mohite, Sachin Balaso; et al

Chemistry - A European Journal (2023), 29(70), e202302759.

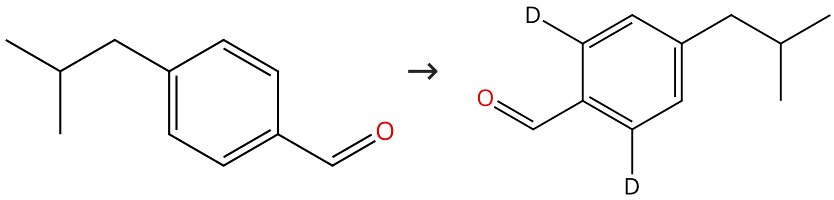
31-614-CAS-39746348	Steps: **1** Yield: **72%**
1.1 **Reagents:** Methanol-*d*, Oxygen, Water-d_2 **Catalysts:** Palladium diacetate; 14 h, 1 atm, 100 °C	
Experimental Protocols	

Palladium-Catalyzed C-H Olefination of Imidazo[1,2a] pyridine Carboxamide in Aqueous Ethanol under Oxygen

By: Balaso Mohite, Sachin; et al

Chemistry - A European Journal (2024), 30(23), e202304239.

Scheme 41 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (72)

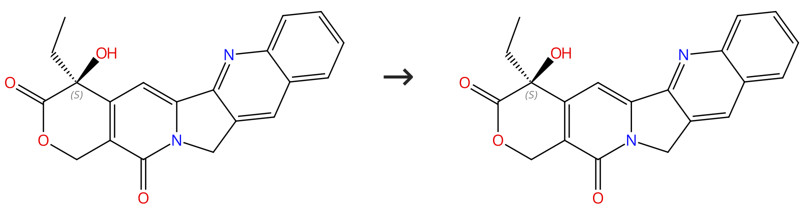
31-614-CAS-24154312	Steps: **1** Yield: **76%**
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C	
1.2 **Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt	
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 42 (1 Reaction) Steps: **1** Yield: **76%**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

Suppliers (141)

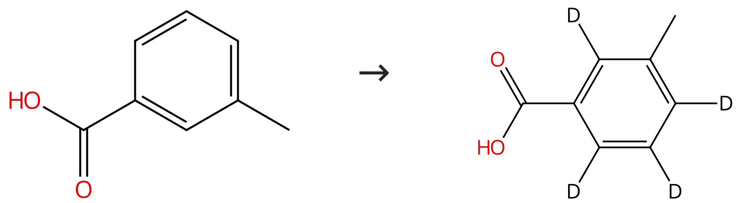
31-614-CAS-41719945	Steps: **1** Yield: **76%**
1.1 **Reagents:** Sodium carbonate, Water-d_2 **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C	
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 43 (1 Reaction) Steps: **1** Yield: **76%**



Suppliers (92)

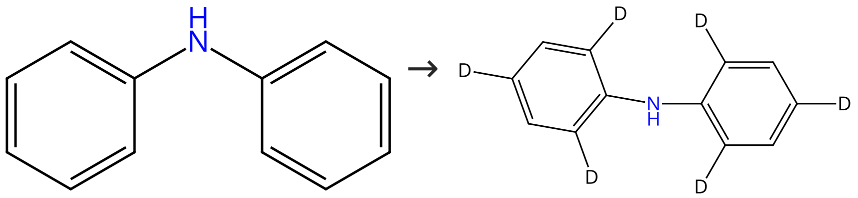
31-614-CAS-24211338	Steps: **1** Yield: **76%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 44 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (114) Suppliers (21)

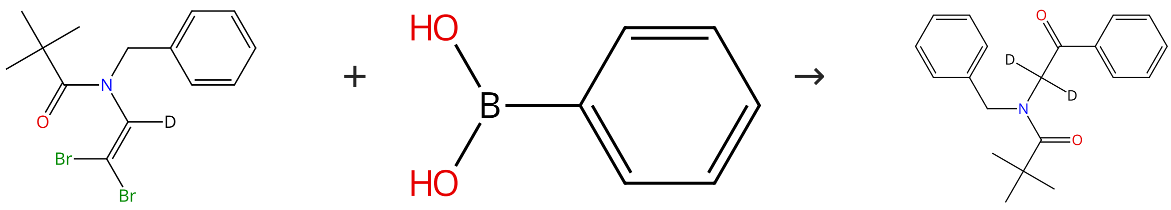
31-116-CAS-14481538	Steps: **1** Yield: **75%**
1.1	**Reagents:** Oxygen **Catalysts:** 1,10-Phenanthroline, Palladium diacetate **Solvents:** Acetic acid, Water-d_2; 24 h, 130 °C
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; neutralized
Experimental Protocols	

Palladium-Catalyzed Annulation of Diarylamines with Olefins through C-H Activation: Direct Access to N-Arylindoles

By: Sharma, Upendra; et al

Angewandte Chemie, International Edition (2014), 53(44), 11895-11899.

Scheme 45 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (143) Supplier (1)

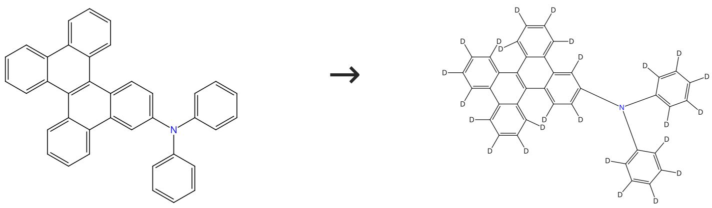
31-179-CAS-7682828	Steps: **1** Yield: **75%**
1.1	**Reagents:** Potassium carbonate **Catalysts:** Palladium chloride, 2-Dicyclohexylphosphino-2',6'-dimethoxybiphenyl **Solvents:** 1,4-Dioxane, Water-d_2; 14 h, 100 °C
Experimental Protocols	

Synthesis of 2-Oxazolones and α-Aminoketones via Palladium-Catalyzed Reaction of β,β-Dibromoenamides

By: Chai, David I.; et al

Organic Letters (2011), 13(1), 106-109.

Scheme 46 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (40)

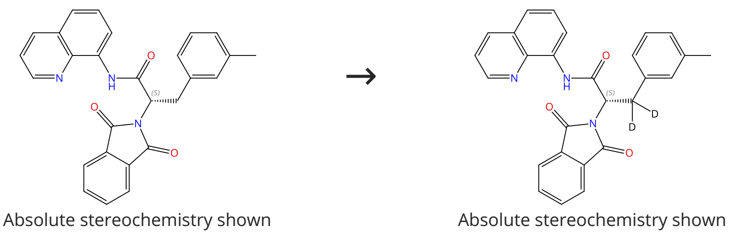
31-116-CAS-15238524	Steps: **1** Yield: **75%**
1.1 **Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 4 - 5 M Pa, 240 °C	
Experimental Protocols	

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 47 (1 Reaction) Steps: **1** Yield: **75%**



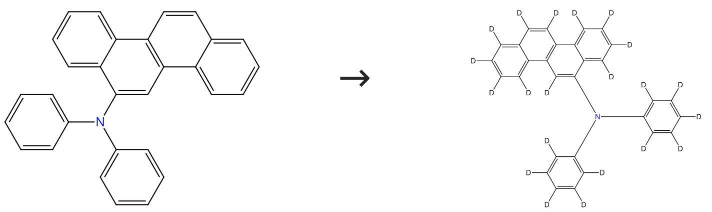
31-614-CAS-38572153	Steps: **1** Yield: **75%**
1.1 **Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C	
1.2 **Reagents:** Ammonium chloride **Solvents:** Water	
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 48 (1 Reaction) Steps: **1** Yield: **75%**



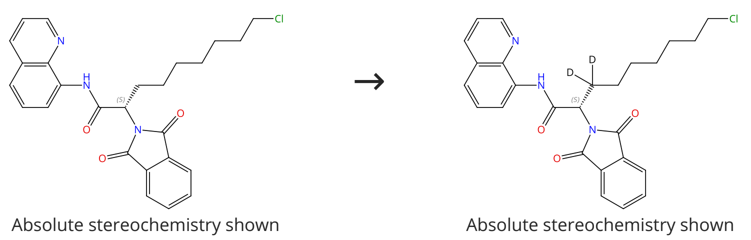
31-116-CAS-13108533	Steps: **1** Yield: **75%**
1.1 **Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 4 - 5 M Pa, 240 °C	
Experimental Protocols	

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 49 (1 Reaction) Steps: **1** Yield: **75%**



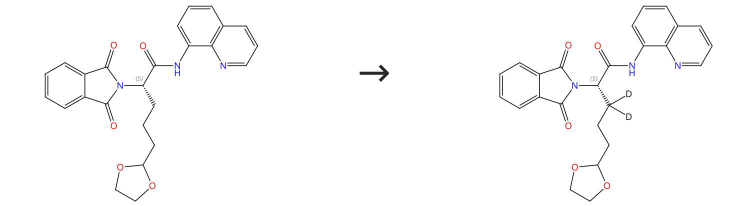
31-614-CAS-38572141	Steps: **1** Yield: **75%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C	
1.2 **Reagents:** Ammonium chloride **Solvents:** Water	
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 50 (1 Reaction) Steps: **1** Yield: **75%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-38572144 Steps: **1** Yield: **75%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

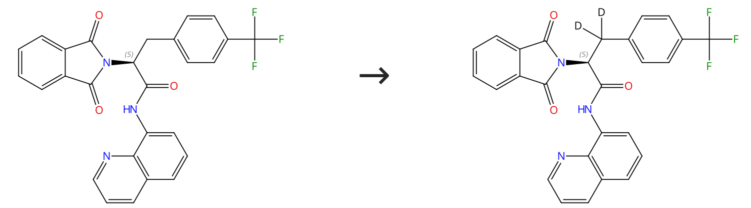
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 51 (1 Reaction) Steps: **1** Yield: **75%**



Absolute stereochemistry shown

Absolute stereochemistry shown

Supplier (1)

31-614-CAS-38572148 Steps: **1** Yield: **75%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

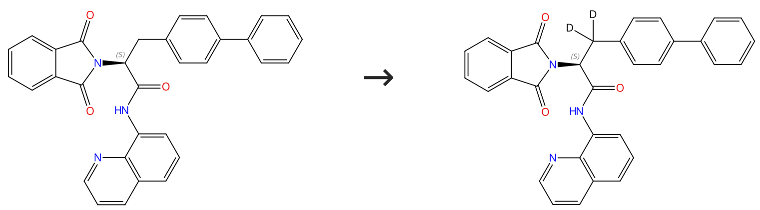
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 52 (1 Reaction) Steps: **1** Yield: **75%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-38572149 Steps: **1** Yield: **75%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

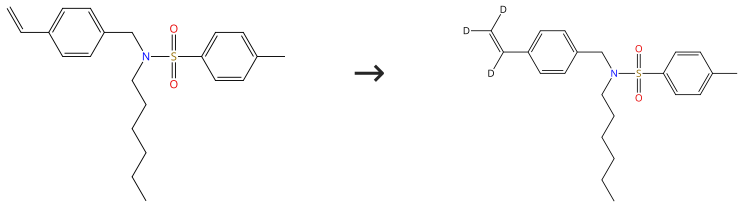
Experimental Protocols

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 53 (1 Reaction) Steps: **1** Yield: **75%**



31-116-CAS-22371275 Steps: **1** Yield: **75%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

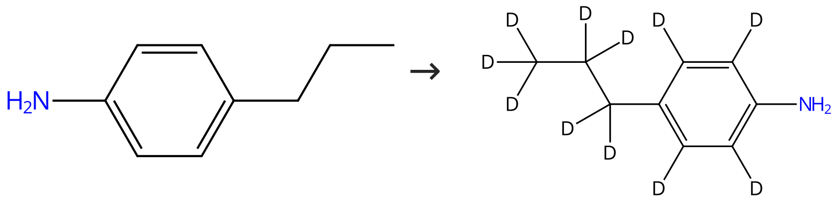
Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 54 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (62)

31-116-CAS-5312813 Steps: **1** Yield: **75%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

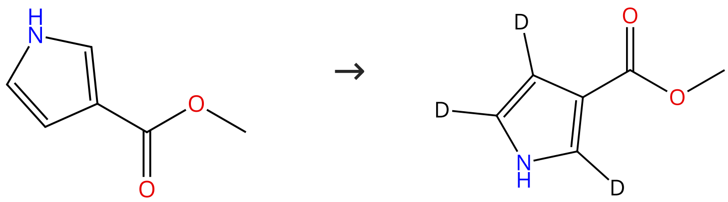
Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 55 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (71)

31-614-CAS-40655061 Steps: **1** Yield: **75%**

1.1 **Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methyl ethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 60 °C

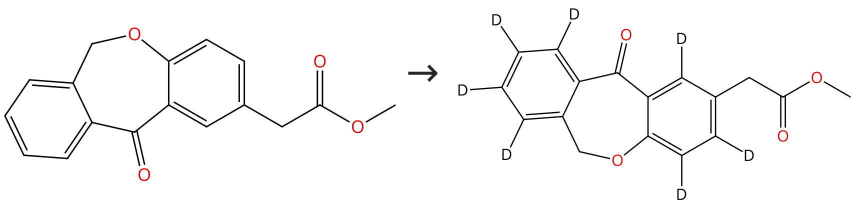
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 56 (1 Reaction) Steps: **1** Yield: **75%**



Suppliers (30)

31-614-CAS-24211364 Steps: **1** Yield: **75%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

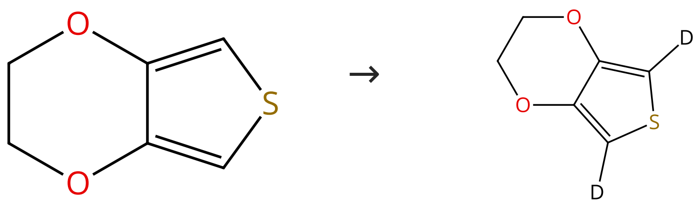
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 57 (1 Reaction) Steps: **1** Yield: **74%**



Suppliers (102)

31-614-CAS-40655053 Steps: **1** Yield: **74%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

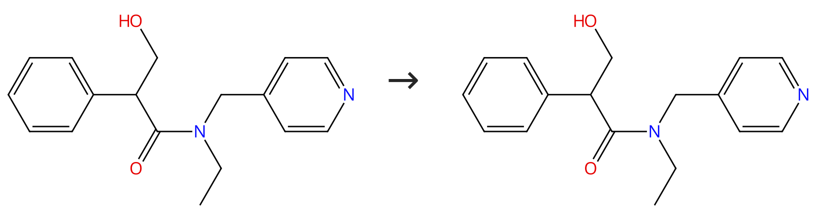
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 58 (1 Reaction) Steps: **1** Yield: **74%**



Suppliers (85)

31-614-CAS-41719951 Steps: **1** Yield: **74%**

1.1 **Reagents:** Sodium carbonate, Water-d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

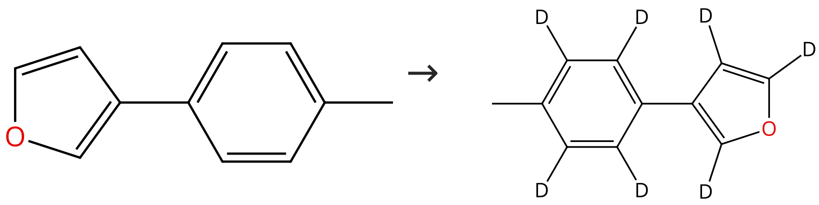
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 59 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (12)

31-614-CAS-40655040

Steps: **1** Yield: **74%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

Experimental Protocols

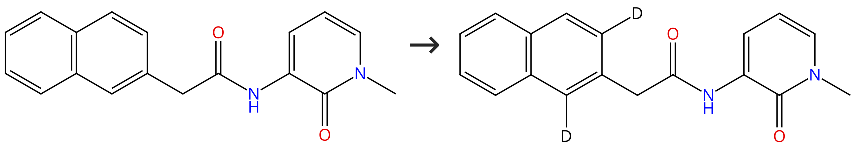
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 60 (1 Reaction)

Steps: **1** Yield: **74%**



31-116-CAS-24000031

Steps: **1** Yield: **74%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

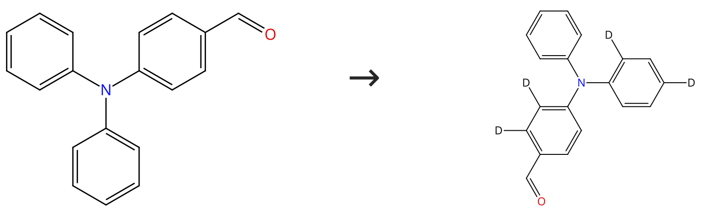
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 61 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (92)

31-614-CAS-24154346

Steps: **1** Yield: **74%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

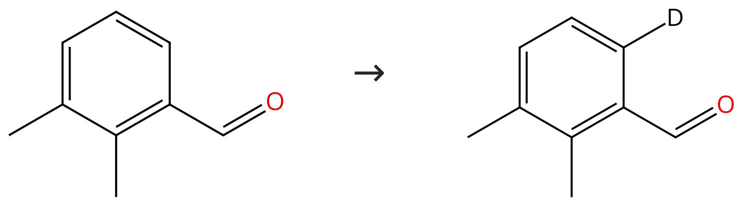
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 62 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (82)

31-614-CAS-24154314

Steps: **1** Yield: **74%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

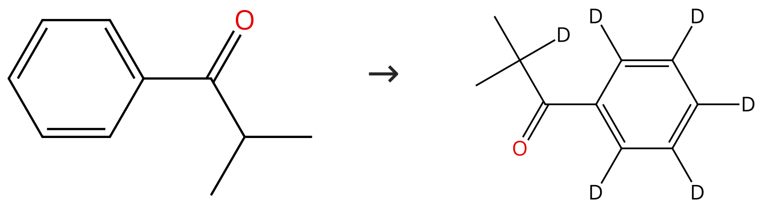
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 63 (1 Reaction)

Steps: **1** Yield: **74%**



Suppliers (66)

31-614-CAS-24211316

Steps: **1** Yield: **74%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

Experimental Protocols

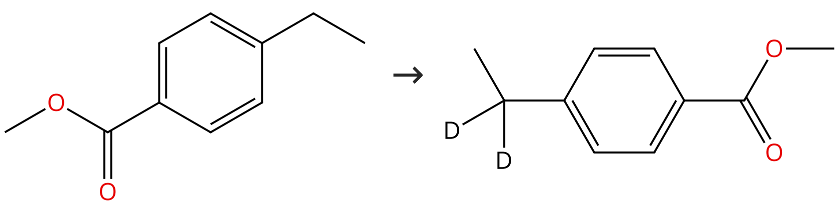
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 64 (2 Reactions)

Steps: **1** Yield: **74%**



Suppliers (58)

31-116-CAS-8621016

Steps: **1** Yield: **74%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 72 h, rt

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

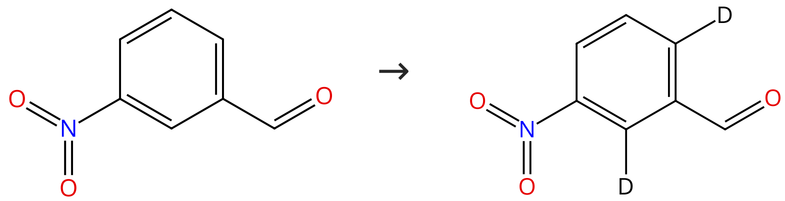
31-116-CAS-9593211	Steps: **1** Yield: **74%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium **Solvents:** Water-*d*$_2$
Experimental Protocols	

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 65 (1 Reaction) Steps: **1** Yield: **74%**



Suppliers (100)

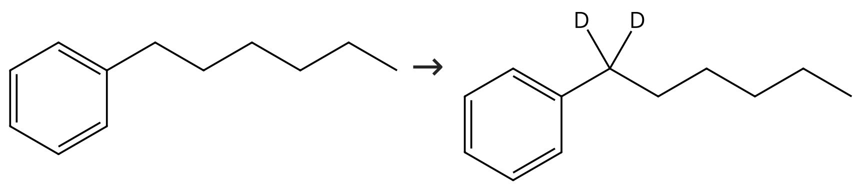
31-614-CAS-24154356	Steps: **1** Yield: **74%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 66 (2 Reactions) Steps: **1** Yield: **73%**



Suppliers (75) Supplier (1)

31-116-CAS-10479133	Steps: **1** Yield: **73%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 72 h, rt
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

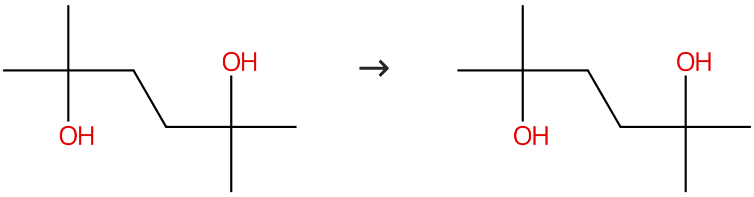
31-116-CAS-10533875	Steps: **1** Yield: **73%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium **Solvents:** Water-*d*$_2$
Experimental Protocols	

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 67 (1 Reaction) Steps: **1** Yield: **73%**



Suppliers (84)

deuterated

31-614-CAS-28115398 Steps: **1** Yield: **73%**

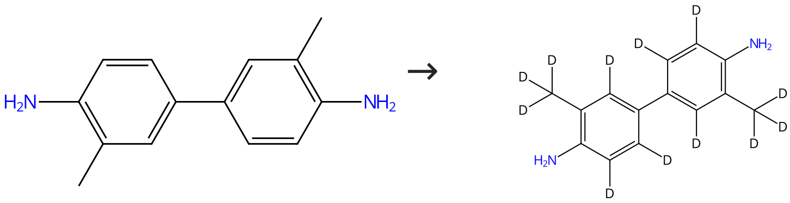
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Condit ions: Application to H-D Exchange Reaction and the Mechan istic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 68 (2 Reactions) Steps: **1** Yield: **62-73%**



Suppliers (76)

31-116-CAS-12536028 Steps: **1** Yield: **73%**

1.1 **Catalysts:** Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-10843695 Steps: **1** Yield: **62%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 69 (1 Reaction) Steps: **1** Yield: **73%**

Absolute stereochemistry shown

Absolute stereochemistry shown

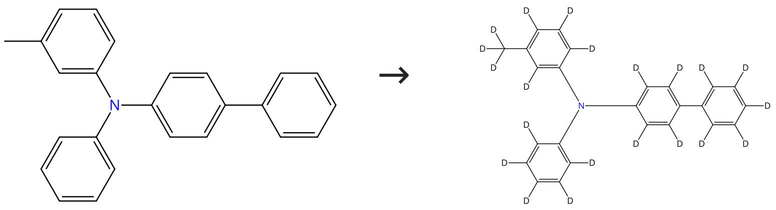
31-614-CAS-38572150	Steps: **1** Yield: **73%**
1.1	**Reagents:** Pivalic acid, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,2-Dichloroethane; 12 h, 100 °C
1.2	**Reagents:** Ammonium chloride **Solvents:** Water
Experimental Protocols	

Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 70 (1 Reaction) Steps: **1** Yield: **73%**



Suppliers (2)

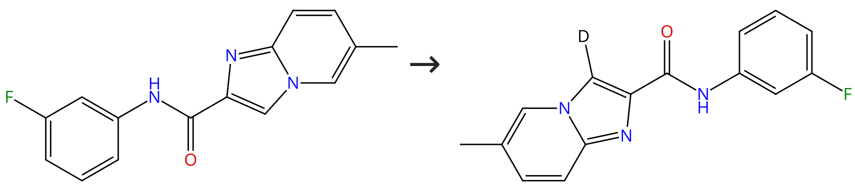
31-116-CAS-12790245	Steps: **1** Yield: **73%**
1.1	**Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 4 - 5 M Pa, 240 °C
Experimental Protocols	

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 71 (2 Reactions) Steps: **1** Yield: **64-73%**



Supplier (1)

31-614-CAS-39746341	Steps: **1** Yield: **73%**
1.1	**Reagents:** Methanol-*d*, Oxygen, Water-d_2 **Catalysts:** Palladium diacetate; 14 h, 1 atm, 100 °C
Experimental Protocols	

Palladium-Catalyzed C-H Olefination of Imidazo[1,2a] pyridine Carboxamide in Aqueous Ethanol under Oxygen

By: Balaso Mohite, Sachin; et al

Chemistry - A European Journal (2024), 30(23), e202304239.

31-614-CAS-38336465	Steps: **1** Yield: **64%**
1.1	**Reagents:** Cupric acetate, Water-d_2 **Catalysts:** Acetylglycine, Palladium diacetate **Solvents:** 1,2-Dichloroethane; 14 h, 100 °C
Experimental Protocols	

Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes

By: Mohite, Sachin Balaso; et al

Chemistry - A European Journal (2023), 29(70), e202302759.

Scheme 72 (3 Reactions) Steps: **1** Yield: **73%**

Suppliers (98)

31-614-CAS-25222124	Steps: 1 Yield: 73%
1.1	**Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

31-614-CAS-27122517	Steps: 1 Yield: 73%
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 30 s, rt; 18 h, 130 °C

Experimental Protocols

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

31-614-CAS-33456312	Steps: 1
1.1	**Reagents:** Water-d_2, Sodium borodeuteride **Catalysts:** Palladium; 18 h, 130 °C

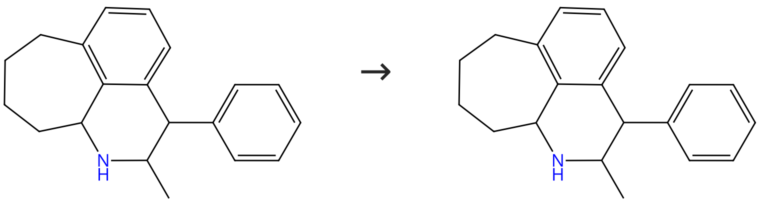
Experimental Protocols

Nitrogen-Doped Carbon Supported Nanocobalt Catalyst for Hydrogen-Transfer Dearomative Coupling of Quinolinium Salts and Tetrahydroquinolines

By: Xu, Shengting; et al

Organic Letters (2022), 24(28), 5209-5213.

Scheme 73 (1 Reaction) Steps: **1** Yield: **73%**



31-614-CAS-26100112	Steps: 1 Yield: 73%
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 30 s, rt; 18 h, 130 °C

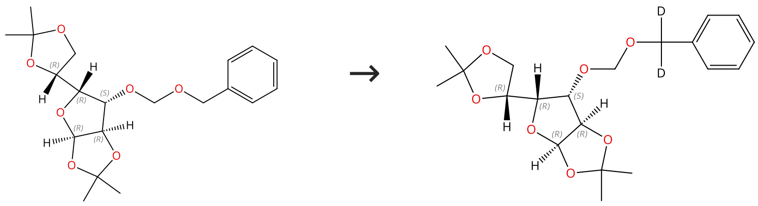
Experimental Protocols

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 74 (1 Reaction) Steps: **1** Yield: **73%**



Absolute stereochemistry shown Absolute stereochemistry shown

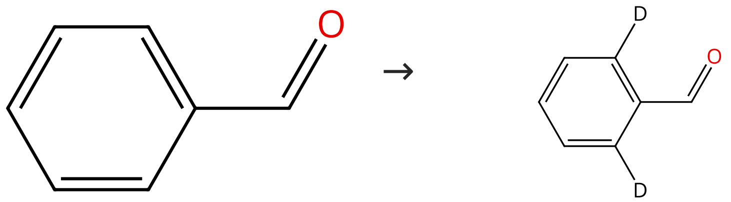
31-116-CAS-5497261	Steps: **1** Yield: **73%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Tetrahydrofuran, Water-d_2; 72 h, 50 °C
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 75 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (80)

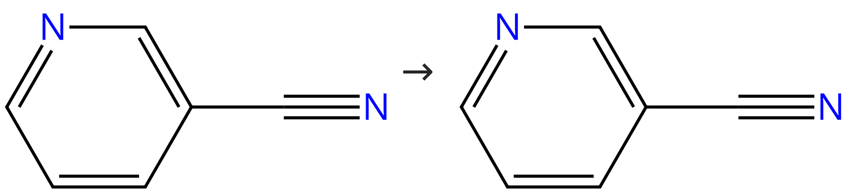
31-614-CAS-24154316	Steps: **1** Yield: **72%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 96 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 76 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (97) Suppliers (5)

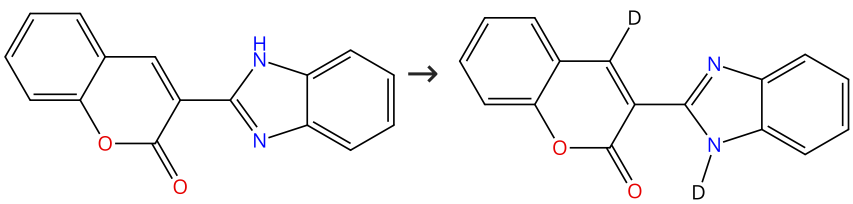
31-614-CAS-41719933	Steps: **1** Yield: **72%**
1.1	**Reagents:** Sodium carbonate, Water-d_2 **Catalysts:** Palladium trifluoroacetate, Bis(3,5-dimethylphenyl) phosphine oxide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C
Experimental Protocols	

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 77 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (31)

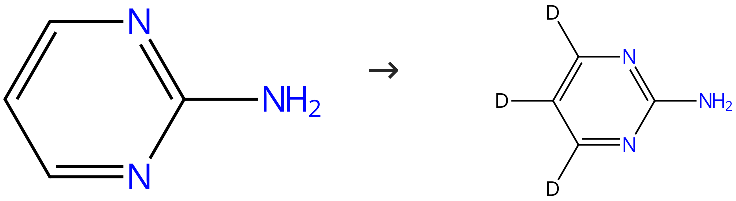
31-614-CAS-37452124	Steps: **1** Yield: **72%**
1.1	**Reagents:** Potassium carbonate, Copper oxide (Cu O), Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** Dimethylformamide; 12 h, 120 °C
1.2	**Reagents:** Ethyl acetate
Experimental Protocols	

Pd(II)-Catalyzed Benzimidazole-Assisted Annulation of 3-(1H-Benzo[d]imidazol-2-yl)-2H-chromen-2-one: Access to Imidazo [1,2-a]chromeno[3,4-c]pyridine

By: Singla, Dinesh; et al

European Journal of Organic Chemistry (2023), 26(34), e202300531.

Scheme 78 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (106) Suppliers (6)

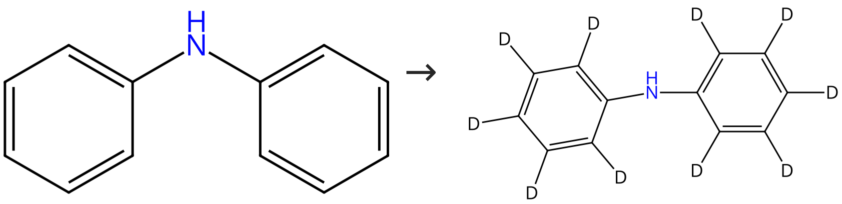
31-116-CAS-4796575	Steps: **1** Yield: **72%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$
Experimental Protocols	

Infrared Vibrational Spectroscopy of $[Ru(bpy)_2(bpm)]^{2+}$ and $[Ru(bpy)_3]^{2+}$ in the Excited Triplet State

By: Mukuta, Tatsuhiko; et al

Inorganic Chemistry (2014), 53(5), 2481-2490.

Scheme 79 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (114) Suppliers (35)

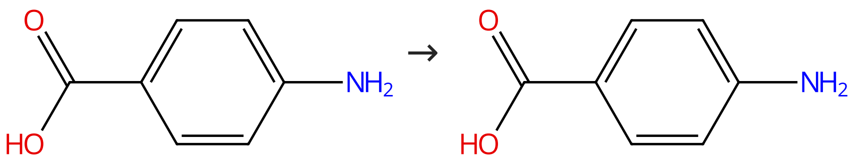
31-116-CAS-16726368	Steps: **1** Yield: **72%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium, Platinum; 4 h, 80 °C

Mild conditions for deuteration of primary and secondary arylamines for the synthesis of deuterated optoelectronic organic molecules

By: Krause-Heuer, Anwen M.; et al

Molecules (2014), 19(11), 18604-18617, 14 pp..

Scheme 80 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (137)

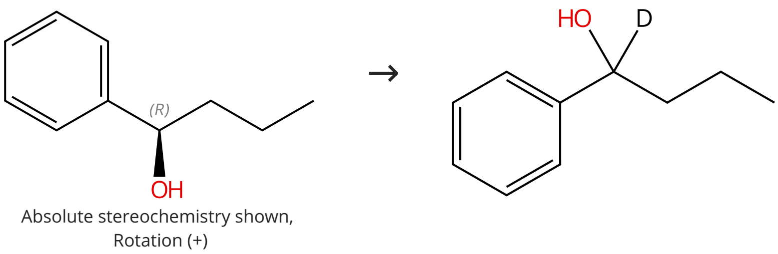
31-614-CAS-30194185	Steps: **1** Yield: **72%**
1.1	**Reagents:** Sodium borodeuteride **Catalysts:** Palladium **Solvents:** Water-d_2; 2 h, 150 °C
Experimental Protocols	

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 81 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (48)

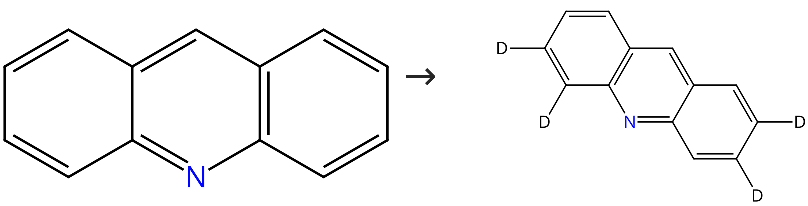
31-116-CAS-14308078	Steps: **1** Yield: **72%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 30 s, rt; 18 h, 130 °C
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 82 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (82)

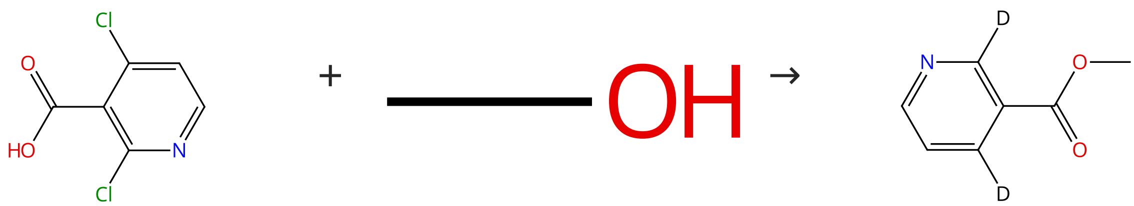
31-116-CAS-6721493	Steps: **1** Yield: **72%**
1.1	**Reagents:** Sodium borodeuteride **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 1 h, rt; 21 h, 155 °C
Experimental Protocols	

Solvent and Isotopic Effects on Acridine and Deuterated Acridine Polymorphism

By: Kupka, A.; et al

Crystal Growth & Design (2012), 12(12), 5966-5971.

Scheme 83 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (82) Suppliers (471)

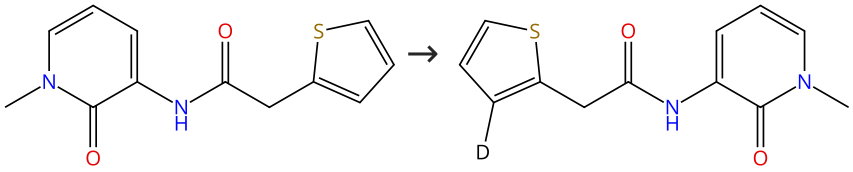
31-113-CAS-18583904	Steps: **1** Yield: **72%**
1.1	**Reagents:** Potassium carbonate, Deuterium **Catalysts:** Palladium **Solvents:** Tetrahydrofuran, Water-d_2; 16 h, 8 bar, rt
1.2	**Reagents:** Dimethylformamide, Oxalyl chloride **Solvents:** Dichloromethane; 1 h, rt
1.3	**Reagents:** Triethylamine **Solvents:** Dichloromethane; 10 min, rt
Experimental Protocols	

Delivering strong 1H nuclear hyperpolarization levels and long magnetic lifetimes through signal amplification by reversible exchange

By: Rayner, Peter J.; et al

Proceedings of the National Academy of Sciences of the United States of America (2017), 114(16), E3188-E3194.

Scheme 84 (1 Reaction) Steps: **1** Yield: **72%**



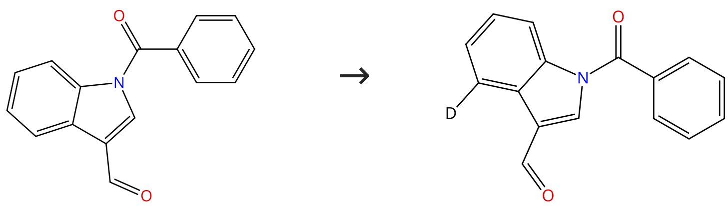
31-116-CAS-24001118	Steps: **1** Yield: **72%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C
Experimental Protocols	

The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 85 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (42)

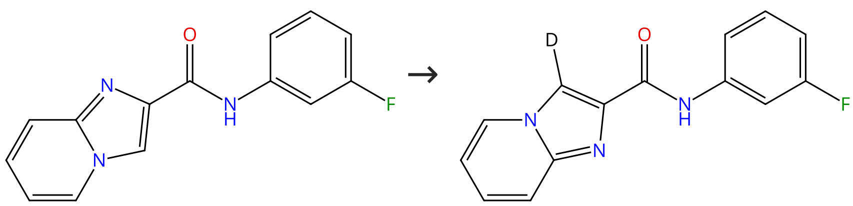
31-614-CAS-38370041	Steps: **1** Yield: **72%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 86 (2 Reactions) Steps: **1** Yield: **70-72%**

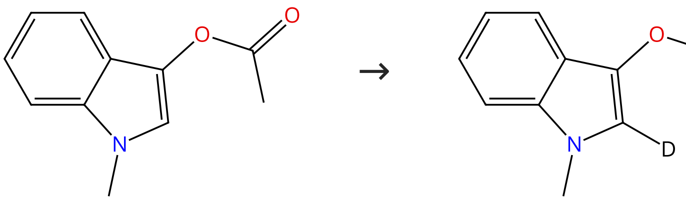


Supplier (1)

31-614-CAS-38336474	Steps: **1** Yield: **72%**	Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes
1.1	**Reagents:** Cupric acetate, Water-d_2 **Catalysts:** Acetylglycine, Palladium diacetate **Solvents:** 1,2-Dichloroethane; 14 h, 100 °C	By: Mohite, Sachin Balaso; et al Chemistry - A European Journal (2023), 29(70), e202302759.
Experimental Protocols		

31-614-CAS-39746346	Steps: **1** Yield: **70%**	Palladium-Catalyzed C-H Olefination of Imidazo[1,2a] pyridine Carboxamide in Aqueous Ethanol under Oxygen
1.1	**Reagents:** Methanol-*d*, Oxygen, Water-d_2 **Catalysts:** Palladium diacetate; 14 h, 1 atm, 100 °C	By: Balaso Mohite, Sachin; et al Chemistry - A European Journal (2024), 30(23), e202304239.
Experimental Protocols		

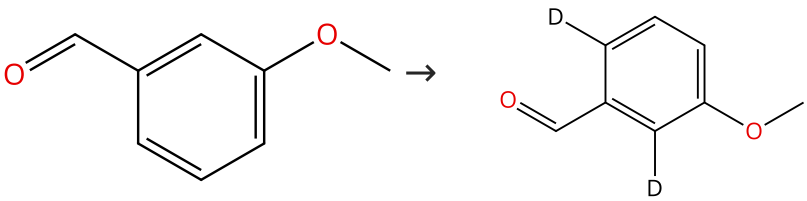
Scheme 87 (1 Reaction) Steps: **1** Yield: **72%**



Suppliers (43)

31-614-CAS-37949182	Steps: **1** Yield: **72%**	Acetoxy Group-Directed Regioselective C2 Alkenylation of Indoles via Pd-Ag Bimetallic Catalysis
1.1	**Reagents:** Cupric acetate, Water-d_2 **Catalysts:** Silver carbonate, Palladium diacetate **Solvents:** Acetonitrile; 4 h, 100 °C	By: Paul, Aditya; et al Journal of Organic Chemistry (2023), 88(20), 14423-14434.
1.2	**Reagents:** Ethyl acetate	
Experimental Protocols		

Scheme 88 (1 Reaction) Steps: **1** Yield: **72%**

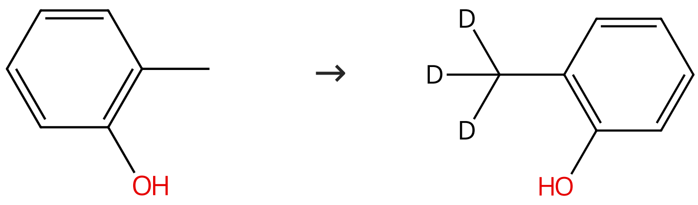


Suppliers (94)

31-614-CAS-24154348	Steps: **1** Yield: **72%**	Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C	By: Kong, Junhua; et al Journal of Organic Chemistry (2021), 86(19), 13350-13359.
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt	
Experimental Protocols		

Scheme 89 (1 Reaction)

Steps: **1** Yield: **72%**



Suppliers (85)

Suppliers (36)

31-116-CAS-20148821

Steps: **1** Yield: **72%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 96 h, 50 °C

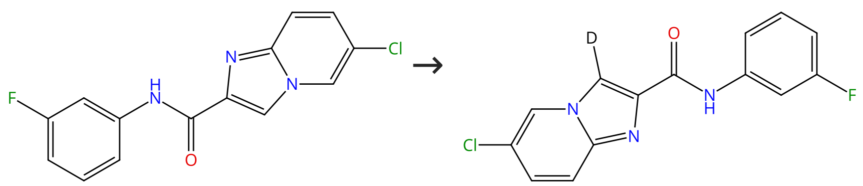
Gold(I)-Catalyzed Cascade Cyclization Reactions of Allenynes for the Synthesis of Fused Cyclopropanes and Acenaphthenes

By: Ikeuchi, Takaya; et al

Angewandte Chemie, International Edition (2019), 58(23), 7792-7796.

Scheme 90 (1 Reaction)

Steps: **1** Yield: **71%**



Suppliers (2)

31-614-CAS-39746344

Steps: **1** Yield: **71%**

1.1 **Reagents:** Methanol-*d*, Oxygen, Water-d_2
Catalysts: Palladium diacetate; 14 h, 1 atm, 100 °C

Experimental Protocols

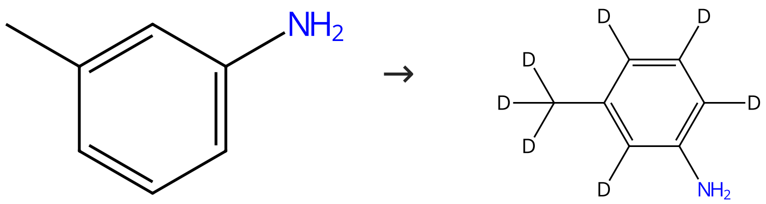
Palladium-Catalyzed C-H Olefination of Imidazo[1,2a] pyridine Carboxamide in Aqueous Ethanol under Oxygen

By: Balaso Mohite, Sachin; et al

Chemistry - A European Journal (2024), 30(23), e202304239.

Scheme 91 (2 Reactions)

Steps: **1** Yield: **59-71%**



Suppliers (79)

Suppliers (19)

31-116-CAS-3424909

Steps: **1** Yield: **71%**

1.1 **Catalysts:** Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-465348 Steps: **1** Yield: **59%**

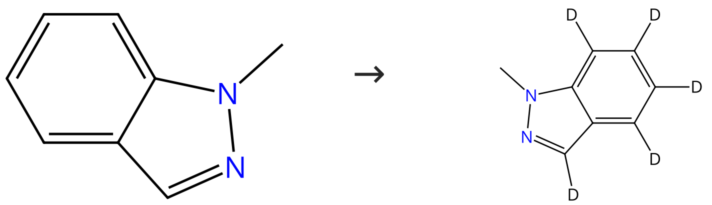
1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium, Platinum
Solvents: Water-*d*$_2$; 32 h, 180 °C

Coherent dynamics of meta-toluidine investigated by quasielastic neutron scattering

By: Faraone, Antonio; et al

Journal of Chemical Physics (2012), 136(10), 104502/1-104502/12.

Scheme 92 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (67)

31-614-CAS-40655051 Steps: **1** Yield: **71%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 130 °C

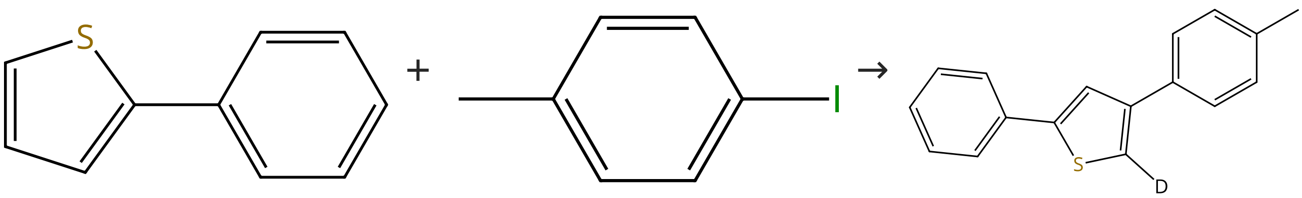
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 93 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (86)

31-614-CAS-38143673 Steps: **1** Yield: **71%**

1.1 **Reagents:** Undecanoic acid, Silver acetate, Poly(oxy-1,2-ethanediyl), α-[[(2*S*)-1-(1-oxododecyl)-2-pyrrolidinyl]carbonyl]-ω-methoxy-
Catalysts: Palladium diacetate
Solvents: Water-*d*$_2$; 16 h, rt

Experimental Protocols

Micellar catalysis: a green solution to enable undirected and mild C-H activation of (oligo)thiophenes at the challenging β-position

By: Hauk, Pascal; et al

Chemical Science (2023), 14(43), 12049-12055.

Scheme 94 (1 Reaction) Steps: **1** Yield: **71%**

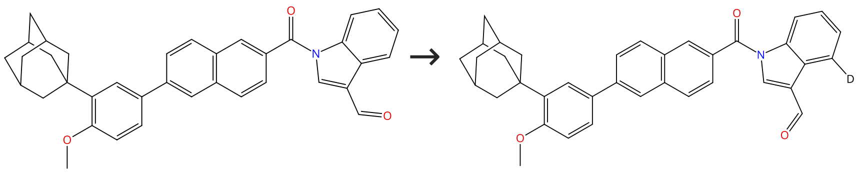
31-116-CAS-24368153	Steps: **1** Yield: **71%**
1.1	**Catalysts:** Palladium **Solvents:** Water-d_2; 16 h, rt → 180 °C; 16 h, 180 °C
Experimental Protocols	

Synthesis of $^{13}C/^{19}F/^{2}H$ labeled indoles for use as tryptophan precursors for protein NMR spectroscopy

By: Maleckis, Ansis; et al

Organic & Biomolecular Chemistry (2021), 19(23), 5133-5147.

Scheme 95 (1 Reaction) Steps: **1** Yield: **71%**



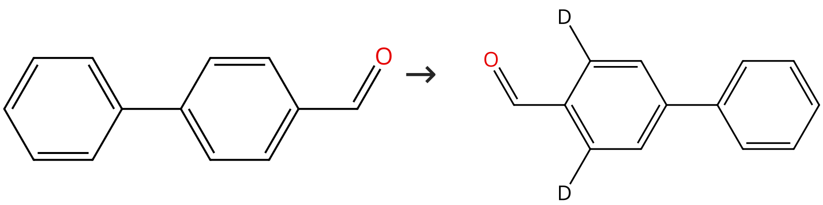
31-614-CAS-38370040	Steps: **1** Yield: **71%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** 1,2-Dichloroethane, Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 96 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (111)

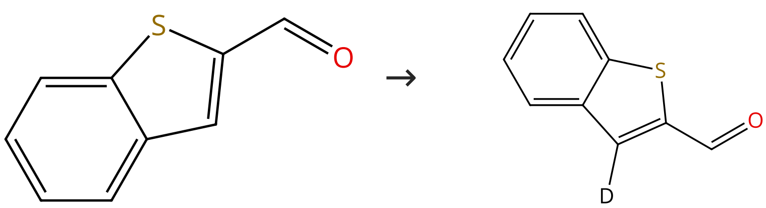
31-614-CAS-24154325	Steps: **1** Yield: **71%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 97 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (84)

31-614-CAS-24154355	Steps: **1** Yield: **71%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

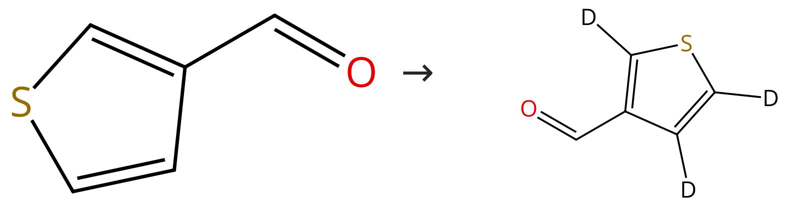
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 98 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (99)

31-614-CAS-24154364	Steps: **1** Yield: **71%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt

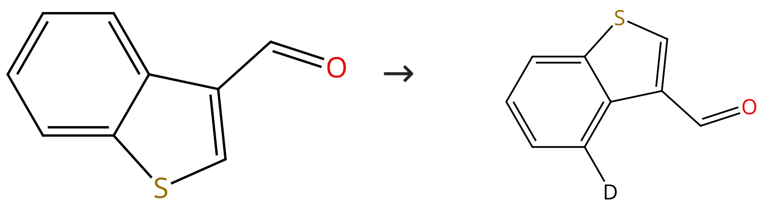
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 99 (1 Reaction) Steps: **1** Yield: **71%**



Suppliers (81)

31-614-CAS-38370025	Steps: **1** Yield: **71%**
1.1	**Reagents:** Trifluoroacetic acid, Water-*d*$_2$ **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoroacetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt

Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 100 (1 Reaction)   Steps: **1** Yield: **71%**

Suppliers (73)

31-614-CAS-24154371   Steps: **1** Yield: **71%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

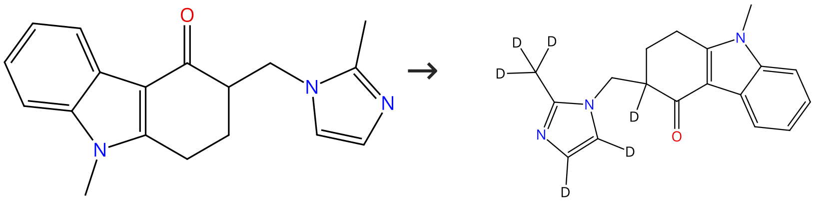
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 101 (1 Reaction)   Steps: **1** Yield: **71%**



Suppliers (87)

31-614-CAS-40655047   Steps: **1** Yield: **71%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2 **Reagents:** Water-*d*$_2$; 18 h, 130 °C

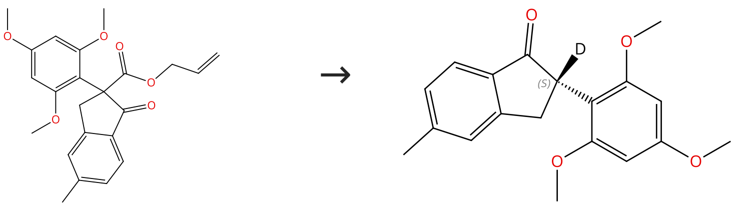
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 102 (1 Reaction)   Steps: **1** Yield: **70%**



Absolute stereochemistry shown

31-154-CAS-21295372   Steps: **1** Yield: **70%**

1.1 **Catalysts:** Palladium diacetate, (S)-(CF$_3$)$_3$-t-Bu-PHOX
Solvents: 1,4-Dioxane; 30 min, 40 °C
1.2 **Reagents:** Formic acid, Water-*d*$_2$
Solvents: 1,4-Dioxane; 24 h, 40 °C

Experimental Protocols

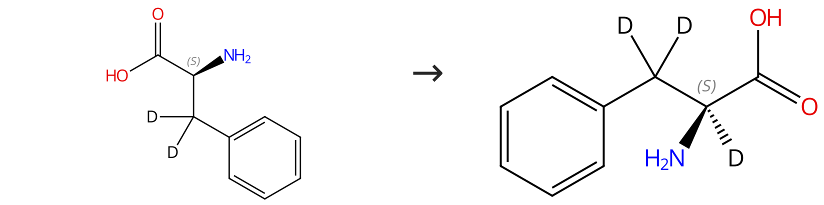
Enantiodivergent Synthesis of Tertiary α-Aryl 1-Indanones: Evidence Toward Disparate Mechanisms in the Palladium-Catalyzed Decarboxylative Asymmetric Protonation

By: Kingston, Cian; et al

Journal of Organic Chemistry (2017), 82(7), 3806-3819.

Scheme 103 (1 Reaction)

Steps: **1** Yield: **70%**



31-116-CAS-11546820

Steps: **1** Yield: **70%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 48 h, 160 °C

1.2 **Reagents:** Water

Experimental Protocols

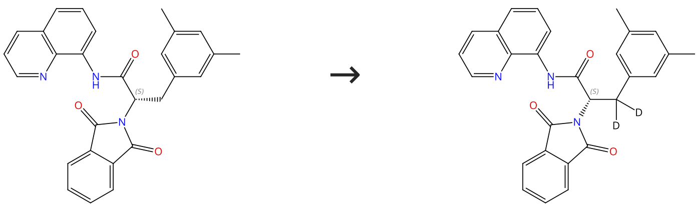
Efficient and selective deuteration of phenylalanine deriva tives catalyzed by Pd/C

By: Maegawa, Tomohiro; et al

Synlett (2005), (5), 845-847.

Scheme 104 (1 Reaction)

Steps: **1** Yield: **70%**



31-614-CAS-38572154

Steps: **1** Yield: **70%**

1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Ammonium chloride
Solvents: Water

Experimental Protocols

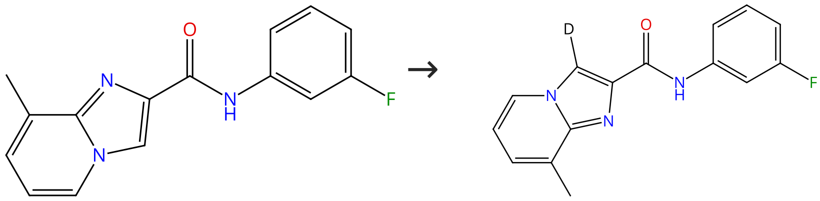
Synthesis of β-deuterated amino acids via palladium-catalyzed H/D exchange

By: Sheng, Fei-Fei; et al

Journal of Organic Chemistry (2022), 87(23), 16084-16089.

Scheme 105 (2 Reactions)

Steps: **1** Yield: **61-70%**



31-614-CAS-39746347

Steps: **1** Yield: **70%**

1.1 **Reagents:** Methanol-*d*, Oxygen, Water-d_2
Catalysts: Palladium diacetate; 14 h, 1 atm, 100 °C

Experimental Protocols

Palladium-Catalyzed C-H Olefination of Imidazo[1,2a] pyridine Carboxamide in Aqueous Ethanol under Oxygen

By: Balaso Mohite, Sachin; et al

Chemistry - A European Journal (2024), 30(23), e202304239.

31-614-CAS-38336464

Steps: **1** Yield: **61%**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Acetylglycine, Palladium diacetate
Solvents: 1,2-Dichloroethane; 14 h, 100 °C

Experimental Protocols

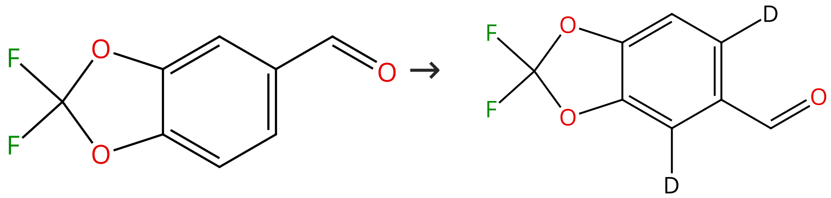
Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes

By: Mohite, Sachin Balaso; et al

Chemistry - A European Journal (2023), 29(70), e202302759.

Scheme 106 (1 Reaction)

Steps: **1** Yield: **70%**



Suppliers (69)

31-614-CAS-24154354

Steps: **1** Yield: **70%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

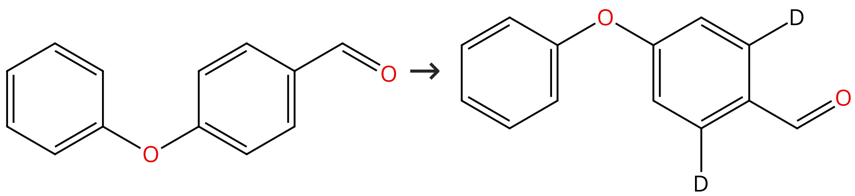
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 107 (1 Reaction)

Steps: **1** Yield: **70%**



Suppliers (95)

31-614-CAS-24154344

Steps: **1** Yield: **70%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

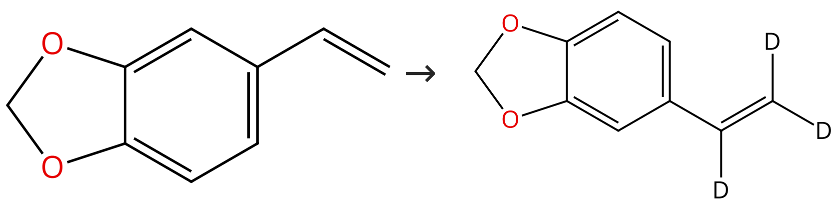
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 108 (1 Reaction)

Steps: **1** Yield: **70%**



Suppliers (59)

31-116-CAS-22371285

Steps: **1** Yield: **70%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

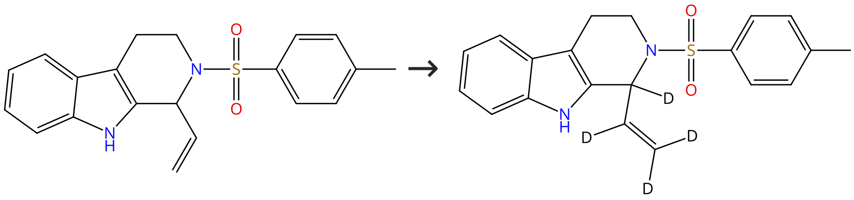
Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 109 (1 Reaction) Steps: **1** Yield: **70%**



Supplier (1)

31-116-CAS-20880693 Steps: **1** Yield: **70%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Benzoic acid, Tricyclohexylphosphine, Tetrakis (triphenylphosphine)palladium
Solvents: Toluene; 16 h, 120 °C

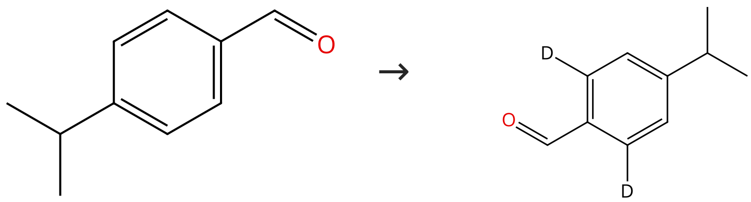
Experimental Protocols

Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

Scheme 110 (1 Reaction) Steps: **1** Yield: **69%**



Suppliers (100)

31-614-CAS-24154317 Steps: **1** Yield: **69%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

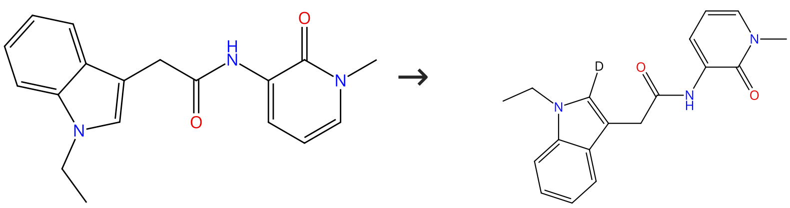
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 111 (1 Reaction) Steps: **1** Yield: **69%**



31-116-CAS-23998837 Steps: **1** Yield: **69%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 120 °C

Experimental Protocols

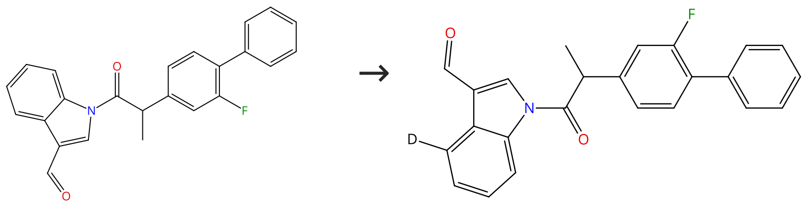
The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues

By: Manna, Priyadarshi; et al

Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 112 (1 Reaction)

Steps: **1** Yield: **69%**



31-614-CAS-38370049

Steps: **1** Yield: **69%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

Experimental Protocols

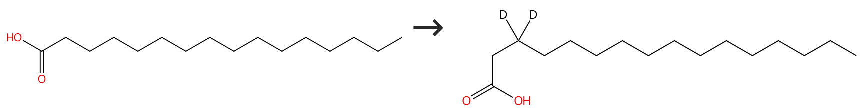
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 113 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (165)

Suppliers (13)

31-614-CAS-39495803

Steps: **1** Yield: **69%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

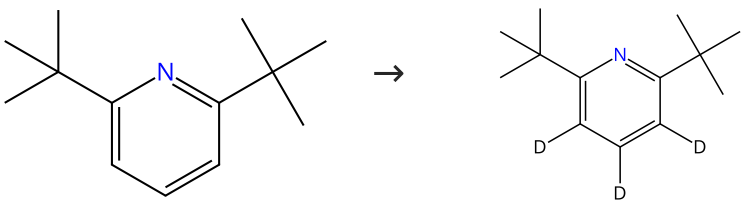
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 114 (1 Reaction)

Steps: **1** Yield: **69%**



Suppliers (100)

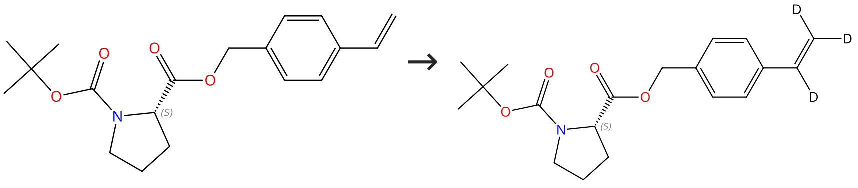
31-614-CAS-24211358	Steps: **1** Yield: **69%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 115 (1 Reaction) Steps: **1** Yield: **69%**



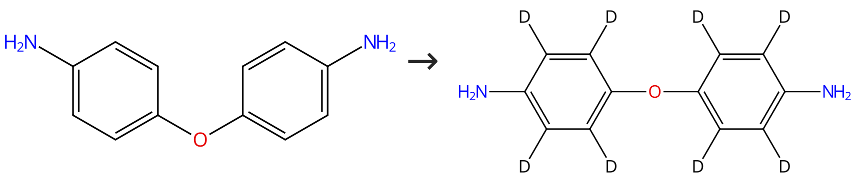
31-116-CAS-22371277	Steps: **1** Yield: **69%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 116 (2 Reactions) Steps: **1** Yield: **66-68%**



Suppliers (96)   Suppliers (2)

31-116-CAS-8717791	Steps: **1** Yield: **68%**
1.1	**Reagents:** Hydrogen, Water-*d*$_2$ **Catalysts:** Palladium, Platinum **Solvents:** Water-*d*$_2$; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

31-116-CAS-14678697	Steps: **1** Yield: **66%**
1.1	**Catalysts:** Palladium, Platinum **Solvents:** Water-*d*$_2$; 24 h, 180 °C
Experimental Protocols	

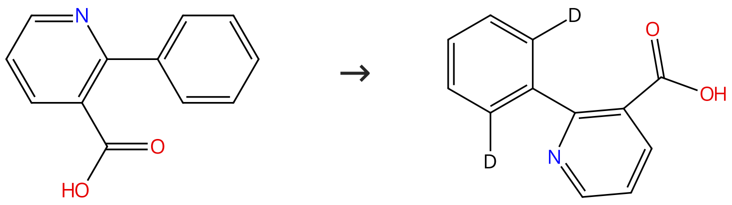
H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 117 (1 Reaction)

Steps: **1** Yield: **68%**



Suppliers (85)

31-614-CAS-34527021

Steps: **1** Yield: **68%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

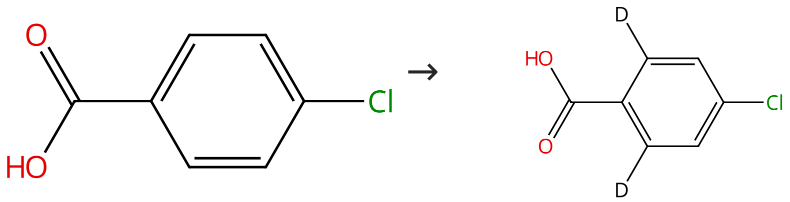
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 118 (1 Reaction)

Steps: **1** Yield: **68%**



Suppliers (111)

31-614-CAS-34527006

Steps: **1** Yield: **68%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

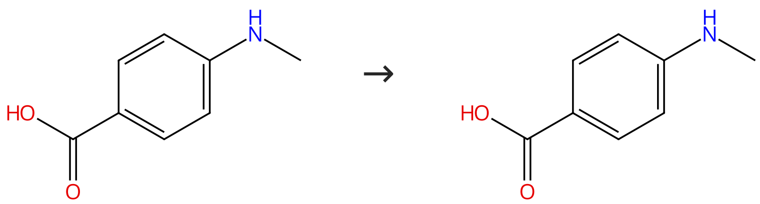
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 119 (1 Reaction)

Steps: **1** Yield: **67%**



Suppliers (83)

Supplier (1)

31-614-CAS-24978396

Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-*d*$_2$; 2 h, 150 °C

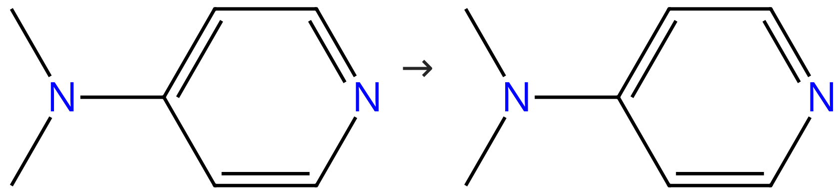
Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 120 (1 Reaction) Steps: **1** Yield: **67%**



Suppliers (154)

31-614-CAS-41719923 Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium carbonate, Water- d_2
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

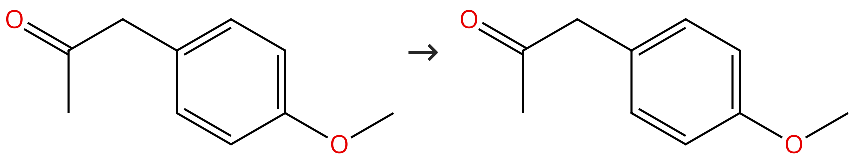
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 121 (1 Reaction) Steps: **1** Yield: **67%**



Suppliers (100) Suppliers (4)

31-614-CAS-30337083 Steps: **1** Yield: **67%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Sodium borodeuteride
Solvents: Water-d_2; 30 s, rt; 18 h, 130 °C

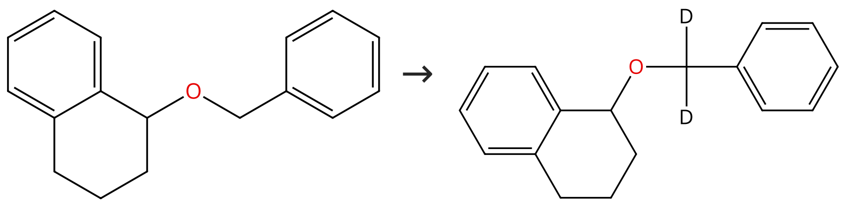
Experimental Protocols

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 122 (1 Reaction) Steps: **1** Yield: **67%**



Suppliers (2)

31-614-CAS-26352067 Steps: **1** Yield: **67%**

1.1 **Reagents:** Hydrogen, Water- d_2
Catalysts: Palladium
Solvents: Tetrahydrofuran, Water-d_2; 24 h, 50 °C

Experimental Protocols

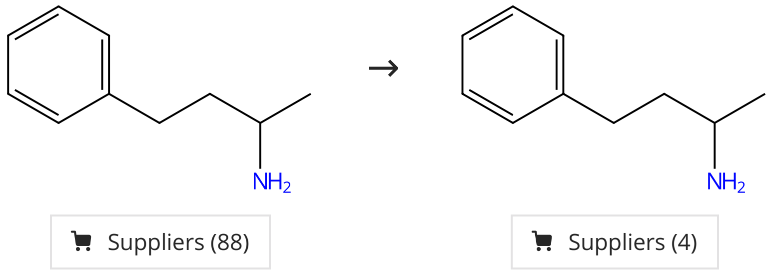
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 123 (1 Reaction)

Steps: **1** Yield: **67%**



31-614-CAS-26630706

Steps: **1** Yield: **67%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium, Platinum
Solvents: Water-*d*2; 2 h, 150 °C

Experimental Protocols

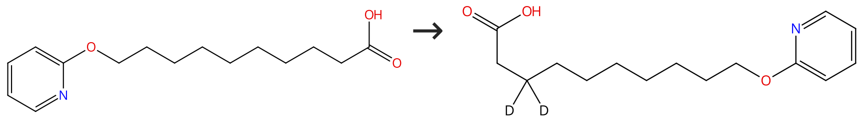
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 124 (1 Reaction)

Steps: **1** Yield: **67%**



31-614-CAS-39495810

Steps: **1** Yield: **67%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*2
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

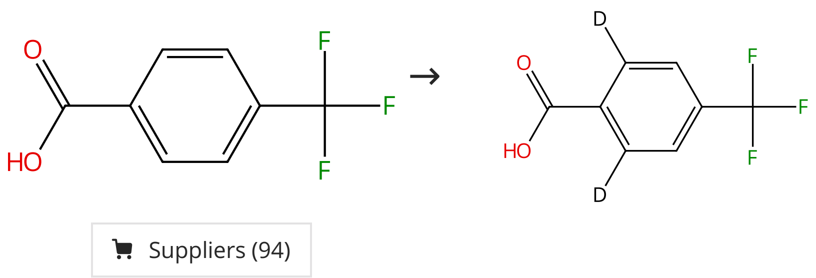
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 125 (1 Reaction)

Steps: **1** Yield: **67%**



31-614-CAS-34527001

Steps: **1** Yield: **67%**

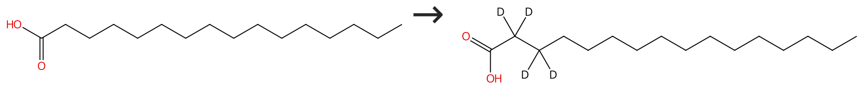
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 126 (1 Reaction) Steps: **1** Yield: **67%**



Suppliers (165)

31-614-CAS-39495817 Steps: **1** Yield: **67%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 48 h, 50 °C

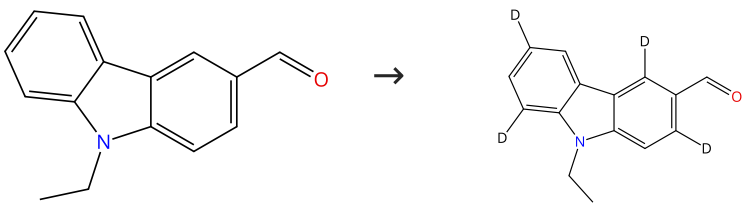
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 127 (1 Reaction) Steps: **1** Yield: **67%**



Suppliers (87)

31-614-CAS-24154359 Steps: **1** Yield: **67%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

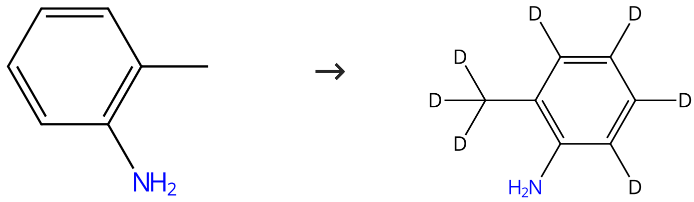
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 128 (2 Reactions) Steps: **1** Yield: **62-67%**



Suppliers (81) Suppliers (33)

31-116-CAS-19152430	Steps: **1** Yield: **67%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum; 24 h, 180 °C	
Experimental Protocols	

$Ru_3(CO)_{12}$-Catalyzed Carbonylation of C-H Bonds by Triazole-Directed C-H Activation

By: Haito, Akira; et al

Asian Journal of Organic Chemistry (2018), 7(7), 1315-1318.

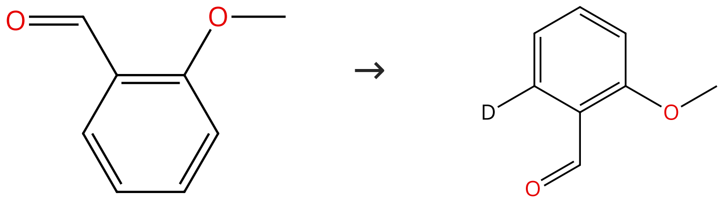
31-116-CAS-1282884	Steps: **1** Yield: **62%**
1.1 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 129 (1 Reaction) Steps: **1** Yield: **66%**



Suppliers (96)

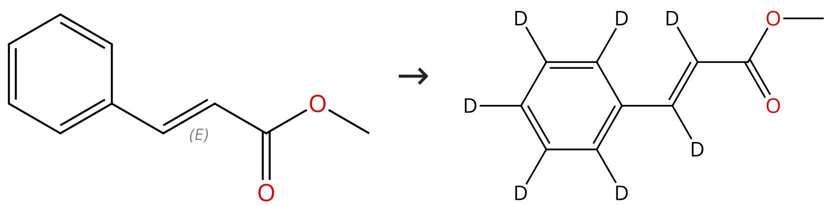
31-614-CAS-24154339	Steps: **1** Yield: **66%**
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C	
1.2 **Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt	
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 130 (1 Reaction) Steps: **1** Yield: **66%**



Double bond geometry shown

Suppliers (69)

31-614-CAS-24211313	Steps: **1** Yield: **66%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C	
Experimental Protocols	

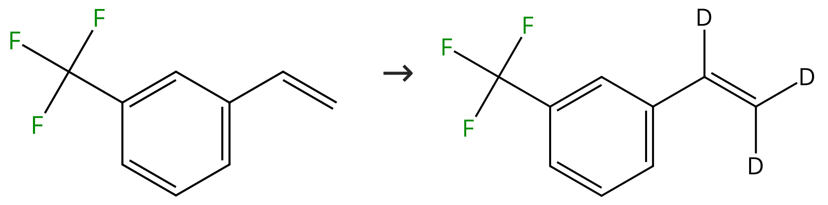
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 131 (1 Reaction)

Steps: **1** Yield: **66%**



31-116-CAS-22371283

Steps: **1** Yield: **66%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

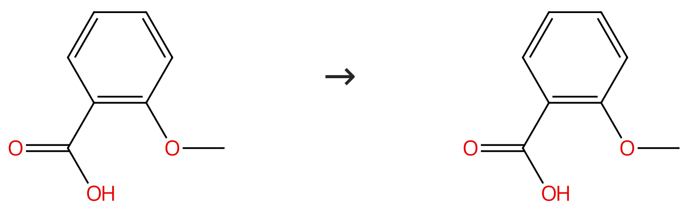
Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 132 (1 Reaction)

Steps: **1** Yield: **66%**



31-614-CAS-34527009

Steps: **1** Yield: **66%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

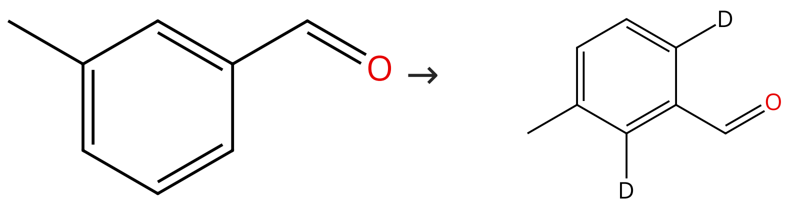
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 133 (1 Reaction)

Steps: **1** Yield: **66%**



31-614-CAS-24154330

Steps: **1** Yield: **66%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

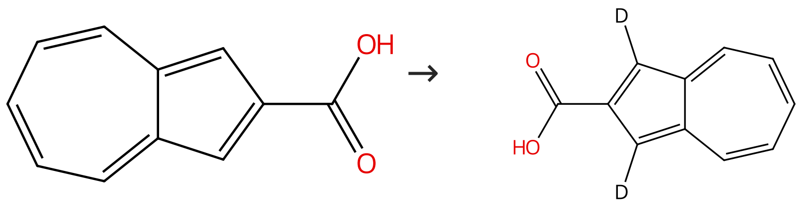
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 134 (1 Reaction)
Steps: **1** Yield: **66%**



Suppliers (3)

31-614-CAS-33443206
Steps: **1** Yield: **66%**

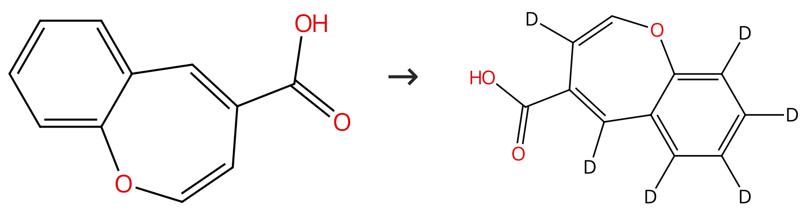
1.1 **Reagents:** Silver carbonate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 3 h, 80 °C

Palladium-Catalyzed Oxidative Cyclization of Azulene-2-Carboxylic Acids with 1,3-Dienes for the Synthesis of Alkenyl Azulenolactones

By: Maeng, Chanyoung; et al

Advanced Synthesis & Catalysis (2022), 364(16), 2859-2864.

Scheme 135 (1 Reaction)
Steps: **1** Yield: **66%**



Suppliers (42)

31-614-CAS-40655080
Steps: **1** Yield: **66%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 100 °C

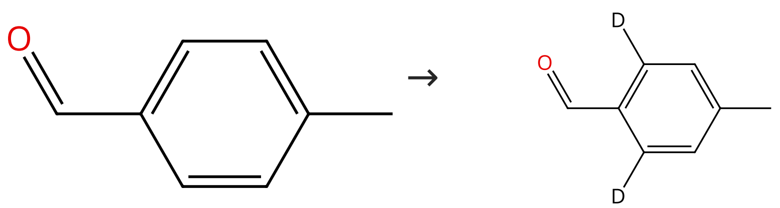
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 136 (1 Reaction)
Steps: **1** Yield: **65%**



Suppliers (107)

31-614-CAS-37580312
Steps: **1** Yield: **65%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; 2 h, rt

Experimental Protocols

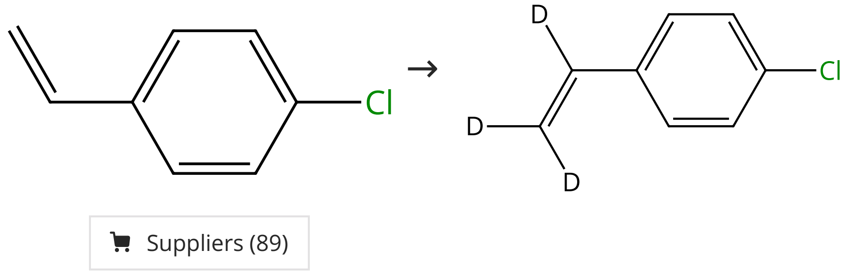
Carbene Formation or Reduction of the Diazo Functional Group? An Unexpected Solvent-Dependent Reactivity of Cyclic Diazo Imides

By: Hussain, Yaseen; et al

Angewandte Chemie, International Edition (2023), 62(40), e202309184.

Scheme 137 (2 Reactions)

Steps: **1** Yield: **65%**



31-116-CAS-22371282	Steps: **1** Yield: **65%**

1.1 **Reagents:** Water-d_2
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

31-116-CAS-20880696	Steps: **1** Yield: **65%**

1.1 **Reagents:** Water-d_2
Catalysts: Benzoic acid, Triphenylphosphine, Tetrakis(triphenylphosphine)palladium
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

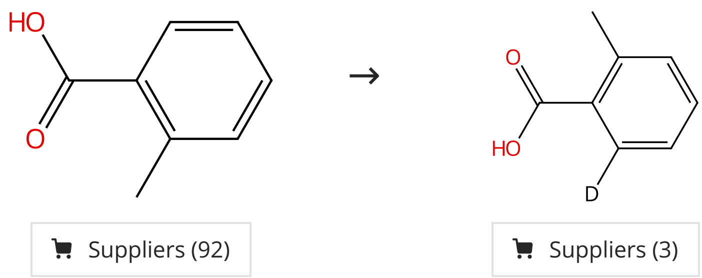
Palladium(0)/benzoic acid catalysis merges sequences with D_2O-promoted labelling of C-H bonds

By: Cera, Gianpiero; et al

Chemical Science (2019), 10(44), 10297-10304.

Scheme 138 (1 Reaction)

Steps: **1** Yield: **65%**



31-614-CAS-34527008	Steps: **1** Yield: **65%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

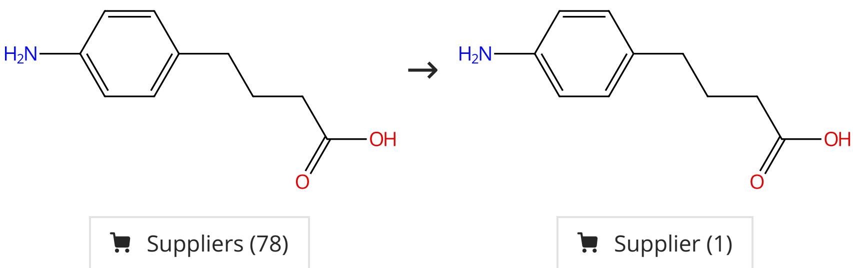
Palladium-Catalyzed Ligand-Free ortho-Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 139 (1 Reaction)

Steps: **1** Yield: **65%**



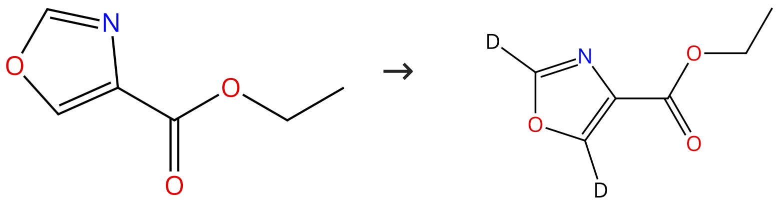
31-614-CAS-25398821	Steps: **1** Yield: **65%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 30 s, rt; 18 h, 130 °C
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 140 (2 Reactions) Steps: **1** Yield: **32-65%**



Suppliers (91)

31-614-CAS-40655042	Steps: **1** Yield: **65%**
1.1	**Catalysts:** Acridine, Palladium trifluoro acetate, Benzamide, 2, 4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-*d*$_2$; 18 h, 130 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

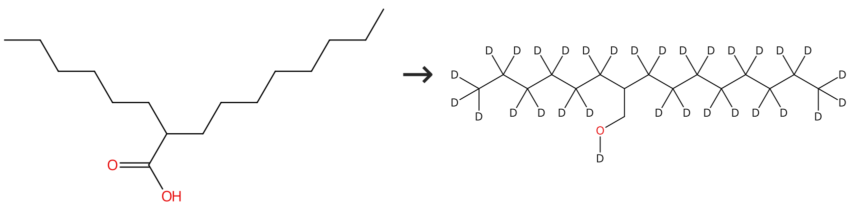
31-614-CAS-24211326	Steps: **1** Yield: **32%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2, 4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl) sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 141 (1 Reaction) Steps: **1** Yield: **65%**



Suppliers (62)

31-614-CAS-42043151	Steps: **1** Yield: **65%**
1.1	**Reagents:** Sodium hydroxide, Water-*d*$_2$ **Catalysts:** Palladium, Platinum, Carbon; 4 d, 180 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Water; 180 °C
1.3	**Reagents:** Lithium tetradeuteroaluminate **Solvents:** Tetrahydrofuran; 1 h, 0 °C
Experimental Protocols	

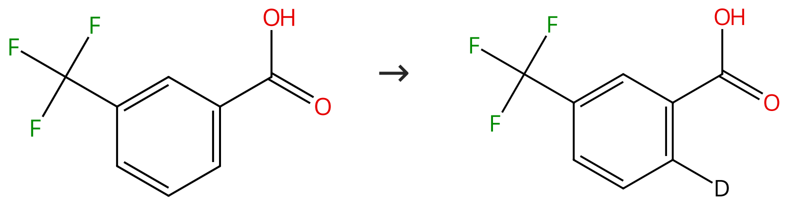
Uncovering Backbone Conformation for Rigid DPP-Based Donor-Acceptor Conjugated Polymer Using Deuterium Labeling and Neutron Scattering

By: Cao, Zhiqiang; et al

Macromolecules (Washington, DC, United States) (2024), 57(21), 10379-10388.

Scheme 142 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (96)

31-614-CAS-34527019

Steps: **1** Yield: **65%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

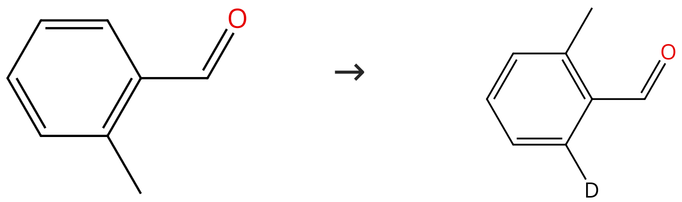
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 143 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (94)

31-614-CAS-24154315

Steps: **1** Yield: **65%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

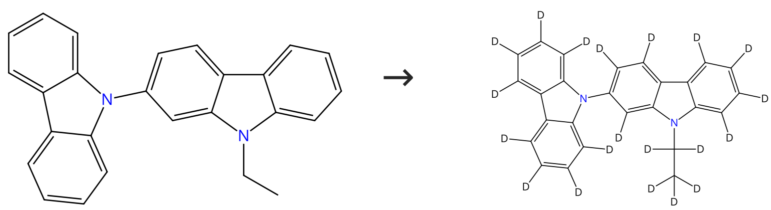
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 144 (1 Reaction)

Steps: **1** Yield: **64%**



31-116-CAS-3983044

Steps: **1** Yield: **64%**

1.1 **Catalysts:** Palladium
Solvents: Water-*d*2; 12 h, 4 - 5 M Pa, 240 °C

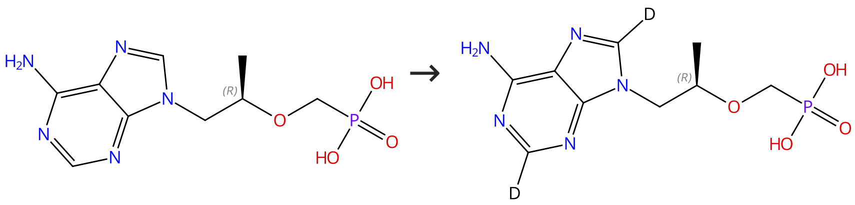
Experimental Protocols

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 145 (1 Reaction) Steps: **1** Yield: **64%**



Suppliers (117)

31-614-CAS-35215354 Steps: **1** Yield: **64%**

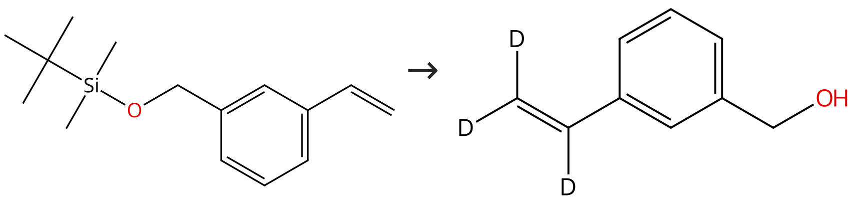
1.1 **Reagents:** Water-d_2, Sodium borohydride
Catalysts: Platinum dioxide, Palladium; 10 min, rt; 3 h, 145 °C; 3 h, 145 °C

An Efficient Pd & Pt-Catalyzed H/D Exchange Approach towards the Synthesis of Deuterium-Labeled Antiviral Prodrugs, Tenofovir Disoproxil Fumarate and Tenofovir Alafenamide

By: Shen, Hangzhou; et al

ChemistrySelect (2018), 3(30), 8724-8728.

Scheme 146 (1 Reaction) Steps: **1** Yield: **64%**



31-049-CAS-22371284 Steps: **1** Yield: **64%**

1.1 **Reagents:** Water-d_2
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

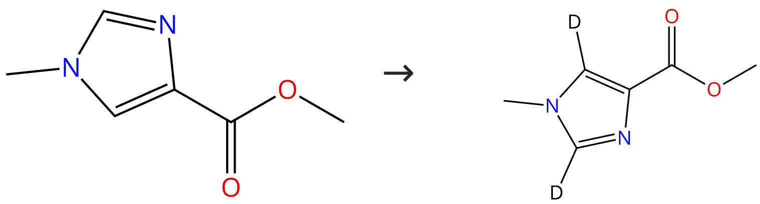
Experimental Protocols

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 147 (1 Reaction) Steps: **1** Yield: **64%**



Suppliers (76)

31-614-CAS-40655048 Steps: **1** Yield: **64%**

1.1 **Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 130 °C

Experimental Protocols

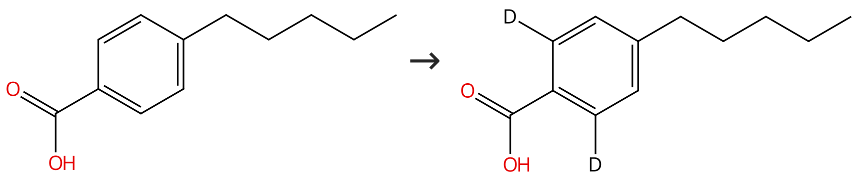
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 148 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (80)

31-614-CAS-34526998

Steps: **1** Yield: **64%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

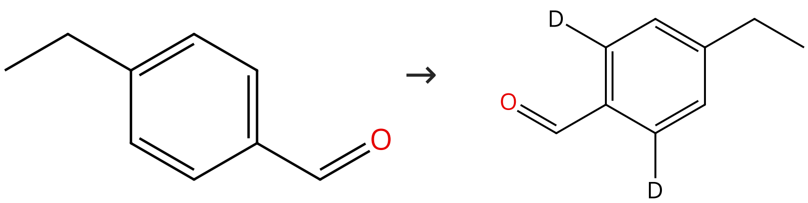
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 149 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (80)

31-614-CAS-24154311

Steps: **1** Yield: **64%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

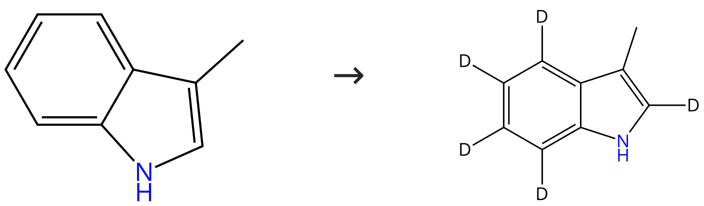
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 150 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (117)

31-614-CAS-40655068

Steps: **1** Yield: **64%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 100 °C

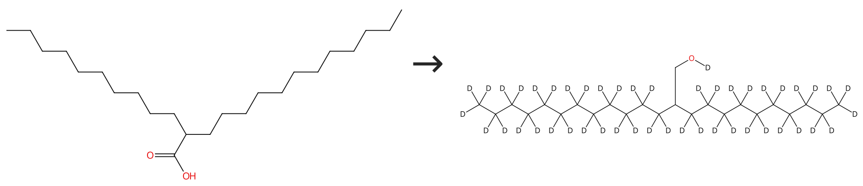
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 151 (1 Reaction) Steps: **1** Yield: **64%**



Suppliers (15)

31-614-CAS-42043157 Steps: **1** Yield: **64%**

1.1 **Reagents:** Sodium hydroxide, Water-*d*$_2$
Catalysts: Palladium, Platinum, Carbon; 4 d, 180 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; 180 °C

1.3 **Reagents:** Lithium tetradeuteroaluminate
Solvents: Tetrahydrofuran; 1 h, 0 °C

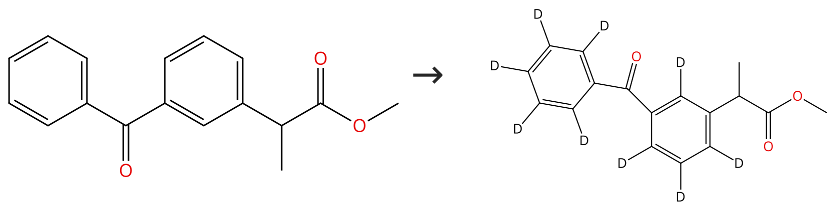
Experimental Protocols

Uncovering Backbone Conformation for Rigid DPP-Based Donor-Acceptor Conjugated Polymer Using Deuterium Labeling and Neutron Scattering

By: Cao, Zhiqiang; et al

Macromolecules (Washington, DC, United States) (2024), 57(21), 10379-10388.

Scheme 152 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (40)

31-614-CAS-24211356 Steps: **1** Yield: **63%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

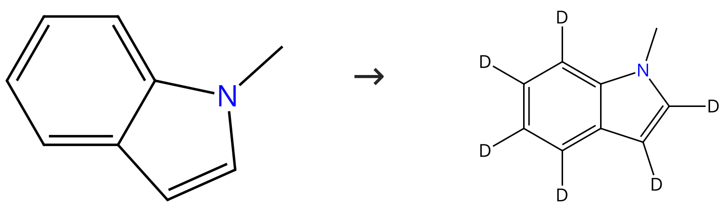
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 153 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (107)

31-614-CAS-40655076 Steps: **1** Yield: **63%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 100 °C

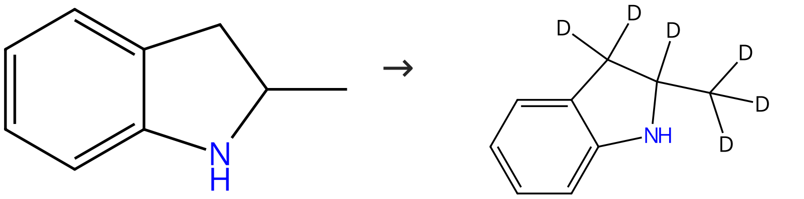
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 154 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (86)

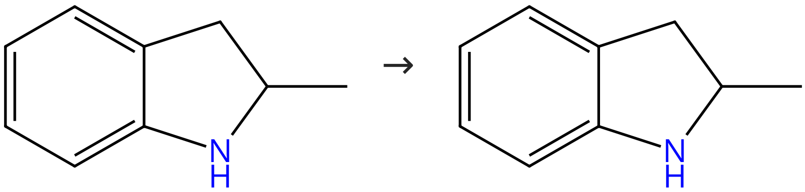
31-614-CAS-26159230	Steps: **1** Yield: **63%**
1.1	**Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 18 h, 130 °C

H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 155 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (86)

31-614-CAS-29536682	Steps: **1** Yield: **63%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-*d*$_2$; 30 s, rt; 18 h, 130 °C

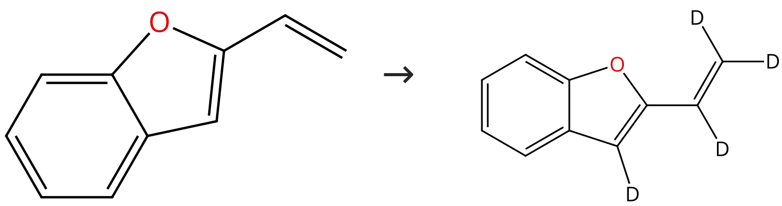
Experimental Protocols

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 156 (1 Reaction) Steps: **1** Yield: **63%**



Suppliers (15)

31-614-CAS-40980902	Steps: **1** Yield: **63%**
1.1	**Reagents:** Water-*d*$_2$, (*S*)-Mandelic acid **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium **Solvents:** Toluene; 16 h, 120 °C

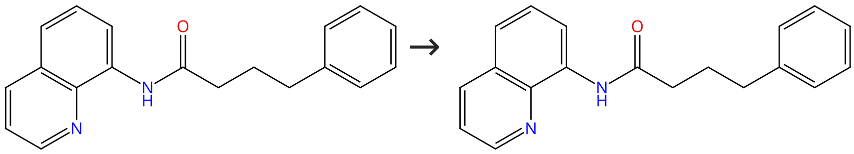
Experimental Protocols

Iron-Catalyzed C-H Alkylation/Ring Opening with Vinylben zofurans Enabled by Triazoles

By: Cattani, Silvia; et al

Angewandte Chemie, International Edition (2024), 63(32), e202404319.

Scheme 157 (1 Reaction) Steps: **1** Yield: **62%**



Suppliers (5)

31-614-CAS-27708030 Steps: **1** Yield: **62%**

1.1 **Reagents:** Trimethoxyphenylsilane, Copper fluoride (CuF_2), Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: Tetrahydrofuran; rt → 100 °C; 24 h, 100 °C

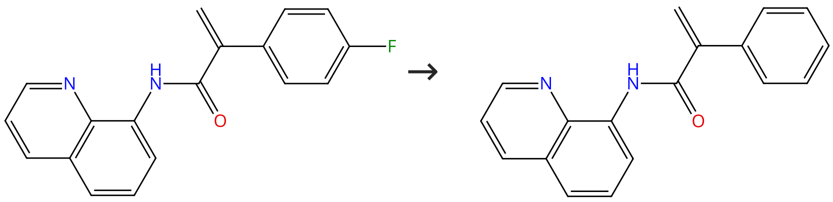
Experimental Protocols

Directed Palladium(II)-Catalyzed Intermolecular Anti-Markovnikov Hydroarylation of Unactivated Alkenes with (Hetero)arylsilanes

By: Lu, Ming-Zhu; et al

Organic Letters (2020), 22(22), 9022-9028.

Scheme 158 (1 Reaction) Steps: **1** Yield: **62%**



31-614-CAS-31062620 Steps: **1** Yield: **62%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium chloride
Solvents: *N*,*N*-Dimethylformamide-*d*$_7$; 12 h, 25 °C

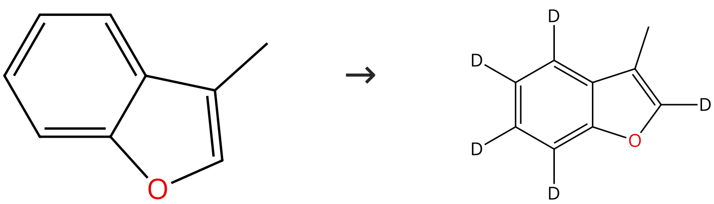
Experimental Protocols

Palladium-Catalyzed Regio- and Diastereoselective Olefinic C-H Difluoromethylthiolation at Room Temperature

By: Xiang, Tongxu; et al

Journal of Organic Chemistry (2022), 87(5), 3135-3144.

Scheme 159 (1 Reaction) Steps: **1** Yield: **62%**



Suppliers (78)

31-614-CAS-40655069 Steps: **1** Yield: **62%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-*d*$_2$; 18 h, 100 °C

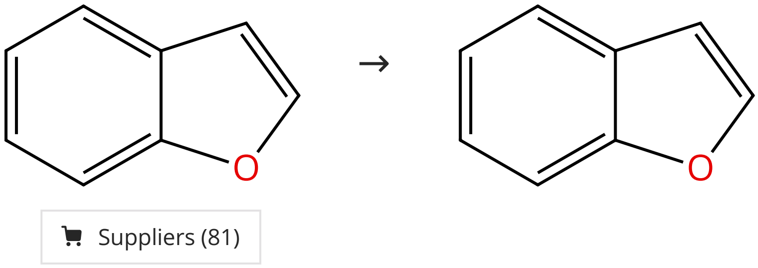
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 160 (1 Reaction) Steps: **1** Yield: **62%**



31-614-CAS-41719941 Steps: **1** Yield: **62%**

1.1 **Reagents:** Sodium carbonate, Water-*d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

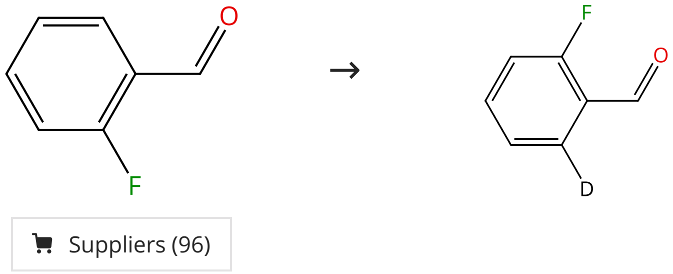
Experimental Protocols

Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 161 (1 Reaction) Steps: **1** Yield: **62%**



31-614-CAS-24154338 Steps: **1** Yield: **62%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

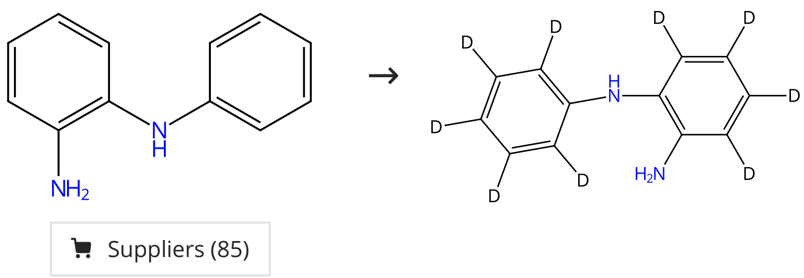
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 162 (1 Reaction) Steps: **1** Yield: **62%**



31-116-CAS-16726370 Steps: **1** Yield: **62%**

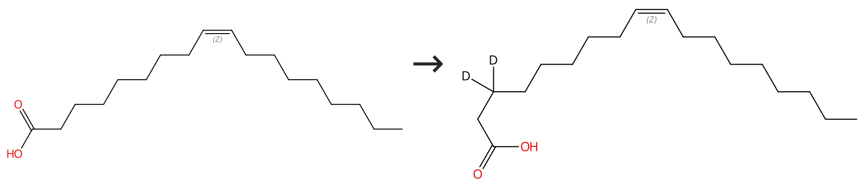
1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium, Platinum; 24 h, 80 °C

Mild conditions for deuteration of primary and secondary arylamines for the synthesis of deuterated optoelectronic organic molecules

By: Krause-Heuer, Anwen M.; et al

Molecules (2014), 19(11), 18604-18617, 14 pp..

Scheme 163 (1 Reaction) Steps: **1** Yield: **61%**



Double bond geometry shown   Double bond geometry shown

Suppliers (181)

31-614-CAS-39495807 Steps: **1** Yield: **61%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

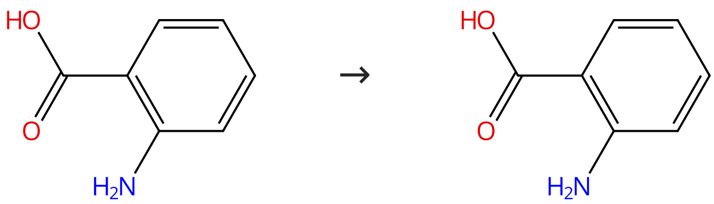
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 164 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (48)

31-614-CAS-25962334 Steps: **1** Yield: **61%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-*d*$_2$; 2 h, 150 °C

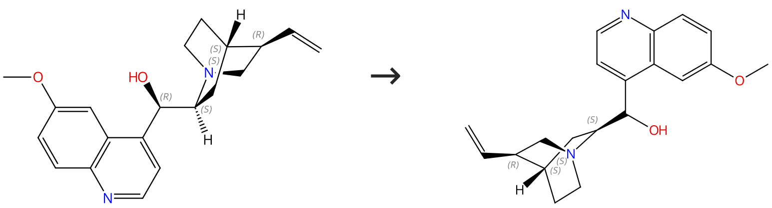
Experimental Protocols

Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by $NaBD_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 165 (1 Reaction) Steps: **1** Yield: **61%**

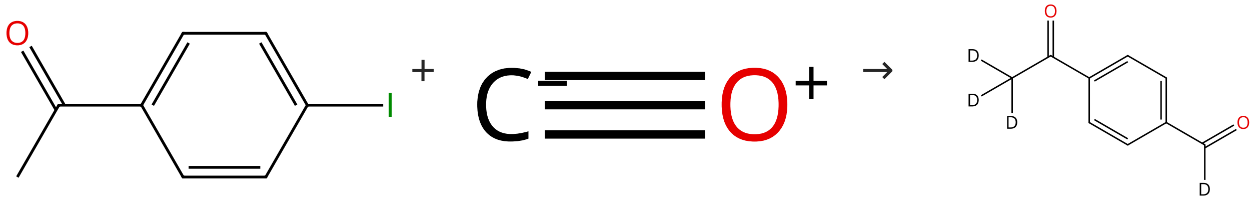


Absolute stereochemistry shown   Absolute stereochemistry shown

Suppliers (139)

31-614-CAS-41719943 Steps: **1** Yield: **61%**	**Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide**
1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$ **Catalysts:** Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C	By: Zheng, Chenxu; et al
Experimental Protocols	Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

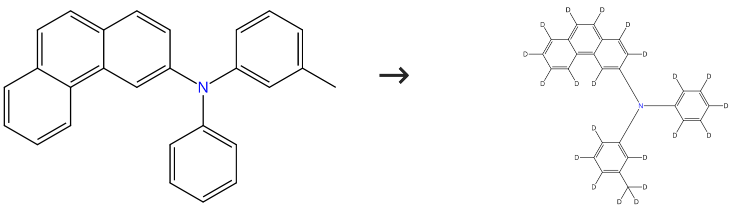
Scheme 166 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (93) Suppliers (17)

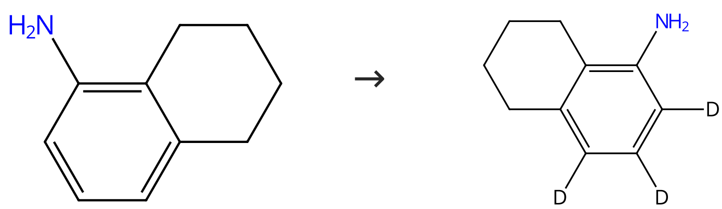
31-116-CAS-19074736 Steps: **1** Yield: **61%**	**Palladium/Rhodium Cooperative Catalysis for the Production of Aryl Aldehydes and Their Deuterated Analogues Using the Water-Gas Shift Reaction**
1.1 **Reagents:** *N*,*N*,*N'*,*N'*-Tetramethylethylenediamine, Water-*d*$_2$ **Catalysts:** Palladium chloride, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, 4,4'-Dimethoxy-2,2'-bipyridine **Solvents:** Dimethylformamide; 24 h, 25 bar, 85 °C	By: Ibrahim, Malek Y. S.; et al
Experimental Protocols	Angewandte Chemie, International Edition (2018), 57(32), 10362-10367.

Scheme 167 (1 Reaction) Steps: **1** Yield: **61%**



31-116-CAS-8850043 Steps: **1** Yield: **61%**	**Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions**
1.1 **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 12 h, 4 - 5 M Pa, 240 °C	By: Hirata, Shuzo; et al
Experimental Protocols	Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 168 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (62)

31-614-CAS-24211325 Steps: **1** Yield: **61%**

1.1 **Reagents:** Silver fluoride, Water-*d*$_2$
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C

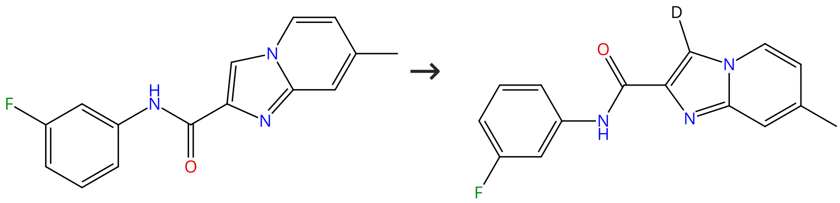
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 169 (1 Reaction) Steps: **1** Yield: **61%**



Supplier (1)

31-614-CAS-38336470 Steps: **1** Yield: **61%**

1.1 **Reagents:** Cupric acetate, Water-*d*$_2$
Catalysts: Acetylglycine, Palladium diacetate
Solvents: 1,2-Dichloroethane; 14 h, 100 °C

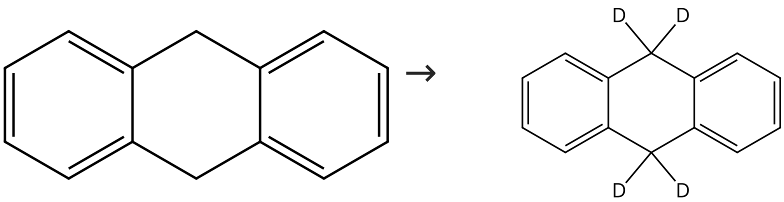
Experimental Protocols

Palladium-Catalyzed Regiodivergent C-H Olefination of Imidazo[1,2-a]pyridine Carboxamide and Unactivated Alkenes

By: Mohite, Sachin Balaso; et al

Chemistry - A European Journal (2023), 29(70), e202302759.

Scheme 170 (1 Reaction) Steps: **1** Yield: **61%**



Suppliers (68) Supplier (1)

31-116-CAS-20293092 Steps: **1** Yield: **61%**

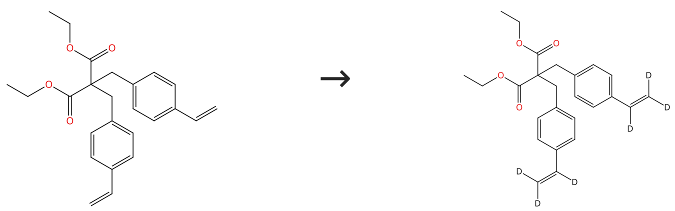
1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Tetrahydrofuran; 4 d, rt

1,4-Dehydrogenation with a Two-Coordinate Cyclic (Alkyl)(amino)silylene

By: Koike, Taichi; et al

Chemistry - A European Journal (2019), 25(39), 9295-9302.

Scheme 171 (1 Reaction) Steps: **1** Yield: **60%**



31-116-CAS-22371288 Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tetrakis(triphenylphosphine)palladium, (*S*)-Mandelic acid
Solvents: Toluene; 16 h, 120 °C

Experimental Protocols

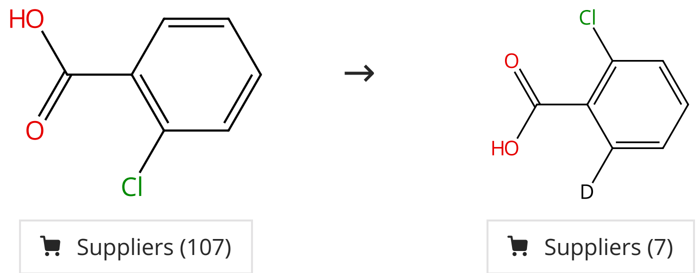
Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0)/Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 172 (1 Reaction)

Steps: **1** Yield: **60%**



31-614-CAS-34527002	Steps: **1** Yield: **60%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

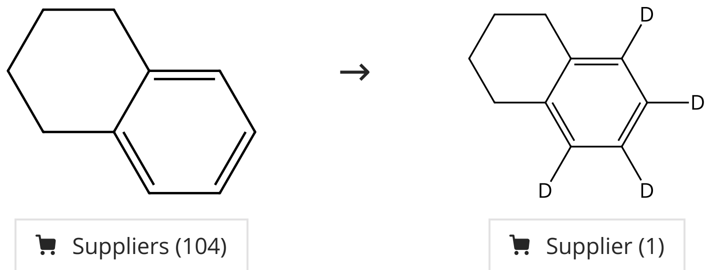
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 173 (1 Reaction)

Steps: **1** Yield: **60%**



31-614-CAS-24211312	Steps: **1** Yield: **60%**

1.1 **Reagents:** Silver fluoride, Water-d_2
Catalysts: Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 40 °C

Experimental Protocols

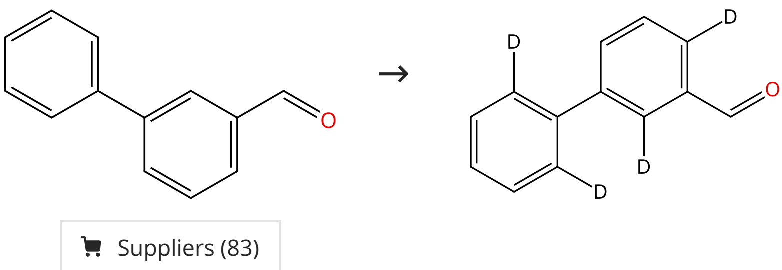
Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 174 (1 Reaction)

Steps: **1** Yield: **60%**



31-614-CAS-24154328	Steps: **1** Yield: **60%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

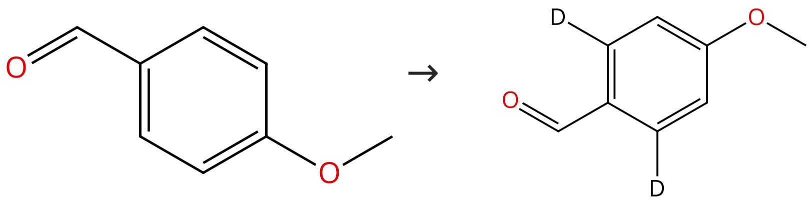
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 175 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (139)

31-614-CAS-24154349 Steps: **1** Yield: **60%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

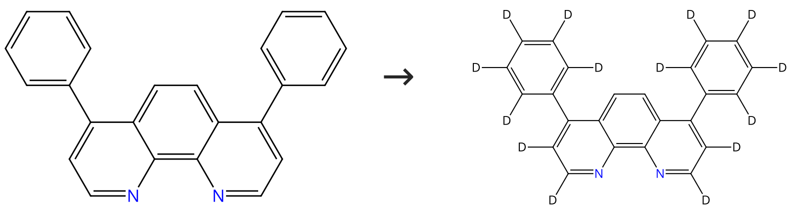
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 176 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (126)

31-116-CAS-4180865 Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium

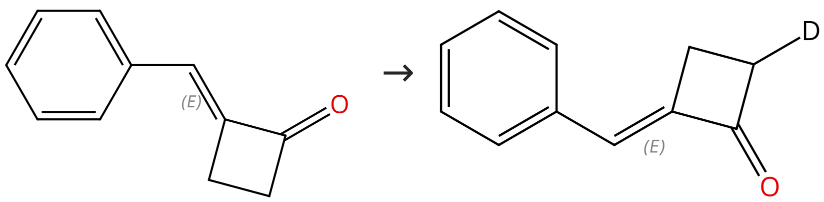
Experimental Protocols

Routes to Regioselective Deuteriation of Heteroaromatic Compounds

By: Browne, Wesley R.; et al

Inorganic Chemistry (2002), 41(16), 4245-4251.

Scheme 177 (1 Reaction) Steps: **1** Yield: **60%**



Double bond geometry shown

Double bond geometry shown

Suppliers (23)

31-116-CAS-16001859 Steps: **1** Yield: **60%**

1.1 **Reagents:** Potassium carbonate, Water-*d*$_2$
Catalysts: Tricyclohexylphosphine, Tris(dibenzylideneacetone) dipalladium
Solvents: 1,4-Dioxane; 22 h, 100 °C

Experimental Protocols

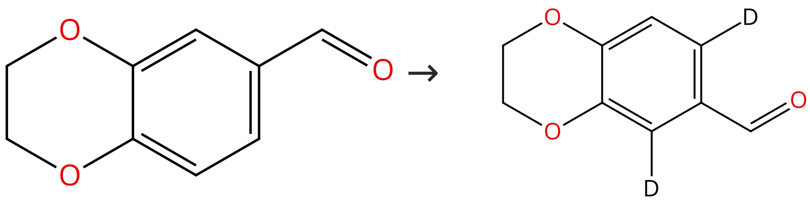
Z-Selective Synthesis of γ,δ-Unsaturated Ketones via Pd-Catalyzed Ring Opening of 2-Alkylenecyclobutanones with Arylboronic Acids

By: Zhou, Yao; et al

Organic Letters (2016), 18(16), 4000-4003.

Scheme 178 (1 Reaction)

Steps: **1** Yield: **60%**



Suppliers (98)

31-614-CAS-24154357

Steps: **1** Yield: **60%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

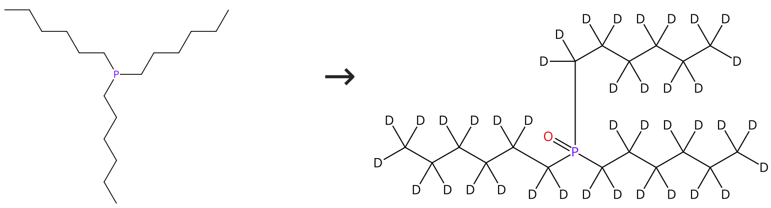
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 179 (2 Reactions)

Steps: **1** Yield: **41-60%**



Suppliers (43)

31-116-CAS-19619871

Steps: **1** Yield: **60%**

1.1 **Reagents:** Hydrogen, Water-*d*2
Catalysts: Palladium, Platinum; 2 min, rt; 1 d, 220 °C

Experimental Protocols

Ionic Liquid Adsorption at the Silica-Oil Interface Revealed by Neutron Reflectometry

By: Cooper, Peter K.; et al

Journal of Physical Chemistry C (2018), 122(42), 24077-24084.

31-614-CAS-39733225

Steps: **1** Yield: **41%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Platinum
Solvents: Water-*d*2; 2 min, 40 - 50 bar, rt; rt → 220 °C; 24 h, 220 °C

Experimental Protocols

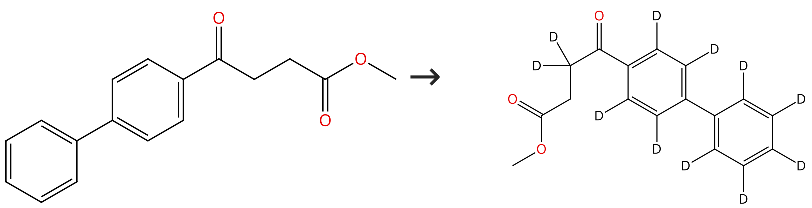
The liquid structure of ionic liquids with [N Tf$_2$]$^-$ anions, derived from neutron scattering

By: McGrogan, Anne; et al

Journal of Physical Chemistry B (2024), 128(13), 3220-3235.

Scheme 180 (1 Reaction)

Steps: **1** Yield: **60%**



Suppliers (26)

31-614-CAS-24211345 Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

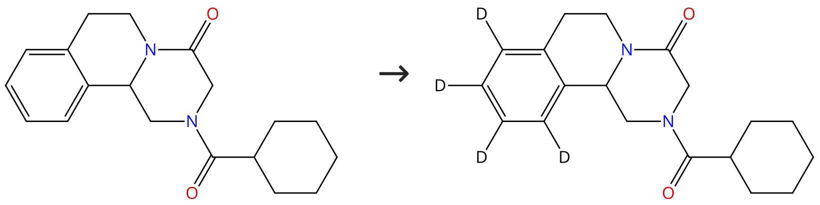
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 181 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (103)

31-614-CAS-24211361 Steps: **1** Yield: **60%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

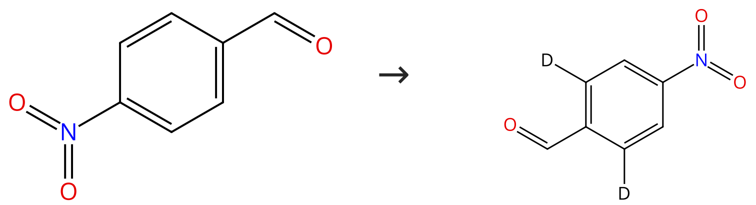
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 182 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (96)

31-614-CAS-24154340 Steps: **1** Yield: **60%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

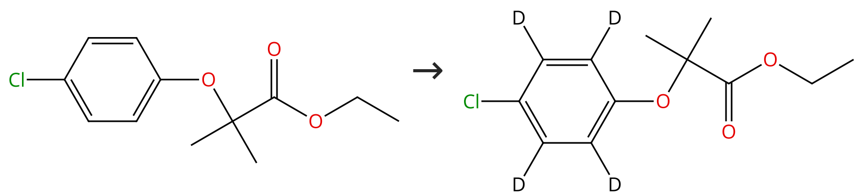
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 183 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (90) Suppliers (28)

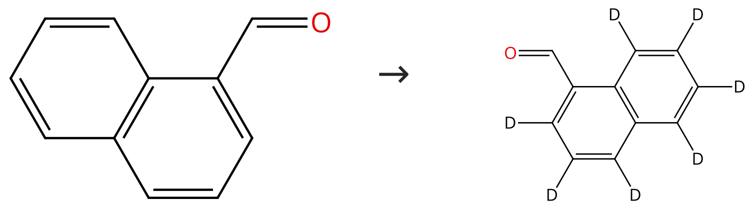
31-614-CAS-24211357	Steps: **1** Yield: **60%**
1.1	**Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 184 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (92) Suppliers (13)

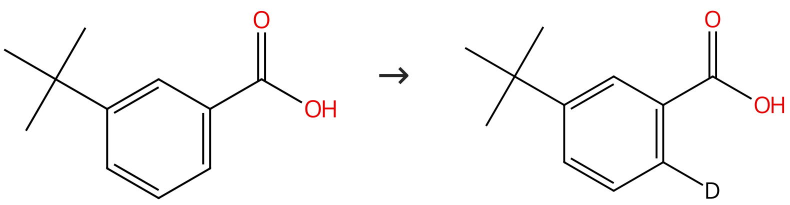
31-614-CAS-24211323	Steps: **1** Yield: **60%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 185 (1 Reaction) Steps: **1** Yield: **60%**



Suppliers (67)

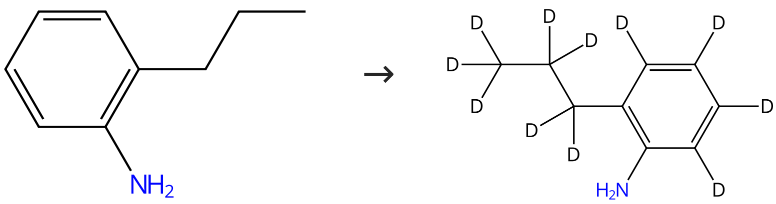
31-614-CAS-34527010	Steps: **1** Yield: **60%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 186 (1 Reaction) Steps: **1** Yield: **59%**



Suppliers (70)

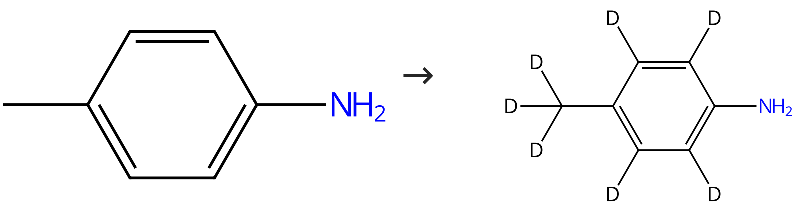
31-116-CAS-3177869	Steps: **1** Yield: **59%**
1.1 **Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 187 (1 Reaction) Steps: **1** Yield: **58%**



Suppliers (78) Suppliers (35)

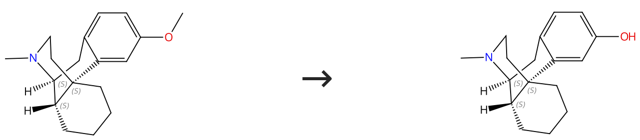
31-116-CAS-5532987	Steps: **1** Yield: **58%**
1.1 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	
Experimental Protocols	

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

Scheme 188 (1 Reaction) Steps: **1** Yield: **58%**



• HBr
Absolute stereochemistry shown

• HBr
Absolute stereochemistry shown

Suppliers (12)

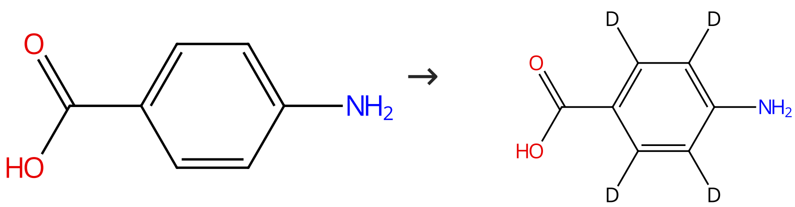
31-614-CAS-30440182	Steps: **1** Yield: **58%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 2 h, 140 °C	
1.2 **Reagents:** Hydrogen bromide **Solvents:** Water; 2 h, reflux	
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 189 (1 Reaction) Steps: **1** Yield: **58%**



Suppliers (137) Suppliers (40)

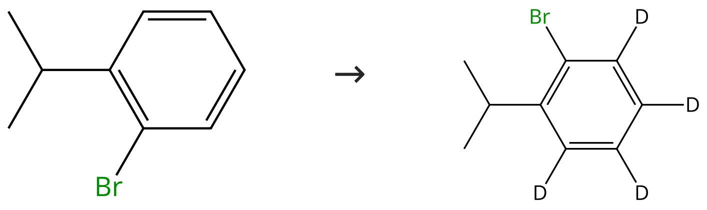
31-116-CAS-9692200	Steps: **1** Yield: **58%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium	
Experimental Protocols	

Syntheses of labeled vitamers of folic acid to be used as internal standards in stable isotope dilution assays

By: Freisleben, Achim; et al

Journal of Agricultural and Food Chemistry (2002), 50(17), 4760-4768.

Scheme 190 (1 Reaction) Steps: **1** Yield: **58%**



Suppliers (77)

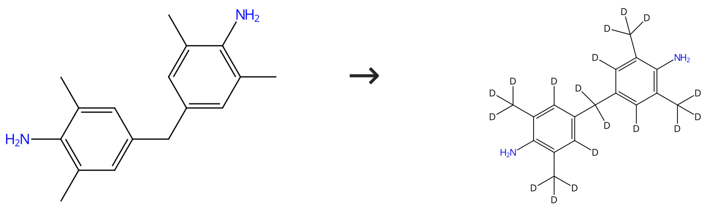
31-614-CAS-24211319	Steps: **1** Yield: **58%**
1.1 **Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C	
Experimental Protocols	

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 191 (1 Reaction) Steps: **1** Yield: **57%**



Suppliers (67) Supplier (1)

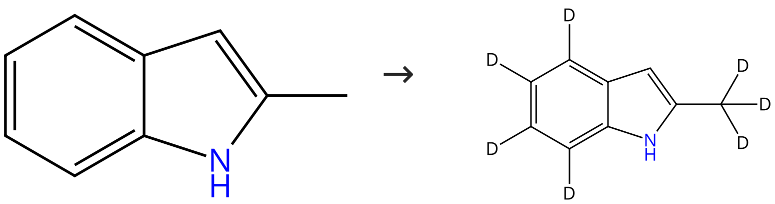
31-116-CAS-15113479	Steps: **1** Yield: **57%**
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C	

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 192 (1 Reaction) Steps: **1** Yield: **57%**



Suppliers (98)

31-614-CAS-40655067	Steps: **1** Yield: **57%**
1.1	**Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 100 °C

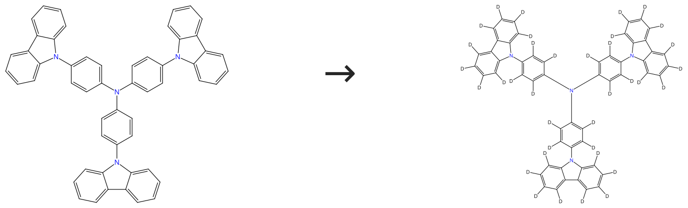
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 193 (1 Reaction) Steps: **1** Yield: **56%**



Suppliers (84) Supplier (1)

31-116-CAS-3746486	Steps: **1** Yield: **56%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium, Platinum **Solvents:** Tetrahydrofuran, Water-d_2; 18 h, 140 °C; 18 h, 140 °C; 18 h, 140 °C; cooled

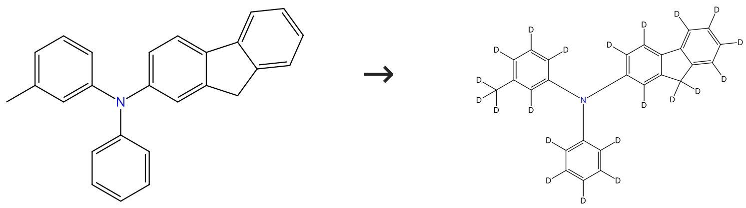
Experimental Protocols

Deuteration of molecules for neutron reflectometry on organic light-emitting diode thin films

By: Darwish, Tamim A.; et al

Tetrahedron Letters (2012), 53(8), 931-935.

Scheme 194 (1 Reaction) Steps: **1** Yield: **56%**



31-116-CAS-4248126	Steps: **1** Yield: **56%**
1.1	**Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

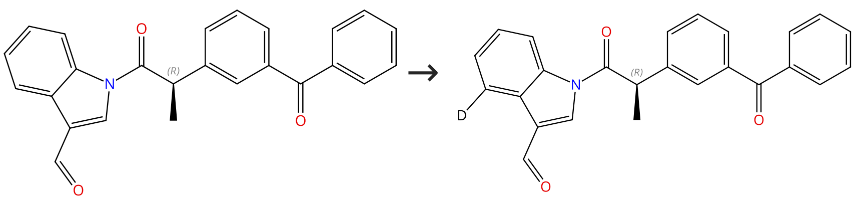
Experimental Protocols

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 195 (1 Reaction) Steps: **1** Yield: **56%**



Absolute stereochemistry shown Absolute stereochemistry shown

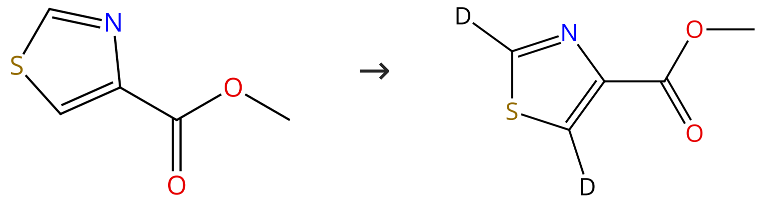
31-614-CAS-38370046	Steps: **1** Yield: **56%**
1.1	**Reagents:** Trifluoroacetic acid, Water-d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** 1,2-Dichloroethane, Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 196 (1 Reaction) Steps: **1** Yield: **56%**



Suppliers (67)

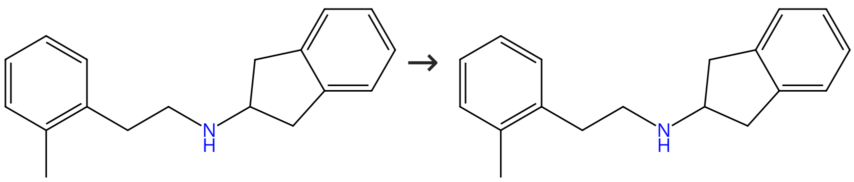
31-614-CAS-40655046	Steps: **1** Yield: **56%**
1.1	**Catalysts:** Acridine, Palladium trifluoroacetate, Benzamide, 2, 4,6-tris(1-methylethyl)-*N*-8-quinolinyl- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 130 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 197 (1 Reaction) Steps: **1** Yield: **56%**



Suppliers (4)

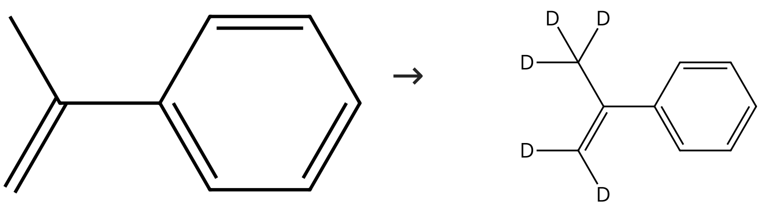
31-614-CAS-25277214	Steps: **1** Yield: **56%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium, Sodium borodeuteride **Solvents:** Water-d_2; 30 s, rt; 18 h, 130 °C
Experimental Protocols	

C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 198 (1 Reaction) Steps: **1** Yield: **56%**



Suppliers (70) Supplier (1)

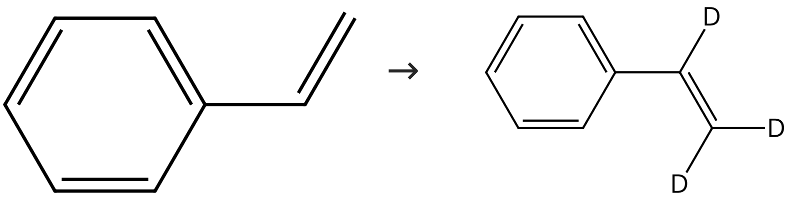
31-116-CAS-22371289	Steps: **1** Yield: **56%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C	
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 199 (1 Reaction) Steps: **1** Yield: **55%**



Suppliers (122) Suppliers (22)

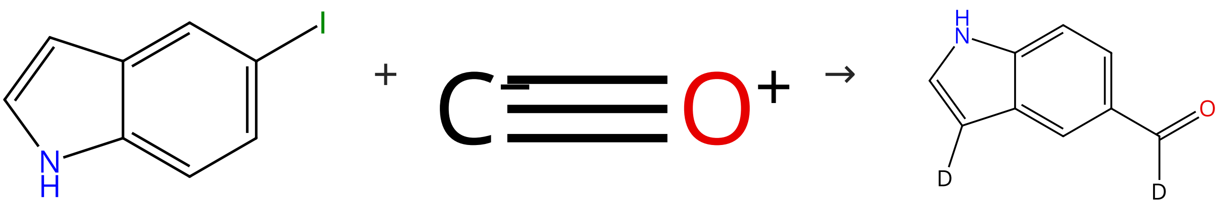
31-116-CAS-22371278	Steps: **1** Yield: **55%**
1.1 **Reagents:** Water-d_2 **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C	
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 200 (1 Reaction) Steps: **1** Yield: **55%**



Suppliers (79) Suppliers (17)

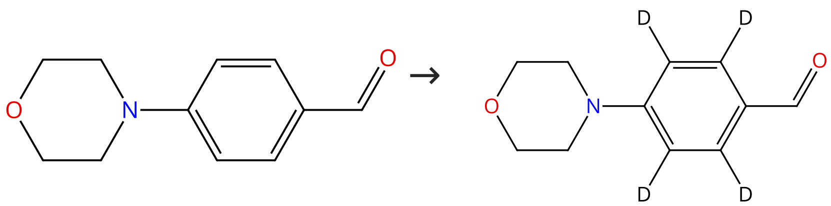
31-116-CAS-19074739	Steps: **1** Yield: **55%**
1.1 **Reagents:** *N,N,N',N'*-Tetramethylethylenediamine, Water-d_2 **Catalysts:** Palladium chloride, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium, 4,4'-Dimethoxy-2,2'-bipyridine **Solvents:** Dimethylformamide; 24 h, 25 bar, 85 °C	
Experimental Protocols	

Palladium/Rhodium Cooperative Catalysis for the Production of Aryl Aldehydes and Their Deuterated Analogues Using the Water-Gas Shift Reaction

By: Ibrahim, Malek Y. S.; et al

Angewandte Chemie, International Edition (2018), 57(32), 10362-10367.

Scheme 201 (1 Reaction) Steps: **1** Yield: **54%**



Suppliers (95)

31-614-CAS-24154347 Steps: **1** Yield: **54%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

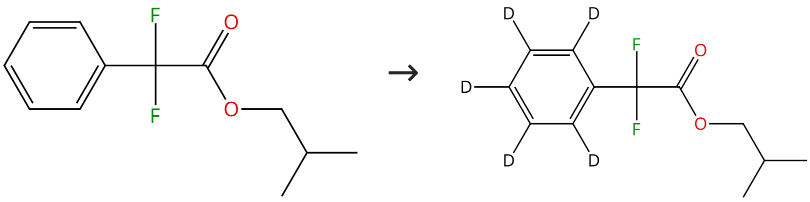
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 202 (1 Reaction) Steps: **1** Yield: **54%**



31-614-CAS-24211336 Steps: **1** Yield: **54%**

1.1 **Reagents:** Water-*d*2
Catalysts: Palladium diacetate, 3-(Trifluoromethyl)quinoline, 2,4,6-Tris(1-methylethyl)-*N*-[2-oxo-2-[[(2,4,6-trifluorophenyl)sulfonyl]amino]ethyl]benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 48 h, 120 °C

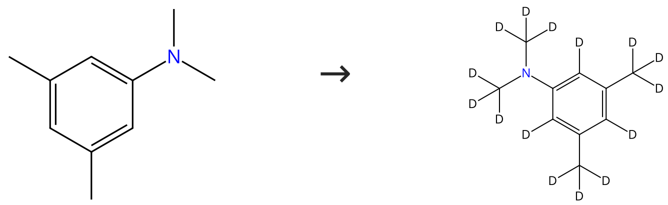
Experimental Protocols

Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes

By: Farizyan, Mirxan; et al

Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 203 (1 Reaction) Steps: **1** Yield: **54%**



Suppliers (56)

31-116-CAS-20244030 Steps: **1** Yield: **54%**

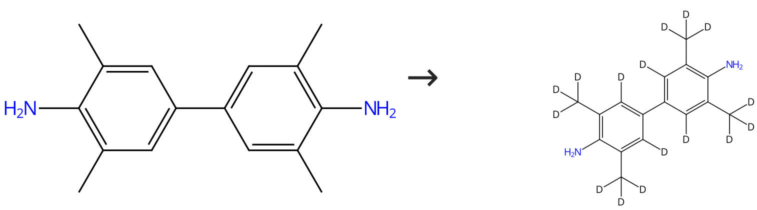
1.1 **Reagents:** Deuterium
Catalysts: Palladium
Solvents: Water-*d*2; 18 h, 2 bar, 150 °C

Fine-tuning the efficiency of para-hydrogen-induced hyperpolarization by rational N-heterocyclic carbene design

By: Rayner, Peter J.; et al

Nature Communications (2018), 9(1), 1-11.

Scheme 204 (2 Reactions) Steps: **1** Yield: **51-54%**

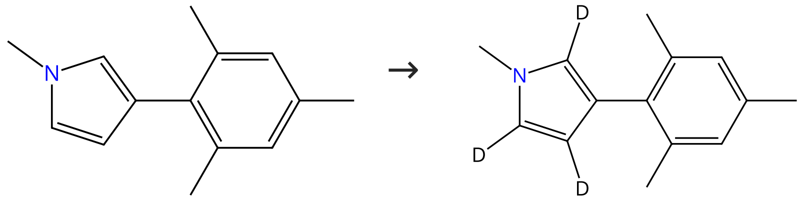


Suppliers (154)

31-116-CAS-12983615	Steps: **1** Yield: **54%**	Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds
1.1 **Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C		By: Ito, Nobuhiro; et al Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

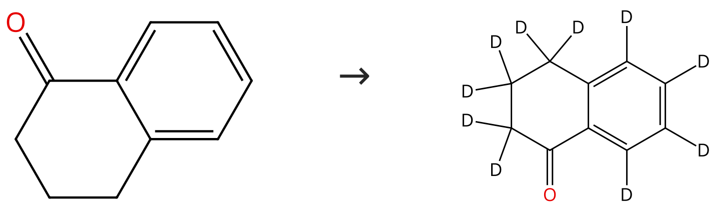
31-116-CAS-4715395	Steps: **1** Yield: **51%**	H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst
1.1 **Catalysts:** Palladium, Platinum **Solvents:** Water-d_2; 24 h, 180 °C Experimental Protocols		By: Ito, Nobuhiro; et al Synthesis (2008), (9), 1467-1478.

Scheme 205 (1 Reaction) Steps: **1** Yield: **53%**



31-614-CAS-24211332	Steps: **1** Yield: **53%**	Palladium-Catalyzed Nondirected Late-Stage C-H Deuteration of Arenes
1.1 **Reagents:** Silver fluoride, Water-d_2 **Catalysts:** Palladium diacetate, Methyl 6-methylnicotinate, *N*-[2,4,6-Tris(1-methylethyl)benzoyl]glycine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 18 h, 80 °C Experimental Protocols		By: Farizyan, Mirxan; et al Journal of the American Chemical Society (2021), 143(40), 16370-16376.

Scheme 206 (3 Reactions) Steps: **1** Yield: **53%**



Suppliers (101)

31-116-CAS-19889077	Steps: **1** Yield: **53%**	Iodine-Promoted Synthesis of 2-Naphthyl Thioethers from Tetralones and Sulfonyl Hydrazides
1.1 **Reagents:** Water-d_2, Sodium borodeuteride **Catalysts:** Palladium; 18 h, rt → 130 °C Experimental Protocols		By: Yang, Fulai; et al Asian Journal of Organic Chemistry (2019), 8(2), 234-237.

31-116-CAS-20077085	Steps: **1** Yield: **53%**	Iodine-Promoted Tunable Synthesis of 2-Naphthyl Thioethers and 1-Naphthyl Thioethers
1.1 **Reagents:** Water-d_2, Sodium borodeuteride **Catalysts:** Palladium; 18 h, rt → 130 °C		By: Bao, Yishu; et al Advanced Synthesis & Catalysis (2019), 361(9), 2154-2158.

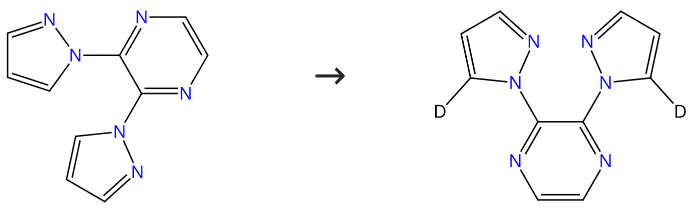
31-116-CAS-16215039	Steps: **1** Yield: **53%**
1.1	**Reagents:** Water-d_2, Sodium borodeuteride **Catalysts:** Palladium; 18 h, rt → 130 °C

By-Product-Catalyzed Redox-Neutral Sulfenylation/Deiodination/Aromatization of Cyclic Alkenyl Iodides with Sulfonyl Hydrazides

By: Yang, Fu-Lai; et al

Advanced Synthesis & Catalysis (2016), 358(21), 3368-3372.

Scheme 207 (1 Reaction) Steps: **1** Yield: **52%**



Supplier (1)

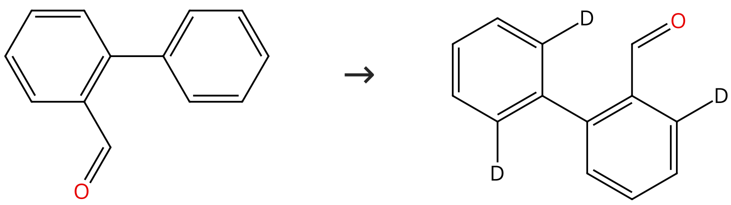
31-614-CAS-35835983	Steps: **1** Yield: **52%**
1.1	**Reagents:** 4-Methylpyridine, Silver carbonate, Water-d_2 **Catalysts:** Tributylphosphine, Palladium diacetate **Solvents:** 1,4-Dioxane; 7 h, 105 °C
Experimental Protocols	

Dehydrogenative Syntheses of Biazoles via a "Pre-Join" Approach

By: Yu, Tianyang; et al

JACS Au (2023), 3(1), 80-85.

Scheme 208 (1 Reaction) Steps: **1** Yield: **52%**



Suppliers (83)

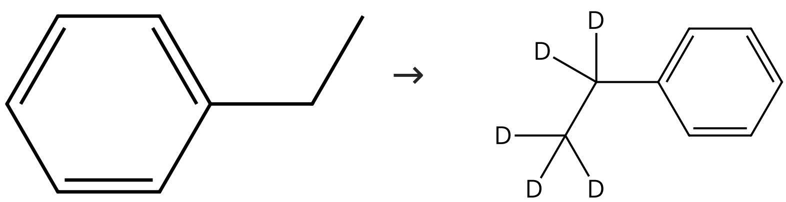
31-614-CAS-24154326	Steps: **1** Yield: **52%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 209 (1 Reaction) Steps: **1** Yield: **51%**



Suppliers (136)

31-614-CAS-27227235	Steps: **1** Yield: **51%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium, Carbon **Solvents:** Water-d_2; 24 h, 110 °C
Experimental Protocols	

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 210 (1 Reaction) Steps: **1** Yield: **51%**

Suppliers (75)

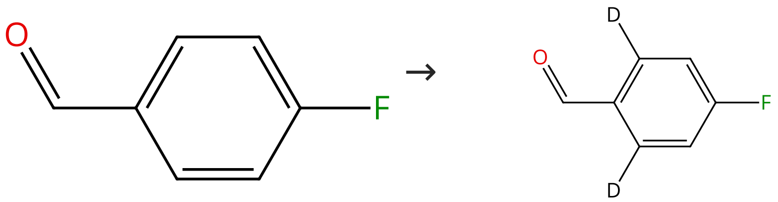
31-614-CAS-40655070	Steps: **1** Yield: **51%**
1.1	**Catalysts:** Palladium diacetate, Benzamide, 2,4,6-tris(1-methyl ethyl)-*N*-[2-[(4-methylphenyl)thio]ethyl]- **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt
1.2	**Reagents:** Water-d_2; 18 h, 60 °C
Experimental Protocols	

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 211 (1 Reaction) Steps: **1** Yield: **51%**



Suppliers (103)

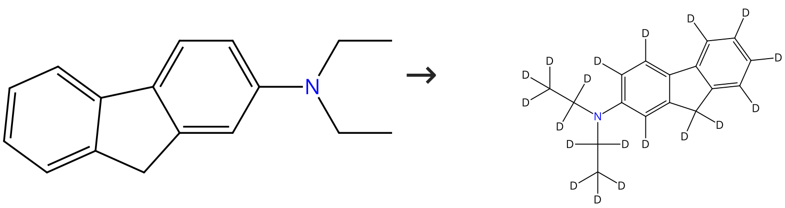
31-614-CAS-24154333	Steps: **1** Yield: **51%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2 **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 212 (1 Reaction) Steps: **1** Yield: **51%**



Suppliers (5)

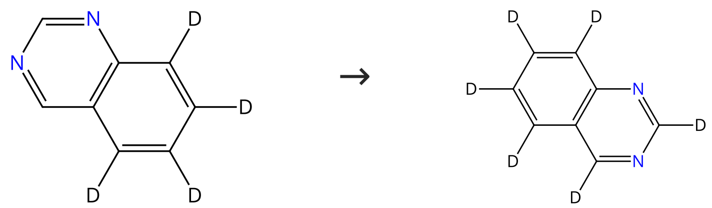
31-116-CAS-4594586	Steps: **1** Yield: **51%**
1.1	**Catalysts:** Palladium **Solvents:** Water-d_2; 12 h, 4 - 5 M Pa, 240 °C
Experimental Protocols	

Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 213 (1 Reaction) Steps: **1** Yield: **50%**



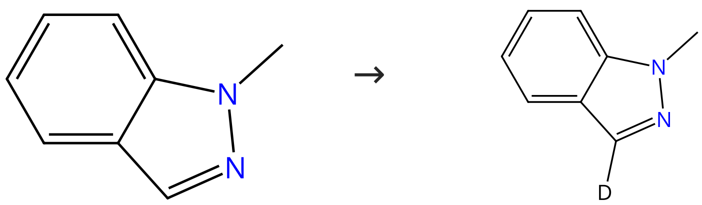
31-116-CAS-3048859	Steps: **1** Yield: **50%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 48 h, 55 °C; 55 °C → 90 °C; 6 h, 90 °C

ONSH: Optimization of Oxidative Alkylamination Reactions through Study of the Reaction Mechanism

By: Verbeeck, Stefan; et al

Journal of Organic Chemistry (2010), 75(15), 5126-5133.

Scheme 214 (1 Reaction) Steps: **1** Yield: **50%**



Suppliers (67)

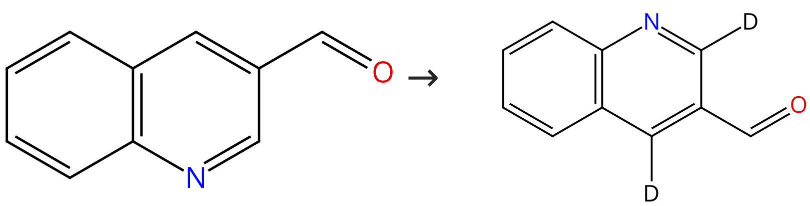
31-116-CAS-20966795	Steps: **1** Yield: **50%**
1.1	**Reagents:** Cupric acetate, Sodium sulfate, Water- d_2 **Catalysts:** Palladium diacetate, Sodium chloride; 30 min, rt
Experimental Protocols	

Palladium-Catalyzed C-H/C-H Cross-Coupling by Mechanochemistry: Direct Alkenylation and Heteroarylation of N1-Protected 1H-Indazoles

By: Yu, Jingbo; et al

Journal of Organic Chemistry (2020), 85(2), 1009-1021.

Scheme 215 (1 Reaction) Steps: **1** Yield: **50%**



Suppliers (96)

31-614-CAS-24154360	Steps: **1** Yield: **50%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

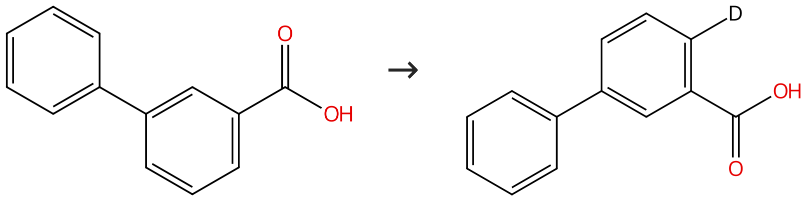
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 216 (1 Reaction) Steps: **1** Yield: **50%**



Suppliers (93)

31-614-CAS-34527016	Steps: **1** Yield: **50%**

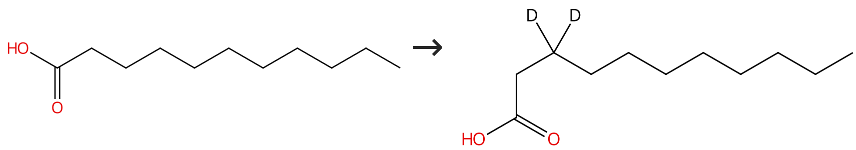
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 217 (1 Reaction) Steps: **1** Yield: **49%**



Suppliers (109)

31-614-CAS-39495800	Steps: **1** Yield: **49%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

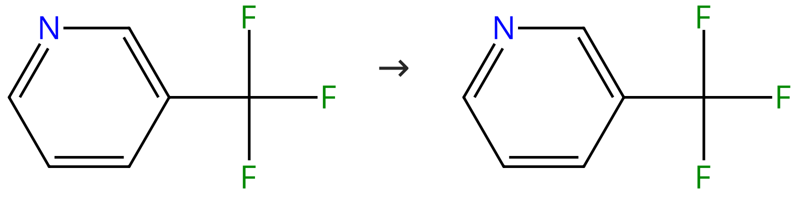
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 218 (1 Reaction)

Steps: **1** Yield: **49%**



Suppliers (78)

31-614-CAS-41719932

Steps: **1** Yield: **49%**

1.1 **Reagents:** Sodium carbonate, Water- *d*$_2$
Catalysts: Palladium trifluoroacetate, Bis(3,5-dimethylphenyl) phosphine oxide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

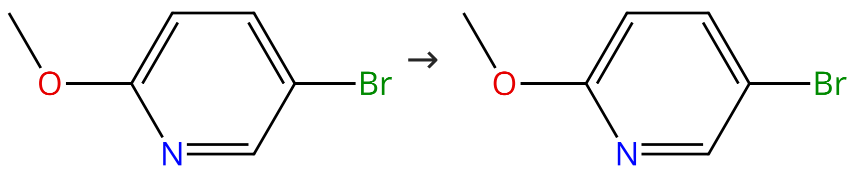
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 219 (1 Reaction)

Steps: **1** Yield: **48%**



Suppliers (98)

Suppliers (3)

31-614-CAS-26060742

Steps: **1** Yield: **48%**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-*d*$_2$; 2 h, 150 °C

Experimental Protocols

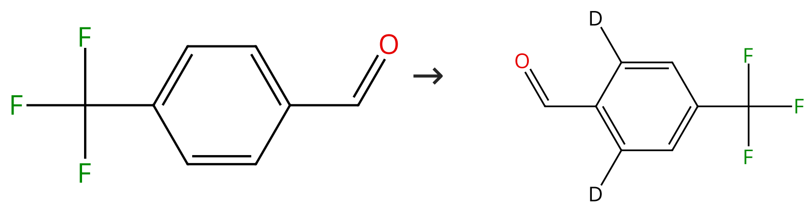
Hydrogen-Deuterium Exchange Reactions of Aromatic Compounds and Heterocycles by NaBD$_4$-Activated Rhodium, Platinum and Palladium Catalysts

By: Derdau, Volker; et al

Chemistry - A European Journal (2009), 15(40), 10397-10404, S10397/1-S10397/8.

Scheme 220 (1 Reaction)

Steps: **1** Yield: **48%**



Suppliers (92)

31-614-CAS-24154342

Steps: **1** Yield: **48%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

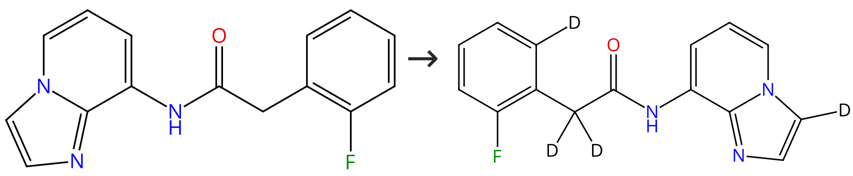
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 221 (1 Reaction)

Steps: **1** Yield: **46%**



Supplier (1)

31-116-CAS-23306887

Steps: **1** Yield: **46%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate; 42 h, 120 °C

Experimental Protocols

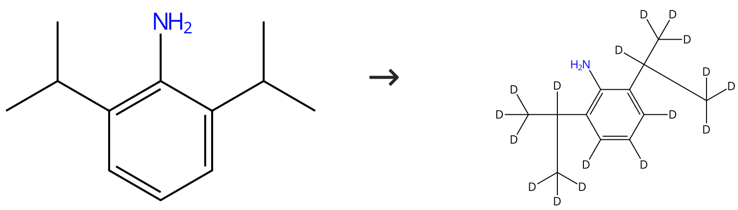
8-Aminoimidazo[1,2-a]pyridine (AIP) directed Pd(II) catalysis: site-selective ortho-C(sp^2)-H arylation in aqueous medium

By: Mondal, Biswajit; et al

Organic & Biomolecular Chemistry (2021), 19(7), 1604-1609.

Scheme 222 (1 Reaction)

Steps: **1** Yield: **46%**



Suppliers (93)

31-116-CAS-23461925

Steps: **1** Yield: **46%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Platinum; 15 min, rt; 72 h, 180 psi, rt → 150 °C

Experimental Protocols

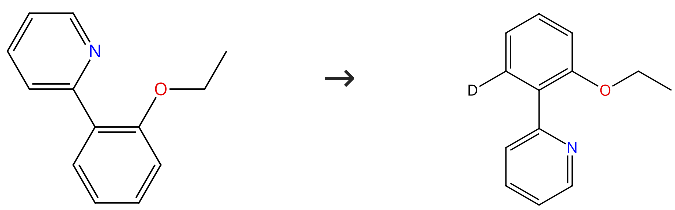
Kinetically Controlled Formation of Semi-crystalline Conjugated Polymer Nanostructures

By: Kei, Peter; et al

Macromolecules (Washington, DC, United States) (2021), 54(5), 2162-2177.

Scheme 223 (1 Reaction)

Steps: **1** Yield: **46%**



Suppliers (19)

Supplier (1)

31-116-CAS-9874952

Steps: **1** Yield: **46%**

1.1 **Reagents:** *N*-Bromosuccinimide
Catalysts: Palladium diacetate
Solvents: Acetonitrile; 10 h, 120 °C

1.2 **Reagents:** Butyllithium
Solvents: Tetrahydrofuran, Hexane; -78 °C; -40 °C; 30 min, -40 °C

1.3 **Reagents:** Water-d_2; 30 min, -40 °C

Experimental Protocols

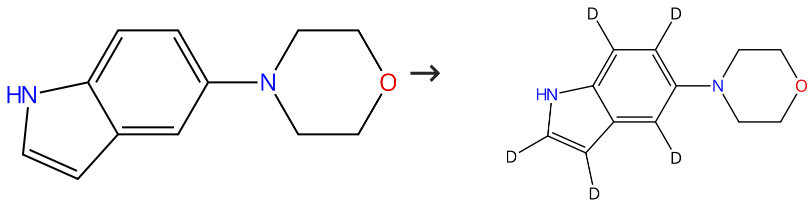
Directed palladium-catalyzed oxidative C-H arylation of (hetero)arenes with arylboronic acids by using TEMPO

By: Kirchberg, Sylvia; et al

Synlett (2008), (18), 2841-2845.

Scheme 224 (1 Reaction)

Steps: **1** Yield: **45%**



Suppliers (57)

31-614-CAS-40655074

Steps: **1** Yield: **45%**

1.1 **Catalysts:** 2,6-Lutidine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-(2-pyridinylmethyl)-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 100 °C

Experimental Protocols

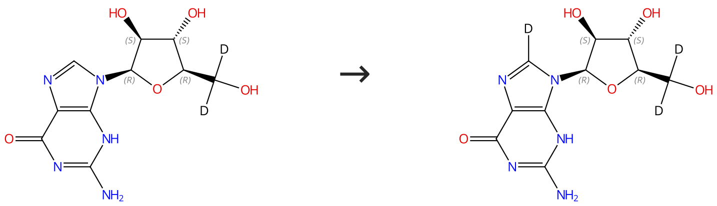
Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 225 (1 Reaction)

Steps: **1** Yield: **45%**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-116-CAS-22623973

Steps: **1** Yield: **45%**

1.1 **Reagents:** Ammonium formate
Catalysts: Palladium
Solvents: Ethan-*1-d*-ol; 8 h, 85 °C

1.2 **Reagents:** Water-d_2; 1 h, 100 °C

Experimental Protocols

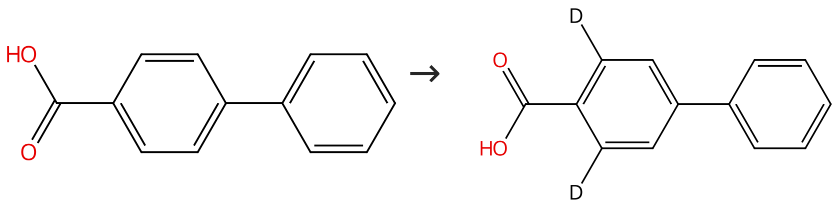
Synthesis of deuterium-labeled nelarabine and its active ingredient, ara-G

By: Zhao, Damin; et al

Journal of Radioanalytical and Nuclear Chemistry (2020), 325(1), 47-55.

Scheme 226 (1 Reaction)

Steps: **1** Yield: **45%**



Suppliers (111)

31-614-CAS-34527025

Steps: **1** Yield: **45%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

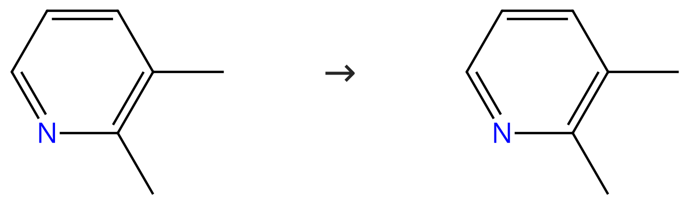
Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 227 (1 Reaction)

Steps: **1** Yield: **44%**



Suppliers (75)

31-614-CAS-41719921

Steps: **1** Yield: **44%**

1.1 **Reagents:** Sodium carbonate, Water-*d*$_2$
Catalysts: Bis(4-methoxyphenyl)phosphine oxide, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C

Experimental Protocols

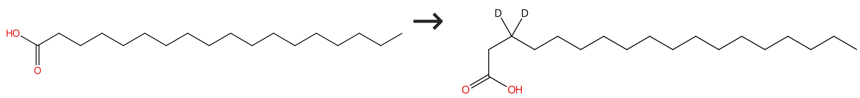
Geometric constraints regulated regioselectivity: Pd-catalyzed α-deuteration of pyridines with secondary phosphine oxide

By: Zheng, Chenxu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(75), 10338-10341.

Scheme 228 (1 Reaction)

Steps: **1** Yield: **43%**



Suppliers (175)

31-614-CAS-39495806

Steps: **1** Yield: **43%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

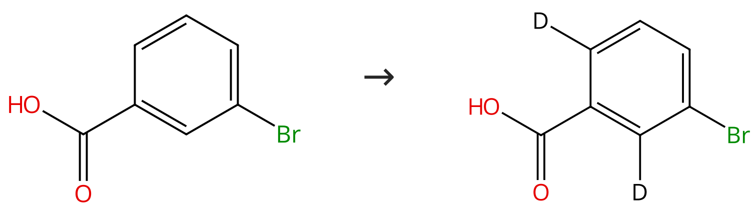
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 229 (1 Reaction)

Steps: **1** Yield: **43%**



Suppliers (106)

31-614-CAS-34527015

Steps: **1** Yield: **43%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

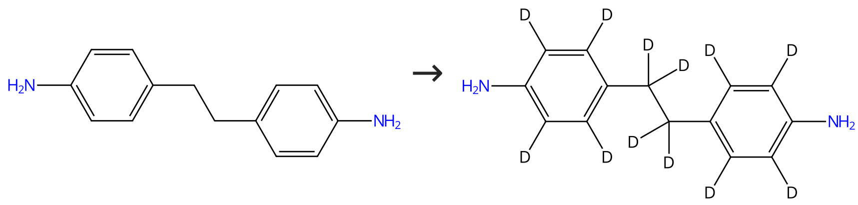
Palladium-Catalyzed Ligand-Free ortho-Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 230 (2 Reactions)

Steps: **1** Yield: **43%**



Suppliers (69)

31-116-CAS-2580642

Steps: **1** Yield: **43%**

1.1 **Catalysts:** Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

Experimental Protocols

H-D exchange reaction taking advantage of the synergistic effect of heterogeneous palladium and platinum mixed catalyst

By: Ito, Nobuhiro; et al

Synthesis (2008), (9), 1467-1478.

31-116-CAS-6595187

Steps: **1** Yield: **43%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Platinum
Solvents: Water-d_2; 24 h, 180 °C

Synergistic effect of a palladium-on-carbon/platinum-on-carbon mixed catalyst in hydrogen/deuterium exchange reactions of alkyl-substituted aromatic compounds

By: Ito, Nobuhiro; et al

Advanced Synthesis & Catalysis (2006), 348(9), 1025-1028.

Scheme 231 (1 Reaction)

Steps: **1** Yield: **42%**

Absolute stereochemistry shown, Rotation (+)

Suppliers (68)

Absolute stereochemistry shown

Supplier (1)

31-614-CAS-42165009

Steps: **1** Yield: **42%**

1.1 **Reagents:** Quinone
Catalysts: Palladium(2+), bis[μ-(acetato-κ*O*:κ*O*')]bis(2,9-dimethyl-1,10-phenanthroline-κ*N*[1],κ*N*[10])di-, 1,1,1-trifluoro methanesulfonate (1:2)
Solvents: DMSO-d_6, Water-d_2; 12 h, rt

Experimental Protocols

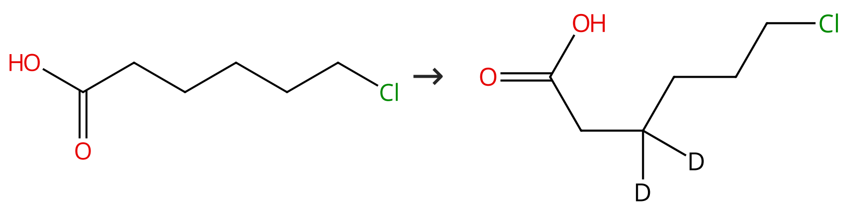
A Predictive Model for the Pd-Catalyzed Site-Selective Oxidation of Diols

By: Marinus, Nittert; et al

Chemistry - A European Journal (2023), 29(44), e202300318.

Scheme 232 (1 Reaction)

Steps: **1** Yield: **42%**



Suppliers (66)

31-614-CAS-39495804 Steps: **1** Yield: **42%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-*d*$_2$
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

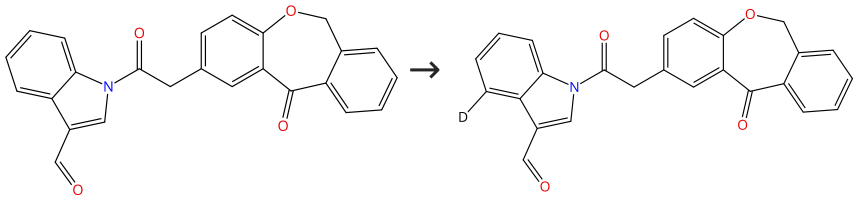
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 233 (1 Reaction) Steps: **1** Yield: **41%**



31-614-CAS-38370037 Steps: **1** Yield: **41%**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: 1,2-Dichloroethane, Water; rt

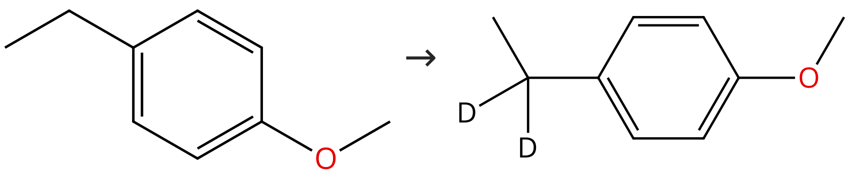
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 234 (2 Reactions) Steps: **1** Yield: **40%**



Suppliers (75)

31-116-CAS-12578424 Steps: **1** Yield: **40%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$; 72 h, rt

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-12051001 Steps: **1** Yield: **40%**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium
Solvents: Water-*d*$_2$

Experimental Protocols

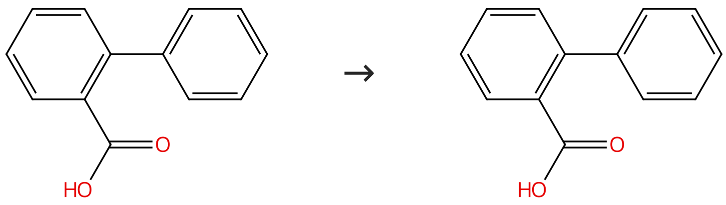
Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 235 (2 Reactions)

Steps: **1** Yield: **40%**



Suppliers (97)

31-614-CAS-34527024

Steps: **1** Yield: **40%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

31-614-CAS-26264076

Steps: **1**

1.1 **Reagents:** Quinone, Silver carbonate, Oxygen, Water- d_2
Catalysts: *N*-Acetyl-L-alanine, Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 1 h, 80 °C

Experimental Protocols

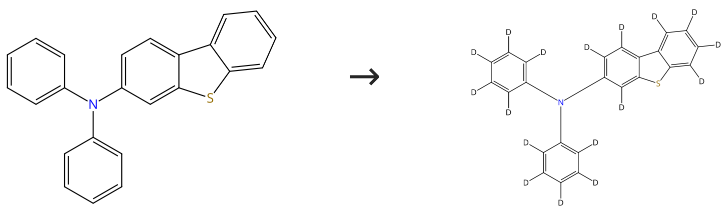
Remote and Selective C(sp^2)-H Olefination for Sequential Regioselective Linkage of Phenanthrenes

By: Wei, Yi; et al

Organic Letters (2020), 22(11), 4129-4134.

Scheme 236 (1 Reaction)

Steps: **1** Yield: **39%**



31-116-CAS-13068593

Steps: **1** Yield: **39%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

Experimental Protocols

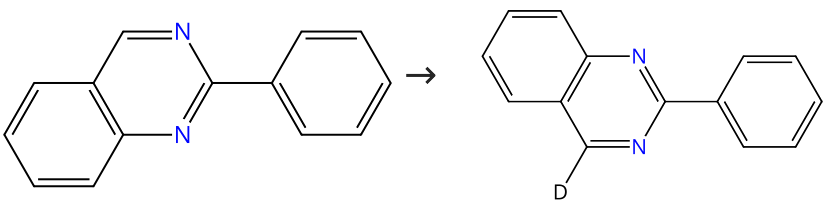
Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 237 (1 Reaction)

Steps: **1** Yield: **39%**



Suppliers (37)

Supplier (1)

31-116-CAS-3091408

Steps: **1** Yield: **39%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 120 °C

Experimental Protocols

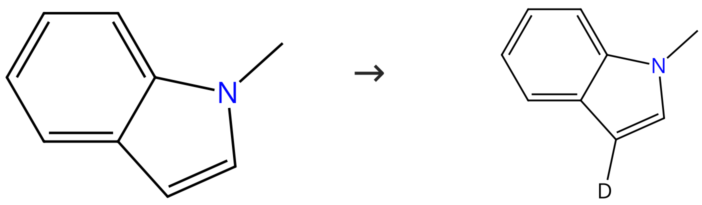
KOtBu-mediated stereoselective addition of quinazolines to alkynes under mild conditions

By: Zhao, Dan; et al

Organic & Biomolecular Chemistry (2013), 11(35), 5908-5912.

Scheme 238 (3 Reactions)

Steps: **1** Yield: **39%**



Suppliers (107)

Suppliers (2)

31-116-CAS-17765593

Steps: **1** Yield: **39%**

1.1 **Reagents:** Butyl vinyl ether, Cupric acetate
Catalysts: Palladium trifluoroacetate
Solvents: Dimethyl sulfoxide, Dimethylformamide, Water-d_2; 12 h, 70 °C; 70 °C → rt

1.2 **Solvents:** Water; rt

Experimental Protocols

3-Acylindoles via palladium-catalyzed regioselective arylation of electron-rich olefins with indoles

By: Li, Yang; et al

RSC Advances (2013), 3(29), 11463-11466.

31-614-CAS-34270002

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, 5-Nitro-1,10-phenanthroline
Solvents: Dimethylformamide; 24 h, 100 °C

1.2 **Reagents:** Sodium chloride

Experimental Protocols

Ligand-controlled regiodivergent direct arylation of indoles via oxidative boron Heck reaction

By: Yang, Yo-Sep; et al

Organic Chemistry Frontiers (2022), 9(21), 5906-5911.

31-116-CAS-22753221

Steps: **1**

1.1 **Catalysts:** Dimethyl sulfoxide, Cupric acetate, Palladium, bis (acetonitrile)dichloro-
Solvents: Dimethylformamide; 5 min, rt

1.2 **Reagents:** Water-d_2; 31 h, 70 °C

1.3 -

Experimental Protocols

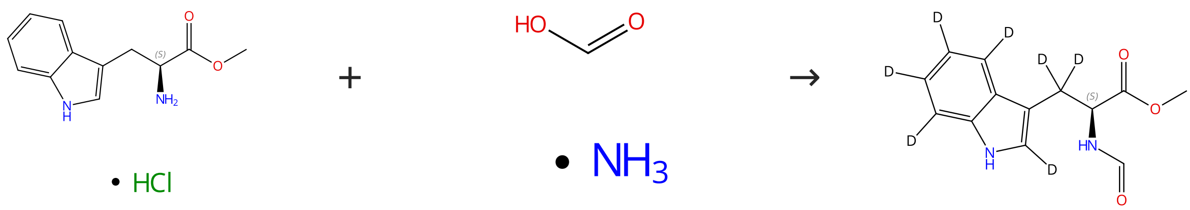
Regiocontrol in the oxidative Heck reaction of indole by ligand-enabled switch of the regioselectivity-determining step

By: Wang, Yu-Jie; et al

Chemical Science (2020), 11(40), 11042-11054.

Scheme 239 (1 Reaction)

Steps: **1** Yield: **37%**



• HCl

Absolute stereochemistry shown, Rotation (+)

Suppliers (94)

• NH_3

Suppliers (116)

Absolute stereochemistry shown

31-116-CAS-19075957

Steps: **1** Yield: **37%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Water
Solvents: Water-d_2; 18 h, 110 °C; 110 °C → rt

1.2 **Catalysts:** Platinum dioxide; rt → reflux; 8 h, reflux; reflux → rt

1.3 **Solvents:** Acetonitrile; rt → 95 °C; 18 h, 95 °C

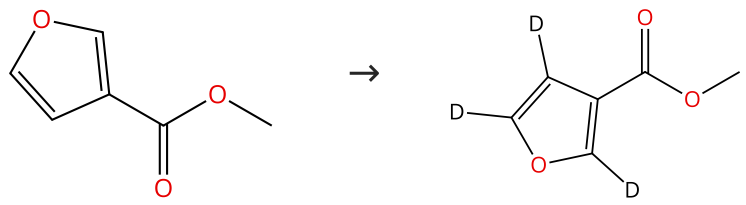
Experimental Protocols

Mechanistic Investigation of Oxidative Decarboxylation Catalyzed by Two Iron(II)- and 2-Oxoglutarate-Dependent Enzymes

By: Huang, Jhih-Liang; et al

Biochemistry (2018), 57(12), 1838-1841.

Scheme 240 (1 Reaction) Steps: **1** Yield: **34%**



Suppliers (68)

31-614-CAS-40655035 Steps: **1** Yield: **34%**

1.1 **Catalysts:** Acridine, Palladium diacetate, Benzamide, 2,4,6-tris(1-methylethyl)-*N*-8-quinolinyl-
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 20 min, rt

1.2 **Reagents:** Water-d_2; 18 h, 90 °C

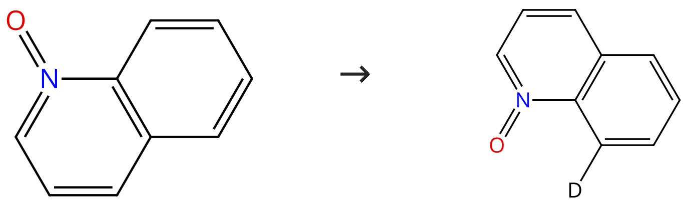
Experimental Protocols

Palladium(II)-Catalyzed Nondirected Late-Stage C(sp^2)-H Deuteration of Heteroarenes Enabled Through a Multi-Substrate Screening Approach

By: Dey, Jyotirmoy; et al

Angewandte Chemie, International Edition (2024), 63(27), e202404421.

Scheme 241 (1 Reaction) Steps: **1** Yield: **34%**



Suppliers (57) Supplier (1)

31-116-CAS-13538617 Steps: **1** Yield: **34%**

1.1 **Reagents:** Acetic acid-d_4
Catalysts: Palladium diacetate
Solvents: Water-d_2; 3 h, 120 °C

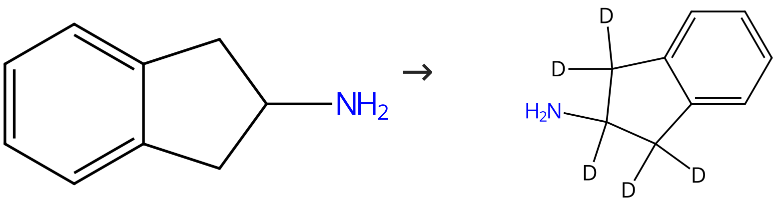
Experimental Protocols

Palladium-Catalyzed C8-Selective C-H Arylation of Quinoline N-Oxides: Insights into the Electr onic, Steric, and Solvation Effects on the Site Selectivity by Mechanistic and DFT Computational Studies

By: Stephens, David E.; et al

ACS Catalysis (2015), 5(1), 167-175.

Scheme 242 (1 Reaction) Steps: **1** Yield: **34%**



Suppliers (36)

31-614-CAS-26056141 Steps: **1** Yield: **34%**

1.1 **Catalysts:** Palladium, Sodium borodeuteride
Solvents: Water-d_2; 18 h, 130 °C

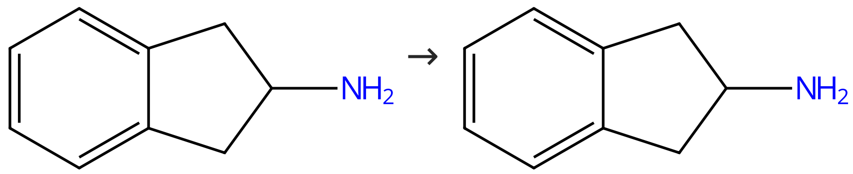
H/D-exchange reactions with hydride-activated catalysts

By: Derdau, Volker; et al

Journal of Labelled Compounds and Radiopharmaceuticals (2007), 50(5-6), 295-299.

Scheme 243 (1 Reaction)

Steps: **1** Yield: **34%**



Suppliers (36)

31-614-CAS-27932560

Steps: **1** Yield: **34%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Sodium borodeuteride
Solvents: Water-d_2; 30 s, rt; 18 h, 130 °C

Experimental Protocols

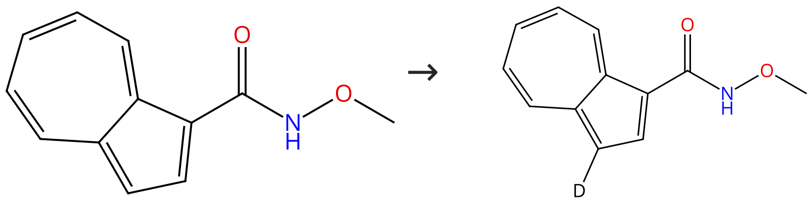
C-H/C-D exchange reactions of aromatic compounds in D_2O with $NaBD_4$-activated catalysts

By: Derdau, Volker; et al

Synlett (2006), (12), 1918-1922.

Scheme 244 (1 Reaction)

Steps: **1** Yield: **33%**



31-116-CAS-22860876

Steps: **1** Yield: **33%**

1.1 **Reagents:** Potassium iodide, Oxygen, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 4 h, 120 °C

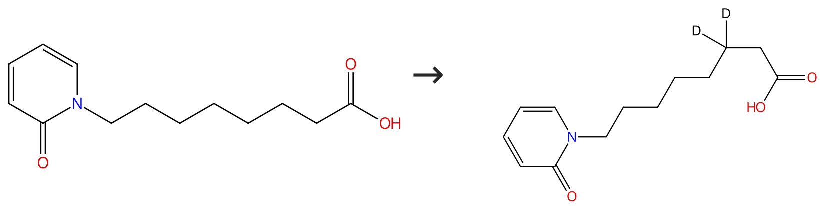
Synthesis of Azulenopyridinones through Palladium-Catalyzed Oxidative [4+2] Cyclization Reactions of N-Methoxyazulene-1- and 2-carboxamides with Alkynes

By: Han, Gi Uk; et al

Advanced Synthesis & Catalysis (2020), 362(21), 4749-4754.

Scheme 245 (1 Reaction)

Steps: **1** Yield: **32%**



31-614-CAS-39495809

Steps: **1** Yield: **32%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

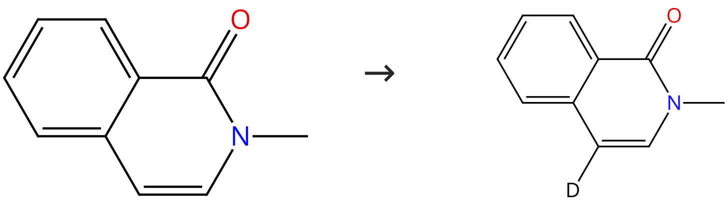
Experimental Protocols

Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 246 (1 Reaction) Steps: **1** Yield: **32%**



Suppliers (60) Supplier (1)

31-116-CAS-485805 Steps: **1** Yield: **32%**

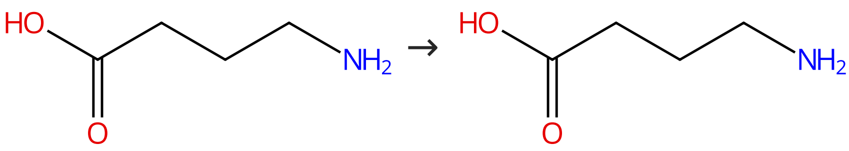
1.1 **Reagents:** Water-d_2
Catalysts: Palladium dipivalate
Solvents: 1,2-Dimethoxyethane; 24 h, 120 °C

Catalyst Controlled Divergent C4/C8 Site-Selective C-H Arylation of Isoquinolones

By: Lee, Soyoung; et al

Organic Letters (2015), 17(15), 3864-3867.

Scheme 247 (1 Reaction) Steps: **1** Yield: **30%**



Suppliers (144)

31-614-CAS-40399565 Steps: **1** Yield: **30%**

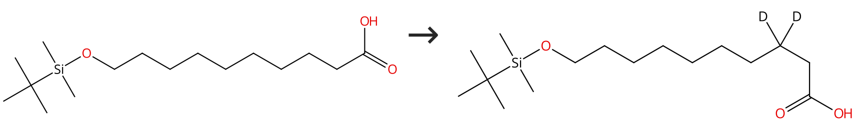
1.1 **Reagents:** Water-d_2
Catalysts: Palladium, Barium sulfate; 90 min, 210 °C

The Use of D_2 and Deuterated Water for the Introduction of a Label into 4-Aminobutanoic Acid

By: Shevchenko, V. P.; et al

Radiochemistry (Moscow, Russian Federation) (2024), 66(1), 97-104.

Scheme 248 (1 Reaction) Steps: **1** Yield: **29%**



Supplier (1)

31-614-CAS-39495808 Steps: **1** Yield: **29%**

1.1 **Reagents:** 8-Aminoquinoline
Catalysts: Ethanol, 2,2,2-trifluoro-, 1,1',1''-triester with boric acid (H_3BO_3)
Solvents: Toluene; 48 h, reflux; reflux → rt

1.2 **Reagents:** Acetic anhydride; 2 h, rt

1.3 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Palladium diacetate; 24 h, 90 °C; cooled

1.4 **Catalysts:** Triacylglycerol lipase
Solvents: Water; 24 h, 50 °C

Experimental Protocols

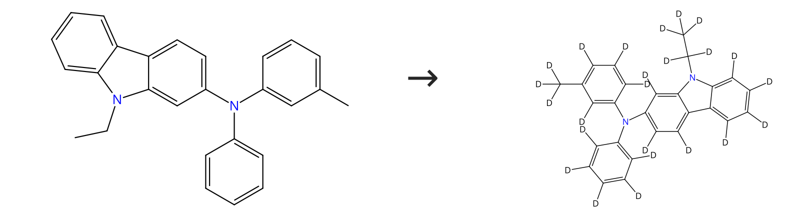
Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids

By: Wang, Xicheng; et al

Green Chemistry (2024), 26(7), 3767-3775.

Scheme 249 (1 Reaction)

Steps: **1** Yield: **29%**



31-116-CAS-15524088

Steps: **1** Yield: **29%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

Experimental Protocols

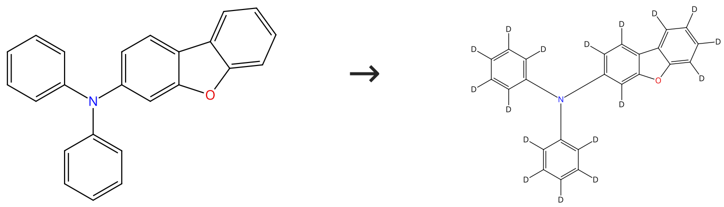
Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 250 (1 Reaction)

Steps: **1** Yield: **28%**



31-116-CAS-1521360

Steps: **1** Yield: **28%**

1.1 **Catalysts:** Palladium
Solvents: Water-d_2; 12 h, 4 - 5 M Pa, 240 °C

Experimental Protocols

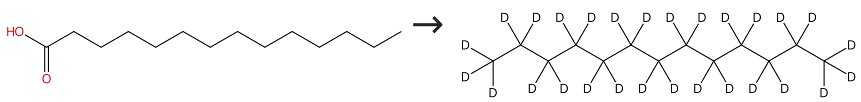
Efficient persistent room temperature phosphorescence in organic amorphous materials under ambient conditions

By: Hirata, Shuzo; et al

Advanced Functional Materials (2013), 23(27), 3386-3397.

Scheme 251 (1 Reaction)

Steps: **1** Yield: **28%**



Suppliers (123)

Suppliers (16)

31-116-CAS-13614337

Steps: **1** Yield: **28%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 12 h, 4000.0 - 5000.0 k Pa, 250 °C

Experimental Protocols

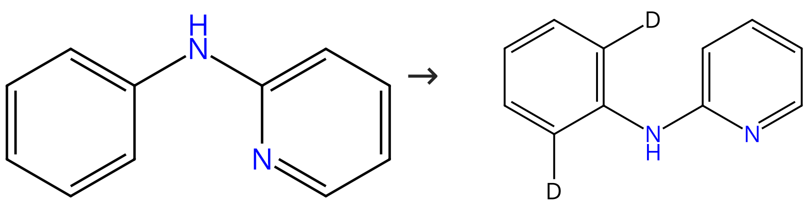
Palladium-catalyzed decarboxylation and decarbonylation under hydrothermal conditions: decarboxylative deuteration

By: Matsubara, Seijiro; et al

Organic Letters (2004), 6(12), 2071-2073.

Scheme 252 (1 Reaction)

Steps: **1** Yield: **28%**



Suppliers (73)

31-116-CAS-24009230	Steps: **1** Yield: **28%**

1.1 **Reagents:** Copper sulfate, Water-*d*$_2$
Catalysts: Acetylglycine, Palladium diacetate
Solvents: Dimethylformamide; 2 h, 120 °C

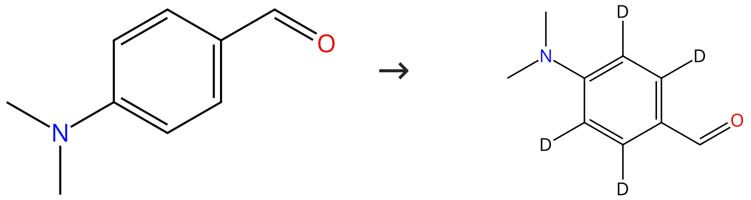
Experimental Protocols

Selective synthesis of 2-aryl-3-alkenylindoles and 2-aryl-3-alkynylindoles by palladium-catalyzed ligand-promoted annulative coupling of anilines and propargyl alcohols

By: Li, Qiang; et al

Journal of Organometallic Chemistry (2021), 948, 121930.

Scheme 253 (1 Reaction) Steps: **1** Yield: **25%**



Suppliers (148)

31-614-CAS-24154345	Steps: **1** Yield: **25%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

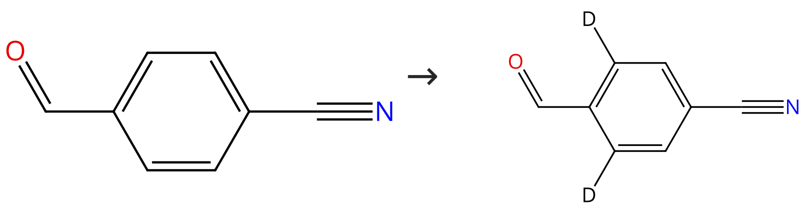
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 254 (1 Reaction) Steps: **1** Yield: **25%**



Suppliers (99)

31-614-CAS-24154350	Steps: **1** Yield: **25%**

1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

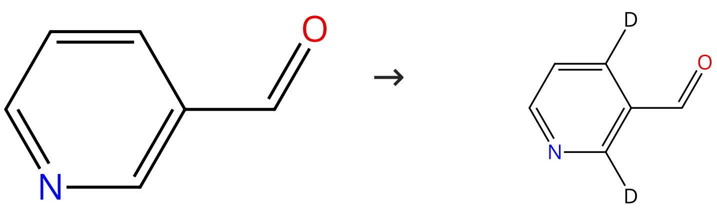
Experimental Protocols

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 255 (1 Reaction) Steps: **1** Yield: **24%**



Suppliers (91)

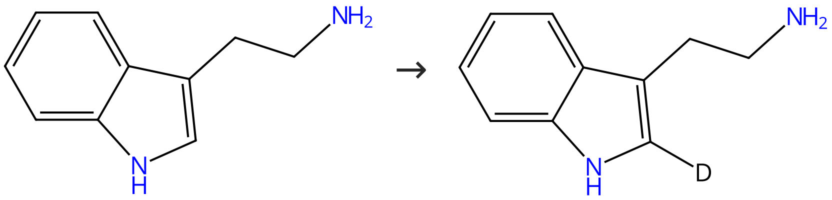
31-614-CAS-24154358	Steps: **1** Yield: **24%**
1.1	**Reagents:** Trifluoroacetic acid, Silver trifluoroacetate, Water-*d*$_2$ **Catalysts:** Palladium diacetate, *tert*-Leucine **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 120 °C
1.2	**Reagents:** Hydrochloric acid **Solvents:** Dichloromethane, Water; 1 - 2 h, rt
Experimental Protocols	

Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 256 (1 Reaction) Steps: **1** Yield: **24%**



Suppliers (92)

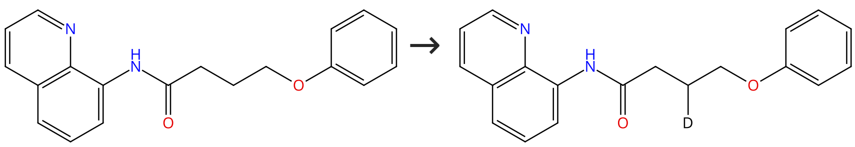
31-116-CAS-19680338	Steps: **1** Yield: **24%**
1.1	**Reagents:** Sodium formate, Water-*d*$_2$ **Catalysts:** Palladium dihydroxide; 1 min, 100 °C
Experimental Protocols	

Two-in-One Strategy for Palladium-Catalyzed C-H Functionalization in Water

By: Zeng, Huiying; et al

Angewandte Chemie, International Edition (2019), 58(9), 2859-2863.

Scheme 257 (2 Reactions) Steps: **1** Yield: **23%**



Supplier (1)

31-116-CAS-22968430	Steps: **1** Yield: **23%**
1.1	**Reagents:** Acetic acid-*d*$_4$, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** Dichloromethane; 25 h, 130 °C
Experimental Protocols	

Palladium-Catalyzed Selective Carbofunctionalization of Inert γ-C(sp^3)-O Bonds with 4-Hydroxypyridin-2(1H)-ones and 4-Hydroxy-2H-pyran-2-ones

By: Guan, Qifan; et al

Advanced Synthesis & Catalysis (2020), 362(24), 5772-5776.

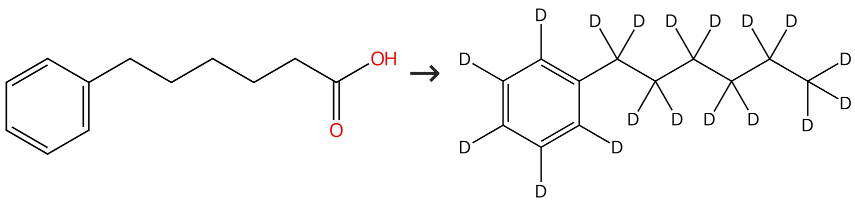
31-614-CAS-31333357	Steps: **1**
1.1	**Reagents:** Acetic acid-*d*$_4$, Water-*d*$_2$ **Catalysts:** Palladium diacetate **Solvents:** Dichloromethane; 24 h, 120 °C
Experimental Protocols	

Pd(II)-Catalyzed Selective Amination of Inert γ-C(sp^3)-O Bonds of Aliphatic Amides with Hydrazines

By: Chen, Sai; et al

Asian Journal of Organic Chemistry (2022), 11(2), e202100765.

Scheme 258 (1 Reaction) Steps: **1** Yield: **23%**



Suppliers (70) Suppliers (3)

31-116-CAS-2365930 Steps: **1** Yield: **23%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 12 h, 4000.0 - 5000.0 k Pa, 250 °C

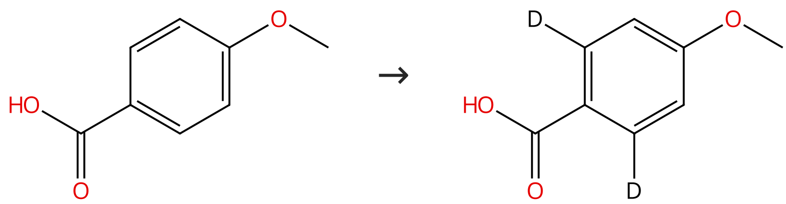
Experimental Protocols

Palladium-catalyzed decarboxylation and decarbonylation under hydrothermal conditions: decarboxylative deuteration

By: Matsubara, Seijiro; et al

Organic Letters (2004), 6(12), 2071-2073.

Scheme 259 (1 Reaction) Steps: **1** Yield: **22%**



Suppliers (116) Supplier (1)

31-614-CAS-34526999 Steps: **1** Yield: **22%**

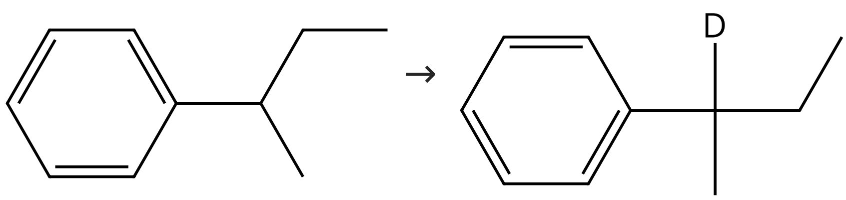
1.1 **Reagents:** Trifluoroacetic acid, Silver trifluoro acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 72 h, 150 °C

Palladium-Catalyzed Ligand-Free ortho -Deuteration of Aromatic Carboxylic Acids with D_2O

By: Zhang, Ziyin; et al

Synthesis (2022), 54(22), 4907-4916.

Scheme 260 (2 Reactions) Steps: **1** Yield: **20%**



Suppliers (67) Supplier (1)

31-116-CAS-3414022 Steps: **1** Yield: **20%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 72 h, rt

Experimental Protocols

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

31-116-CAS-4678696 Steps: **1** Yield: **20%**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

Experimental Protocols

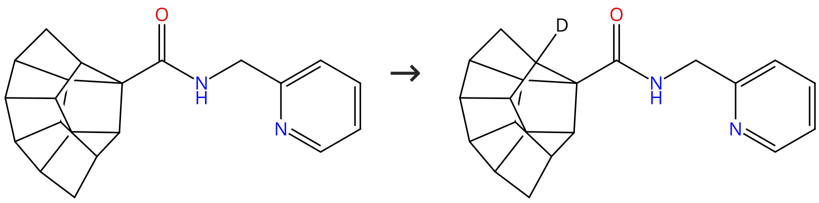
Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 261 (1 Reaction)

Steps: **1** Yield: **19%**



31-116-CAS-24181970

Steps: **1** Yield: **19%**

1.1 **Reagents:** *tert*-Butyl alcohol-*d*, Water-d_2
Catalysts: 2-Pyridone, Palladium diacetate; 16 h, 110 °C

Experimental Protocols

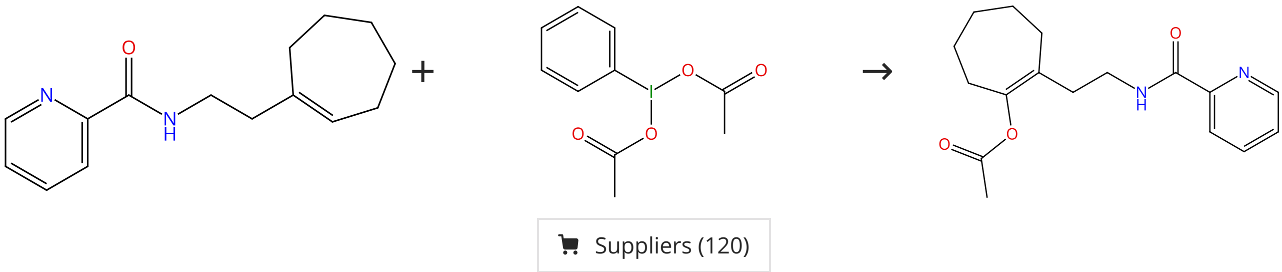
Towards an Effective Synthesis of Difuncti onalized Heptacyclo [6.6.0.0^{2,6}.0^{3,13}.0^{4,11}.0^{5,9}.0^{10,14}]tetradecane: Ligand Effects on the Cage Assembly and Selective C-H Arylation Reactions

By: Marset, Xavier; et al

Advanced Synthesis & Catalysis (2021), 363(14), 3546-3553.

Scheme 262 (1 Reaction)

Steps: **1** Yield: **17%**



31-614-CAS-25989519

Steps: **1** Yield: **17%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Toluene; 1 h, 100 °C

Experimental Protocols

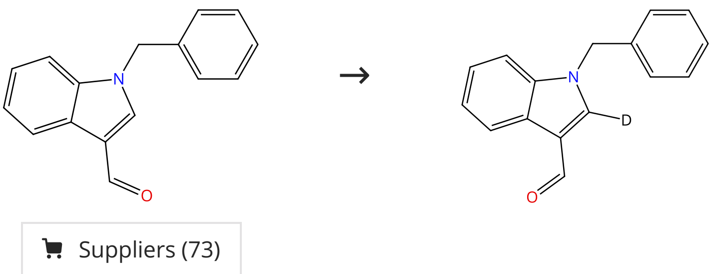
Catalytic Multisite-Selective Acetoxylation Reactions at sp^2 vs sp^{3}C-H Bonds in Cyclic Olefins

By: Zang, Zhong-Lin; et al

Organic Letters (2016), 18(19), 5014-5017.

Scheme 263 (1 Reaction)

Steps: **1** Yield: **14%**



31-614-CAS-40351504

Steps: **1** Yield: **14%**

1.1 **Reagents:** Trifluoroacetic acid, Iodobe nzene diacetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 100 °C

1.2 **Reagents:** Water

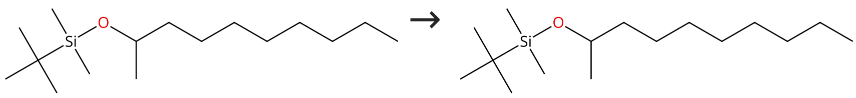
Experimental Protocols

Palladium-Catalyzed C3-Carbaldehyde Directed Regioselective C2-Thioarylation of Indoles

By: Kumar Gupta, Sandip; et al

Chemistry - An Asian Journal (2024), 19(11), e202400272.

Scheme 264 (1 Reaction) Steps: **1** Yield: **8%**



Supplier (1)

deuterated

31-614-CAS-27304733 Steps: **1** Yield: **8%**

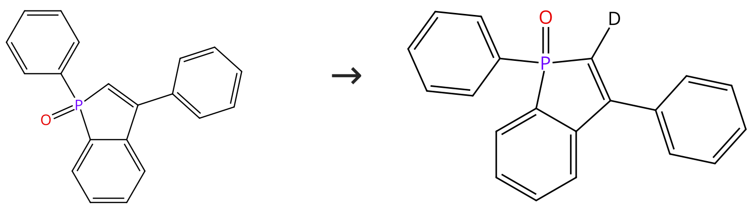
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 265 (1 Reaction) Steps: **1** Yield: **7%**



31-614-CAS-41292577 Steps: **1** Yield: **7%**

1.1 **Reagents:** Propanoic acid, 2,2-dimethyl-, sodium salt (1:1), Water-d_2
Catalysts: Palladium dipivalate
Solvents: 1,4-Dioxane; 48 h, 60 °C

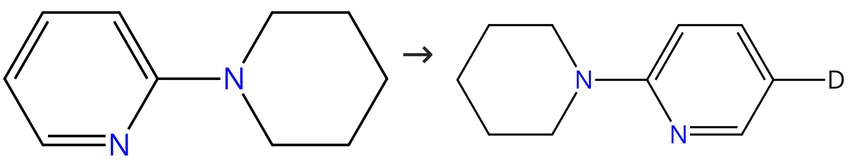
Experimental Protocols

Pd-catalyzed C-H alkynylation of benzophospholes

By: Tokura, Yu; et al

Chemical Communications (Cambridge, United Kingdom) (2024), 60(20), 2792-2795.

Scheme 266 (1 Reaction) Steps: **1** Yield: **5%**



Suppliers (31)

31-614-CAS-36847922 Steps: **1** Yield: **5%**

1.1 **Reagents:** Silver carbonate, Diisopropyl sulfide, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,4-Dioxane; 12 h, 140 °C

Experimental Protocols

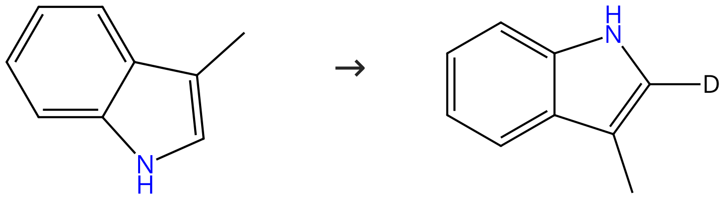
Direct C(3)5-H Polyfluoroarylation of 2-Amino/alkoxy Pyridines Enabled by a Transient and Electron-deficient Palladium Intermediate

By: Das, Animesh; et al

Chemistry - A European Journal (2023), 29(41), e202301436.

Scheme 267 (1 Reaction)

Steps: **1** Yield: **5%**



Suppliers (117) Supplier (1)

31-116-CAS-19680339

Steps: **1** Yield: **5%**

1.1 **Reagents:** Sodium formate, Water-*d*$_2$
Catalysts: Palladium dihydroxide; 1 min, 100 °C

Experimental Protocols

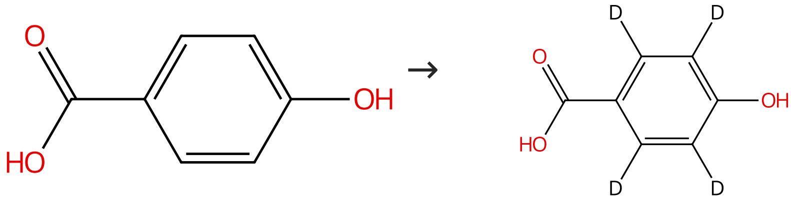
Two-in-One Strategy for Palladium-Catalyzed C-H Functionalization in Water

By: Zeng, Huiying; et al

Angewandte Chemie, International Edition (2019), 58(9), 2859-2863.

Scheme 268 (1 Reaction)

Steps: **1** Yield: **4%**



Suppliers (138) Suppliers (38)

31-614-CAS-34614383

Steps: **1** Yield: **4%**

1.1 **Reagents:** Sodium hydroxide, Water-*d*$_2$
Catalysts: Palladium; 2 h, 210 °C; 210 °C → rt

1.2 **Reagents:** Hydrochloric acid
Solvents: Water; pH 2

Experimental Protocols

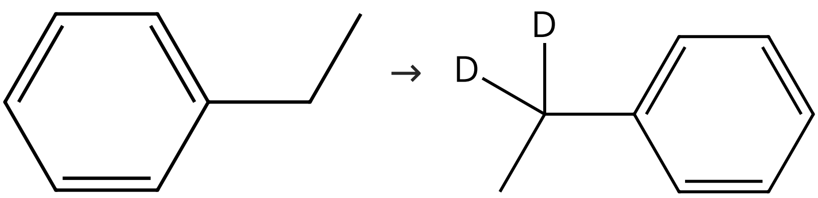
Selective Oxidations Using a Cytochrome P450 Enzyme Variant Driven with Surrogate Oxygen Donors and Light

By: Lee, Joel H. Z.; et al

Chemistry - A European Journal (2022), 28(49), e202201366.

Scheme 269 (1 Reaction)

Steps: **1**



Suppliers (136) Suppliers (19)

31-116-CAS-16041285

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 60 min, rt; 24 h, rt

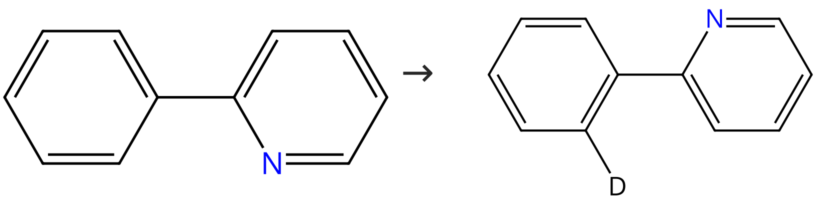
Experimental Protocols

Anharmonic modeling of the conformation-specific IR spectra of ethyl, n-propyl, and n-butylbenzene

By: Tabor, Daniel P.; et al

Journal of Chemical Physics (2016), 144(22), 224310/1-224310/11.

Scheme 270 (1 Reaction) Steps: **1**



Suppliers (94) Suppliers (6)

31-116-CAS-17229462 Steps: **1**

1.1 **Reagents:** Iodobenzene dichloride
Catalysts: Palladium
Solvents: Benzene; 1 h, 120 °C; 120 °C → rt

1.2 **Reagents:** Water-*d*$_2$; 1 h, 25 °C

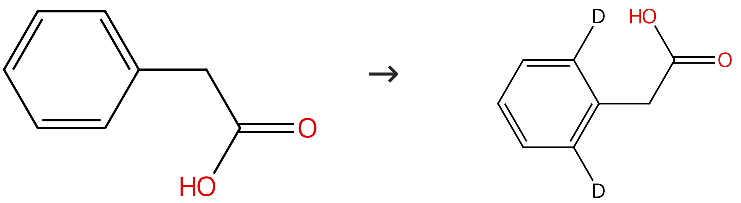
Experimental Protocols

Directed C-H Activation and Tandem Cross-Coupling Reactions Using Palladium Nanocatalysts with Controlled Oxidation

By: Kim, Kiseong; et al

Angewandte Chemie, International Edition (2017), 56(24), 6952-6956.

Scheme 271 (1 Reaction) Steps: **1**



Suppliers (40)

31-614-CAS-34212610 Steps: **1**

1.1 **Reagents:** Dipotassium phosphate
Catalysts: Palladium diacetate, 1,6-Dihydro-α,α-dimethyl-6-oxo-2-pyridineacetic acid
Solvents: Acetonitrile; 5 min, rt

1.2 **Reagents:** Water-*d*$_2$; 24 h, rt

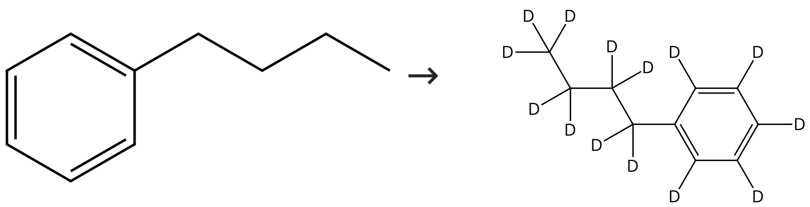
1.3 **Reagents:** Formic acid; acidified, rt

Ligand-Enabled C-H Hydroxylation with Aqueous H_2O_2 at Room Temperature

By: Li, Zhen; et al

Journal of the American Chemical Society (2022), 144(39), 18109-18116.

Scheme 272 (3 Reactions) Steps: **1**



Suppliers (76) Suppliers (12)

31-116-CAS-10283497 Steps: **1**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium oxide (PdO)
Solvents: Water-*d*$_2$; 2 h, 250 °C

Experimental Protocols

C-H bond activation by water on a palladium or platinum metal surface

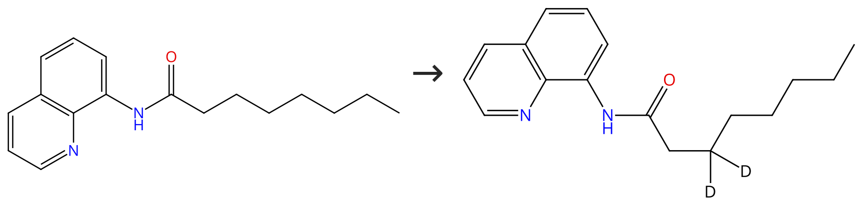
By: Matsubara, Seijiro; et al

Synthesis (2007), (13), 2055-2059.

31-116-CAS-14542368	Steps: 1	C-H bond activation by water on a palladium or platinum metal surface
1.1 Reagents: Water-d_2 Catalysts: Palladium Solvents: Water-d_2; 2 h, 250 °C		By: Matsubara, Seijiro; et al
Experimental Protocols		Synthesis (2007), (13), 2055-2059.

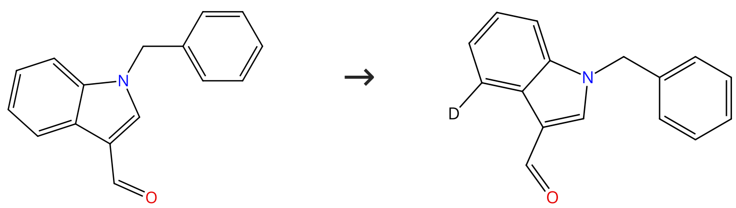
31-116-CAS-737325	Steps: 1	H-D exchange reaction on benzene ring of polystyrene in hydrothermal deuterium oxide with platinum (IV) oxide catalyst
1.1 Reagents: Water-d_2 Catalysts: Palladium Solvents: Water-d_2; 2 h, 4 - 5 M Pa, 250 °C		By: Yamamoto, Mitsuru; et al
		Chemical Communications (Cambridge, United Kingdom) (2004), (15), 1714-1715.

Scheme 273 (1 Reaction) Steps: **1**



31-614-CAS-39495815	Steps: 1	Chemoenzymatic β-specific methylene C(sp^3)-H deuteration of carboxylic acids
1.1 Reagents: Pivalic acid, Acetic anhydride, Water-d_2 Catalysts: Palladium diacetate; 24 h, 90 °C		By: Wang, Xicheng; et al
Experimental Protocols		Green Chemistry (2024), 26(7), 3767-3775.

Scheme 274 (2 Reactions) Steps: **1**



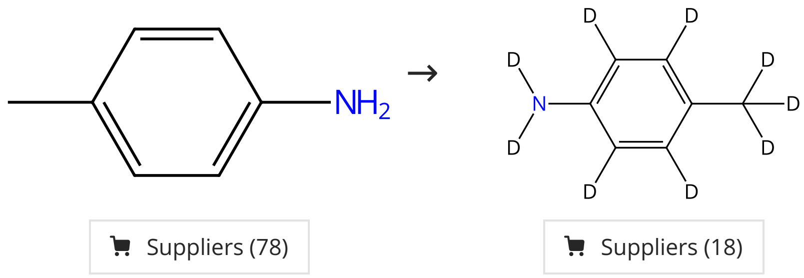
Suppliers (73)

31-614-CAS-38370055	Steps: 1	Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups
1.1 Reagents: Trifluoroacetic acid, Water-d_2 Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt		By: Zheng, Chenxu; et al
1.2 Reagents: Sodium bicarbonate Solvents: Water; rt		Journal of Organic Chemistry (2023), 88(24), 17164-17171.
Experimental Protocols		

31-116-CAS-19710627	Steps: 1	Palladium Catalyzed Regioselective C4-Arylation and Olefination of Indoles and Azaindoles
1.1 Reagents: Acetic acid-d, Silver trifluoroacetate, 2,2-Diphenyl glycine, Water-d_2 Catalysts: Palladium diacetate Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 110 °C		By: Thrimurtulu, Neetipalli; et al
Experimental Protocols		Advanced Synthesis & Catalysis (2019), 361(6), 1441-1446.

Scheme 275 (1 Reaction)

Steps: 1



31-116-CAS-10724827

Steps: 1

1.1 **Catalysts:** Palladium, Platinum
Solvents: Water-d_2; 48 h, rt → 190 °C

Experimental Protocols

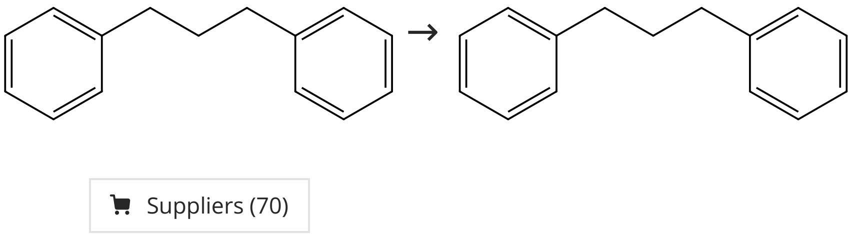
An Experimental and Theoretical Study on the Formation of 2-Methylnaphthalene ($C_{11}H_{10}$/$C_{11}H_3D_7$) in the Reactions of the Para-Tolyl (C_7H_7) and Para-Tolyl-d7 (C_7D_7) with Vinylacetylene (C_4H_4)

By: Parker, Dorian S. N.; et al

Journal of Physical Chemistry A (2014), 118(15), 2709-2718.

Scheme 276 (1 Reaction)

Steps: 1



31-614-CAS-24961186

Steps: 1

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 110 °C

Experimental Protocols

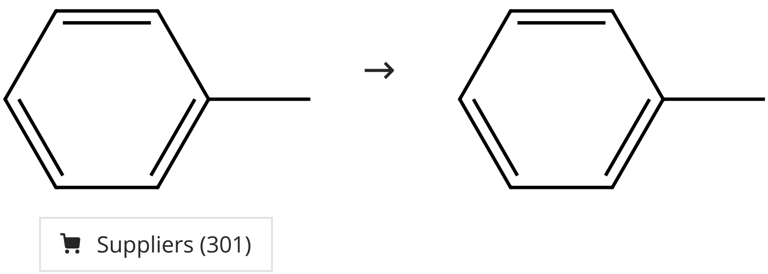
Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 277 (1 Reaction)

Steps: 1



31-614-CAS-25979271

Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-d_2; 6 h, 55 °C

Experimental Protocols

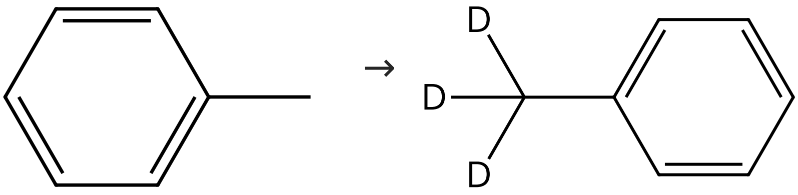
An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 278 (1 Reaction)

Steps: **1**



Suppliers (301)

31-614-CAS-26437672

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 110 °C

Experimental Protocols

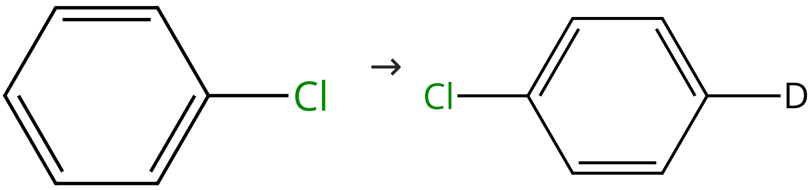
Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 279 (1 Reaction)

Steps: **1**



Suppliers (140)

Suppliers (19)

31-614-CAS-37810462

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: 1,4-Dioxane; 3 s, 23 °C

Experimental Protocols

Electrocatalytic Reduction of (Hetero)Aryl Halides in a Proton-Exchange Membrane Reactor and its Applic ation for Deuter ation

By: Ashikari, Yosuke; et al

ChemElectroChem (2023), 10(23), e202300315.

Scheme 280 (1 Reaction)

Steps: **1**

Suppliers (410)

31-614-CAS-29197551

Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N^1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-d_2; 6 h, 100 °C

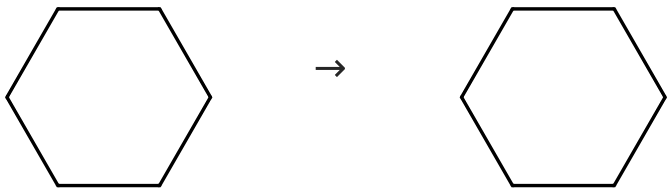
Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydroc arbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 281 (1 Reaction) Steps: **1**



Suppliers (228)

31-614-CAS-27585112 Steps: **1**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κ*C*^{2},κ*N*^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-*d*$_2$; 6 h, 100 °C

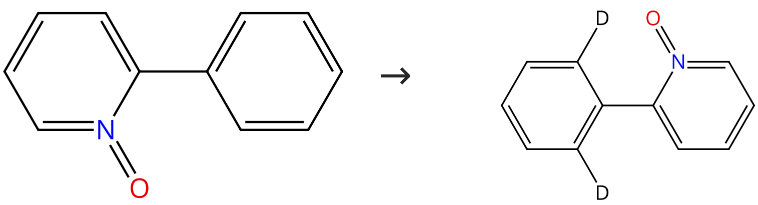
Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 282 (1 Reaction) Steps: **1**



Suppliers (53)

31-116-CAS-16859913 Steps: **1**

1.1 **Reagents:** Silver triflate, Water-*d*$_2$
Catalysts: Tetrabutylammonium bromide, Palladium diacetate; 5 h, 100 °C

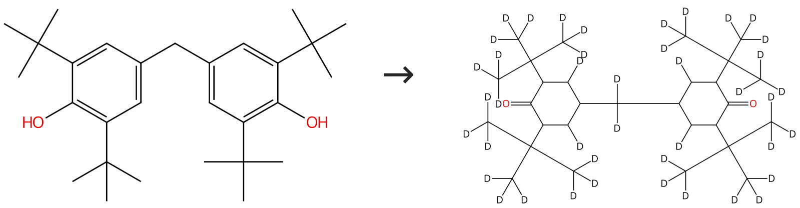
Experimental Protocols

Pd(II)-catalyzed monoarylation of 2-phenylpyridine N-oxide with iodobenzene in water

By: Zhang, Wei; et al

Synthetic Communications (2017), 47(8), 793-802.

Scheme 283 (1 Reaction) Steps: **1**



Suppliers (58)

31-116-CAS-20339502 Steps: **1**

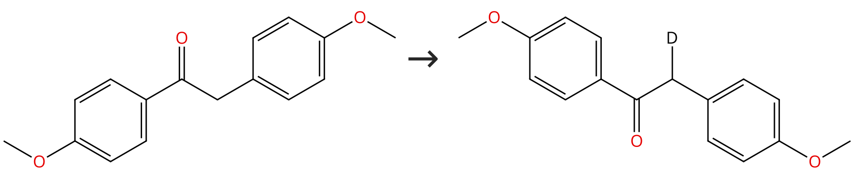
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 15 - 24 h, 1 atm, 180 °C

Galvinoxyl radicals: Synthesis of new derivatives, determination of low oxygen contents, and stability studies

By: Lampp, Lisa; et al

Tetrahedron (2019), 75(18), 2737-2747.

Scheme 284 (1 Reaction) Steps: **1**



Suppliers (69)

31-614-CAS-41662940 Steps: **1**

1.1 **Reagents:** Tripotassium phosphate, Water-d_2, 3,3',5,5'-Tetramethylbenzidine
Catalysts: Palladium diacetate
Solvents: 1,4-Dioxane; 20 h, 80 °C

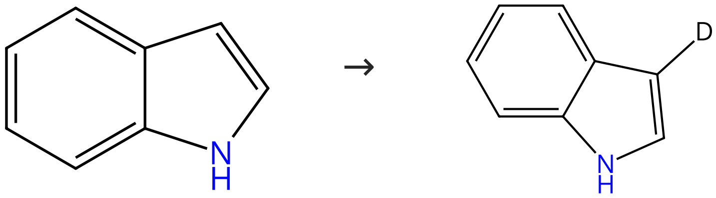
Experimental Protocols

Investigating the Origin of Epimerization Attenuation during Pd-Catalyzed Cross-Coupling Reactions

By: Cai, Isabelle; et al

ACS Catalysis (2024), 14(16), 12331-12341.

Scheme 285 (1 Reaction) Steps: **1**



Suppliers (117) Suppliers (10)

31-116-CAS-22424812 Steps: **1**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Palladium, bis(acetonitrile)dichloro-
Solvents: Dimethylacetamide; 16 h, 80 °C

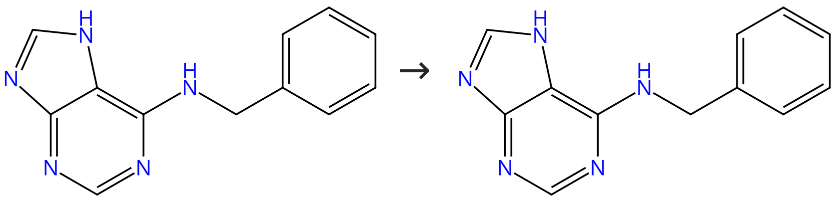
Experimental Protocols

Direct synthesis of annulated indoles through palladium-catalyzed double alkylations

By: Gao, Yadong; et al

Organic Chemistry Frontiers (2020), 7(9), 1149-1157.

Scheme 286 (1 Reaction) Steps: **1**



Suppliers (130)

31-614-CAS-28549631 Steps: **1**

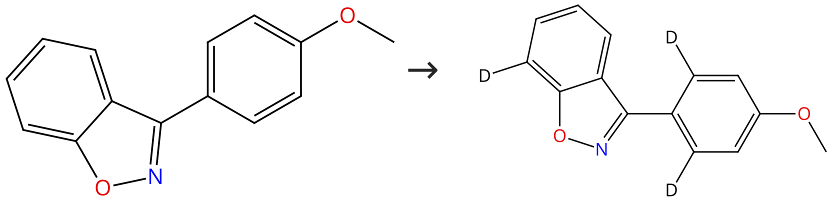
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 110 °C

Deuterium-labeled benzyladenine: synthesis and application as a surrogate

By: Modutlwa, Nkaelang; et al

Heterocycles (2012), 84(1), 419-429.

Scheme 287 (1 Reaction) Steps: **1**



Suppliers (3)

31-116-CAS-17883925 Steps: **1**

1.1 **Reagents:** Water-d_2, Silver oxide (Ag_2O)
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide, Dimethylformamide; 12 h, rt → 100 °C

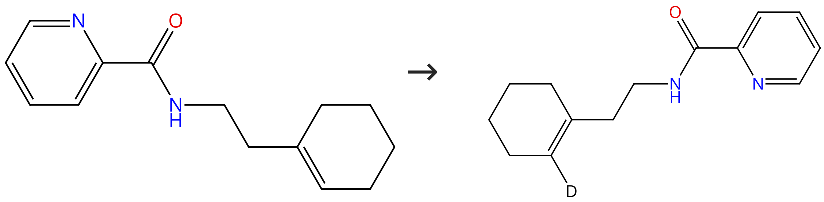
Experimental Protocols

Palladium-catalyzed site-selective direct olefination of 6-electron-withdrawing group substituted 3-arylbenzo[d] isoxazoles

By: Guo, Ying; et al

Organic Chemistry Frontiers (2017), 4(10), 1962-1966.

Scheme 288 (1 Reaction) Steps: **1**



Suppliers (4)

31-116-CAS-21184338 Steps: **1**

1.1 **Reagents:** Cupric acetate, Potassium bicarbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 2-Methyl-2-butanol; 2 h, 130 °C

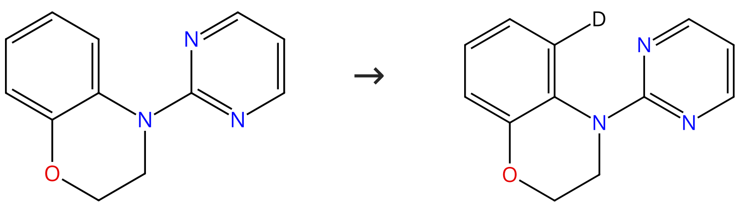
Experimental Protocols

Pd-Catalyzed Remote Site-Selective and Stereoselective C (Alkenyl)-H Alkenylation of Unactivated Cycloalkenes

By: Mao, Chun-Li; et al

Journal of Organic Chemistry (2020), 85(2), 774-787.

Scheme 289 (1 Reaction) Steps: **1**



Supplier (1)

31-614-CAS-40980403 Steps: **1**

1.1 **Reagents:** Water-d_2, Copper bromide ($CuBr_2$)
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 24 h, 95 °C

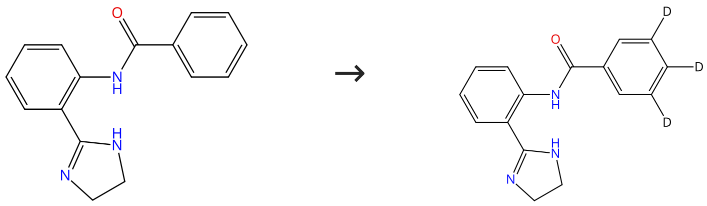
Experimental Protocols

Expedient, regioselective C-H chalcogenation of 3,4-dihydro-1,4-benzoxazines using a palladium-copper catalyst

By: Lalji, Ram Sunil Kumar; et al

Organic & Biomolecular Chemistry (2024), 22(28), 5809-5815.

Scheme 290 (1 Reaction) Steps: **1**



Supplier (1)

31-116-CAS-5340267 Steps: **1**

1.1 **Reagents:** Acetic anhydride, Water-d_2
Catalysts: Palladium trifluoroacetate
Solvents: Acetic acid, 1,2-Dichloroethane; 2 h, 130 °C

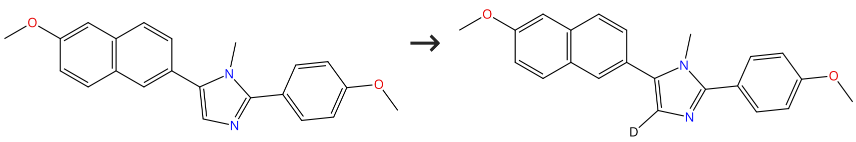
Experimental Protocols

Palladium catalyzed amide-oxazoline directed C-H acetoxylation of arenes

By: Liu, Bin; et al

Organic Chemistry Frontiers (2015), 2(7), 797-800.

Scheme 291 (1 Reaction) Steps: **1**



Supplier (1)

31-116-CAS-1784573 Steps: **1**

1.1 **Reagents:** Cesium carbonate, Water-d_2
Catalysts: Palladium(2+), bis(1,10-phenanthroline-κN^1,κN^{10})-, (*SP*-4-1)-, hexafluorophosphate(1-) (1:2)
Solvents: Dimethylacetamide; 20 h, 150 °C

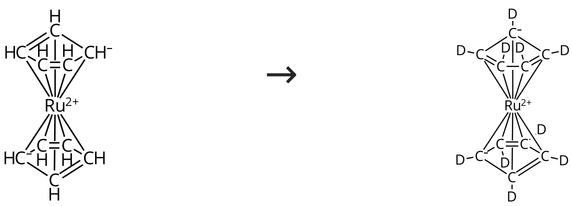
Experimental Protocols

Direct Arylation of Simple Azoles Catalyzed by 1,10-Phenanthroline Containing Palladium Complexes: An Investigation of C4 Arylation of Azoles and the Synthesis of Triarylated Azoles by Sequential Arylation

By: Shibahara, Fumitoshi; et al

Journal of Organic Chemistry (2011), 76(8), 2680-2693.

Scheme 292 (1 Reaction) Steps: **1**



Suppliers (72)

31-614-CAS-34891712 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, Ethyl 4,5-diphenylpyrazolo[1,5-*a*][1,8]naphthyridine-3-carboxylate
Solvents: Acetic acid-d_4; 7 d, 80 °C

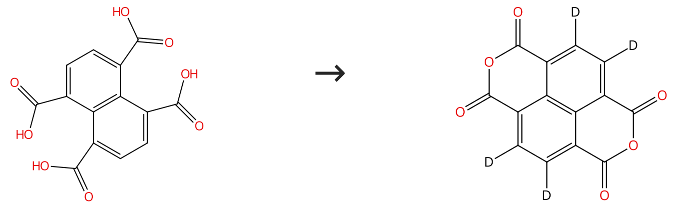
Experimental Protocols

Nondirected Pd-catalyzed aerobic C-H alkenylation of ruthenocene and ferrocene

By: Muller, Sven; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(77), 10809-10812.

Scheme 293 (1 Reaction) Steps: **1**



Suppliers (73)

31-614-CAS-43180977 Steps: **1**

1.1 **Reagents:** Sodium hydroxide-*d*
Solvents: Water-d_2; 10 min, p H 7, rt

1.2 **Reagents:** Hydrogen
Catalysts: Palladium; 2 h, 180 °C

1.3 **Reagents:** Acetic acid; 3 min, 120 °C

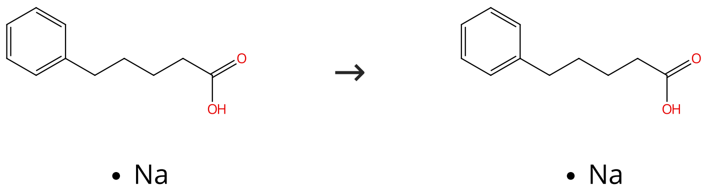
Experimental Protocols

Mechanism of Solid-State [1]H Photochemically Induced Dynamic Nuclear Polarization in a Synthetic Donor-Chromo phore-Acceptor at 0.3 T

By: Levien, Marcel; et al

Journal of Physical Chemistry Letters (2024), 15(44), 11097-11103.

Scheme 294 (1 Reaction) Steps: **1**



31-614-CAS-26074632 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 110 °C

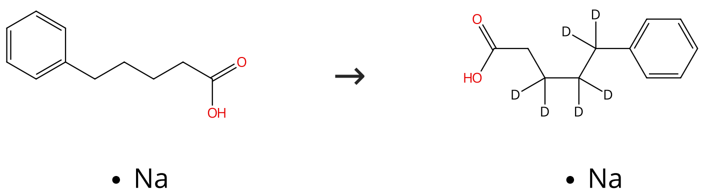
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 295 (1 Reaction) Steps: **1**



31-614-CAS-27934724 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium, Carbon
Solvents: Water-d_2; 24 h, 1 atm, 110 °C

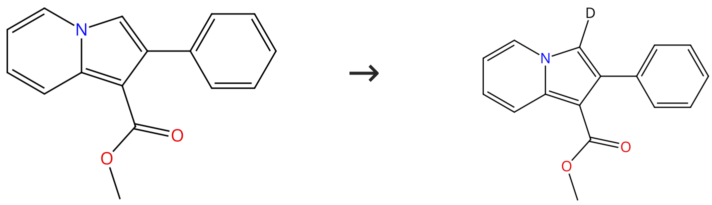
Experimental Protocols

Efficient H/D exchange reactions of alkyl-substituted benzene derivatives by means of the Pd/C-H_2-D_2O system

By: Esaki, Hiroyoshi; et al

Chemistry - A European Journal (2007), 13(14), 4052-4063.

Scheme 296 (1 Reaction) Steps: 1



Suppliers (3)

31-116-CAS-9506545 Steps: 1

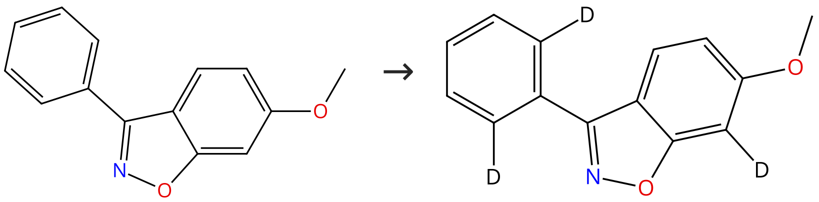
1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: DMSO-*d*$_6$; 60 °C

Heck-Type Cross-Dehydrogenative Coupling Reactions of Indolizines at the 3-Position with Electron-Deficient Alkenes through Palladium-Catalyzed C-H Activation

By: Hu, Huayou; et al

Chemistry - An Asian Journal (2012), 7(5), 884-888.

Scheme 297 (1 Reaction) Steps: 1



Suppliers (4)

31-116-CAS-17883919 Steps: 1

1.1 **Reagents:** Water-*d*$_2$, Silver oxide (Ag_2O)
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide, Dimethylformamide; 12 h, rt → 100 °C

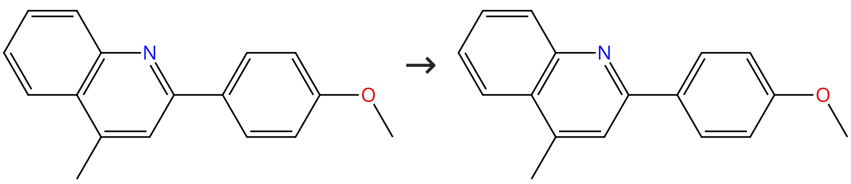
Experimental Protocols

Palladium-catalyzed site-selective direct olefination of 6-electron-withdrawing group substituted 3-arylbenzo[d] isoxazoles

By: Guo, Ying; et al

Organic Chemistry Frontiers (2017), 4(10), 1962-1966.

Scheme 298 (1 Reaction) Steps: 1



Suppliers (3)

31-614-CAS-37290961 Steps: 1

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene, Water-*d*$_2$
Catalysts: Palladium diacetate, 1,3-Bis(diphenylphosphino) propane
Solvents: *N*-Methyl-2-pyrrolidone; 8 h, 100 °C

Experimental Protocols

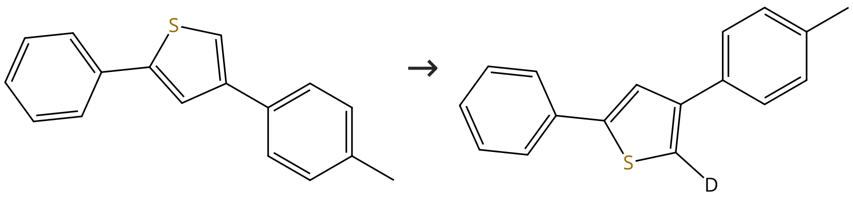
Palladium Catalyzed Annulation of o-Iodo-Anilines with Propargyl Alcohols: Synthesis of Substituted Quinolines

By: Zhang, Zhi; et al

Journal of Organic Chemistry (2023), 88(16), 12054-12063.

Scheme 299 (1 Reaction)

Steps: **1**



Suppliers (2)

31-614-CAS-38143674

Steps: **1**

1.1 **Reagents:** Undecanoic acid, Silver acetate, Poly(oxy-1,2-ethanediyl), α-[[(2*S*)-1-(1-oxododecyl)-2-pyrrolidinyl]carbonyl]-ω-methoxy-
Catalysts: Palladium diacetate
Solvents: Water-d_2; 16 h, rt

Experimental Protocols

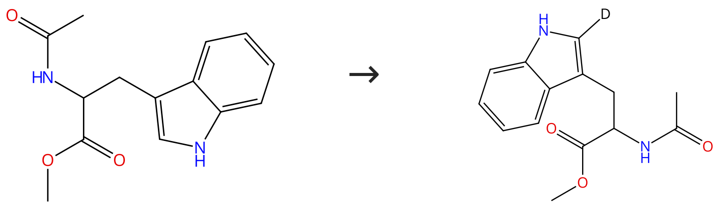
Micellar catalysis: a green solution to enable undirected and mild C-H activation of (oligo)thiophenes at the challenging β-position

By: Hauk, Pascal; et al

Chemical Science (2023), 14(43), 12049-12055.

Scheme 300 (1 Reaction)

Steps: **1**



Suppliers (7)

31-614-CAS-41277663

Steps: **1**

1.1 -

1.2 **Reagents:** Acetic acid-d_4, Oxygen, Water-d_2
Catalysts: Palladium diacetate, 4,5-Diazafluoren-9-one; 40 °C

Experimental Protocols

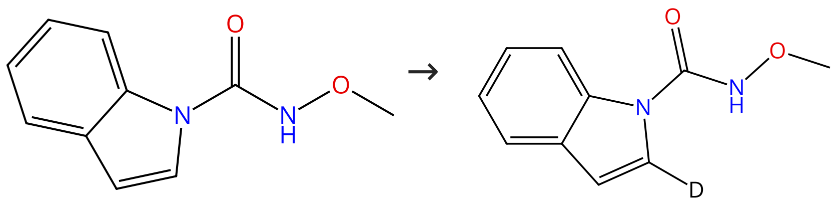
Overcoming Pd Catalyst Deactivation in the C-H Coupling of Tryptophan Residues in Water Using Air as the Oxidant

By: Beckers, Igor; et al

ACS Catalysis (2024), 14(9), 7080-7086.

Scheme 301 (1 Reaction)

Steps: **1**



Supplier (1)

31-116-CAS-20685557

Steps: **1**

1.1 **Reagents:** Trifluoroacetic acid, Potassium persulfate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichlorobenzene; 28 h, 100 °C

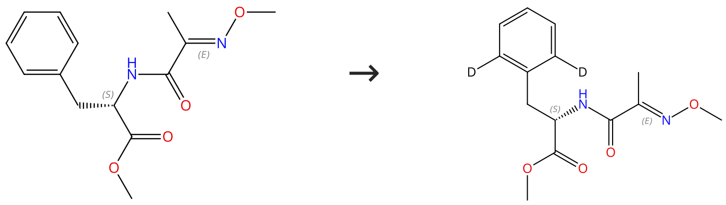
Experimental Protocols

Palladium-Catalyzed Heteroannulation of Indole-1-carboxamides with [60]Fullerene and Subsequent Electrochemical Transformations

By: Hussain, Majid; et al

Organic Letters (2019), 21(21), 8568-8571.

Scheme 302 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)
Double bond geometry shown

Absolute stereochemistry shown
Double bond geometry shown

31-116-CAS-23509814 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 24 h, 130 °C

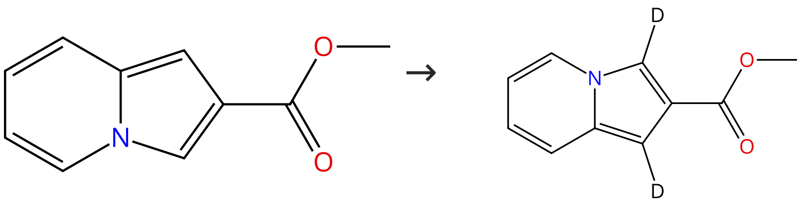
Experimental Protocols

MIA-Directed 2-Pyridone-Enabled Selective Ortho-C-H Arylation of Phenylalanine: A Mechanistic Study

By: Niu, Peng-Peng; et al

Journal of Organic Chemistry (2021), 86(3), 3096-3106.

Scheme 303 (1 Reaction) Steps: **1**



Suppliers (56)

31-116-CAS-20337766 Steps: **1**

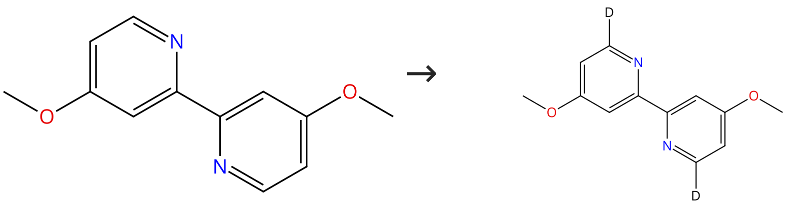
1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: DMSO-d_6; 21 h, 25 °C

Palladium Catalyzed C-H Olefination of Indolizines at the 1-Position with Molecular Oxygen as the Terminal Oxidant

By: Lu, Mingzhu; et al

Asian Journal of Organic Chemistry (2019), 8(8), 1555-1560.

Scheme 304 (1 Reaction) Steps: **1**



Suppliers (77)

31-116-CAS-19074744 Steps: **1**

1.1 **Reagents:** 1-Iodonaphthalene, *N*,*N*,*N'*,*N'*-Tetramethylethylenediamine, Water-d_2
Catalysts: Palladium chloride, Di-μ-chlorobis[(1,2,5,6-η)-1,5-cyclooctadiene]dirhodium
Solvents: Dimethylformamide; 24 h, 25 bar, 85 °C

Experimental Protocols

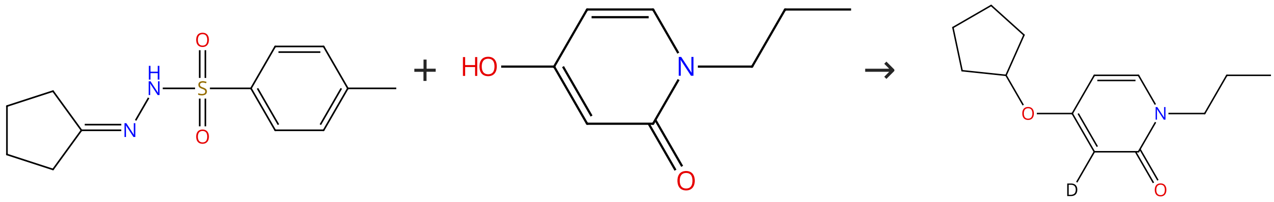
Palladium/Rhodium Cooperative Catalysis for the Production of Aryl Aldehydes and Their Deuterated Analogues Using the Water-Gas Shift Reaction

By: Ibrahim, Malek Y. S.; et al

Angewandte Chemie, International Edition (2018), 57(32), 10362-10367.

Scheme 305 (1 Reaction)

Steps: 1



Suppliers (46)

Supplier (1)

31-116-CAS-20699984

Steps: 1

1.1 **Reagents:** 1,8-Diazabicyclo[5.4.0]undec-7-ene
Solvents: 1,4-Dioxane; 10 min, 40 °C

1.2 **Catalysts:** Palladium diacetate
Solvents: 1,4-Dioxane; 3 h, 80 °C

1.3 **Reagents:** Deuterium chloride
Solvents: Water-d_2

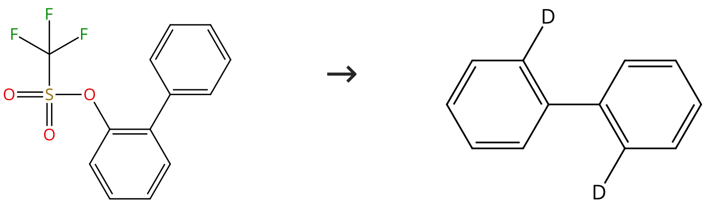
Umpolung-like Cross-coupling of Tosylhydrazones with 4-Hydroxy-2-pyridones under Palladium Catalysis

By: Katsina, Tania; et al

Organic Letters (2019), 21(19), 8110-8115.

Scheme 306 (1 Reaction)

Steps: 1



Suppliers (11)

31-614-CAS-42512855

Steps: 1

1.1 **Reagents:** Diethylamine, Water-d_2
Catalysts: Palladium diacetate, 1,3-Bis(diphenylphosphino) propane
Solvents: Dimethylformamide; 16 h, 110 °C

Experimental Protocols

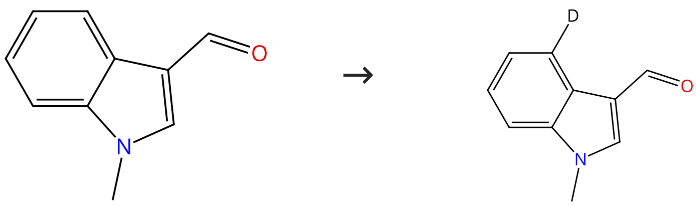
Palladium-Catalyzed Synthesis of Substituted Phenanthrenes via a C-H Annulation of 2-Biaryl Triflates with Alkynes

By: Prabhakaran, Mohan; et al

Journal of Organic Chemistry (2024), 89(22), 16363-16374.

Scheme 307 (1 Reaction)

Steps: 1



Suppliers (83)

31-614-CAS-38370051

Steps: 1

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 308 (1 Reaction) Steps: **1**

Absolute stereochemistry shown → • 2 Na Absolute stereochemistry shown

31-575-CAS-16190159 Steps: **1**

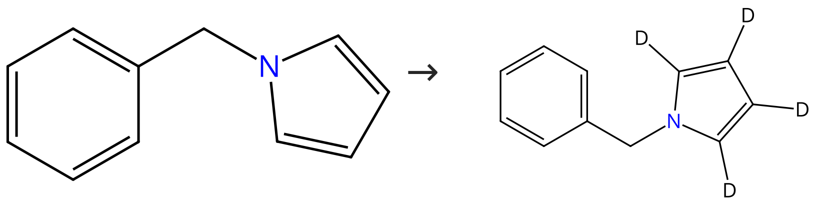
1.1 **Reagents:** Sodium hydroxide
Catalysts: Palladium
Solvents: Water-d_2

Synthesis and pharmacological characterization of the selective GluK1 radioligand (S)-2-amino-3-(6-[^{3}H]-2,4-dioxo-3,4-dihydrothieno[3,2-d]pyrimidin-1(2H)-yl)propanoic acid ([^{3}H]-NF608)

By: Alcaide, Anna; et al

MedChemComm (2016), 7(11), 2136-2144.

Scheme 309 (1 Reaction) Steps: **1**



Suppliers (73) Supplier (1)

31-614-CAS-24544992 Steps: **1**

1.1 **Reagents:** DMSO-d_6, Oxygen, Water-d_2
Catalysts: Palladium diacetate, 4,5-Diphenylpyrazolo[1,5-*a*][1,8]naphthyridine
Solvents: Dimethylformamide, Acetic acid-d_4; 3 h, 1 atm, 35 °C

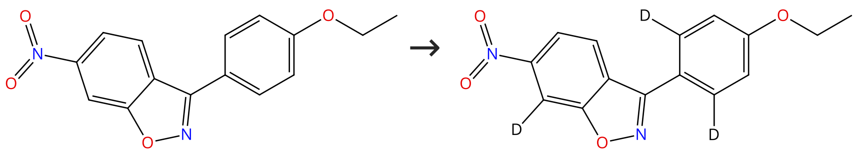
Experimental Protocols

Sterically controlled C-H alkenylation of pyrroles and thiophenes

By: Kang, Eunsu; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(89), 11791-11794.

Scheme 310 (1 Reaction) Steps: **1**



31-116-CAS-17883927 Steps: **1**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide, Dimethylformamide; 12 h, rt → 100 °C

Experimental Protocols

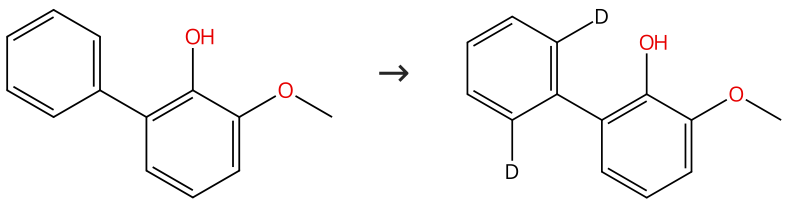
Palladium-catalyzed site-selective direct olefination of 6-electron-withdrawing group substituted 3-arylbenzo[d]isoxazoles

By: Guo, Ying; et al

Organic Chemistry Frontiers (2017), 4(10), 1962-1966.

Scheme 311 (1 Reaction)

Steps: 1



Suppliers (11)

31-614-CAS-37227551

Steps: 1

1.1 **Reagents:** Sodium acetate, Cupric acetate, Methanol-d_4, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 2 h, 100 °C

Experimental Protocols

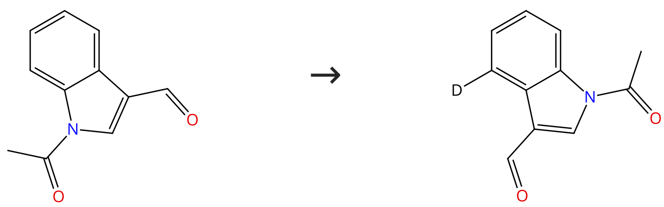
Pd-catalyzed regioselective rollover dual C-H annulation cascade: facile approach to phenanthrene derivatives

By: Kumar, Muniganti Naveen; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(64), 9714-9717.

Scheme 312 (1 Reaction)

Steps: 1



Suppliers (73)

31-614-CAS-38370054

Steps: 1

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

Experimental Protocols

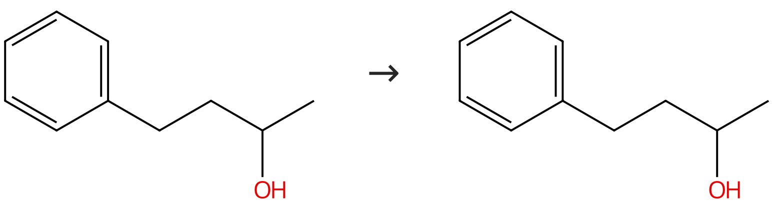
Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 313 (1 Reaction)

Steps: 1



Suppliers (65)

31-614-CAS-26768269

Steps: 1

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 110 °C

Experimental Protocols

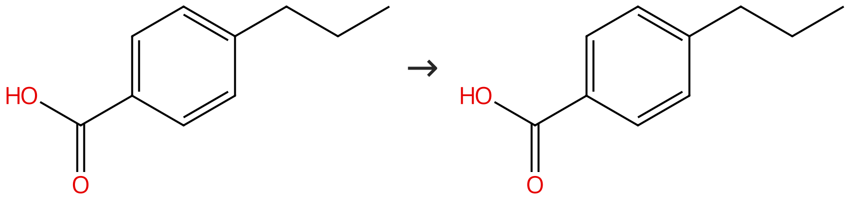
Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 314 (1 Reaction)

Steps: **1**



Suppliers (86)

31-614-CAS-27803626

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 160 °C

Experimental Protocols

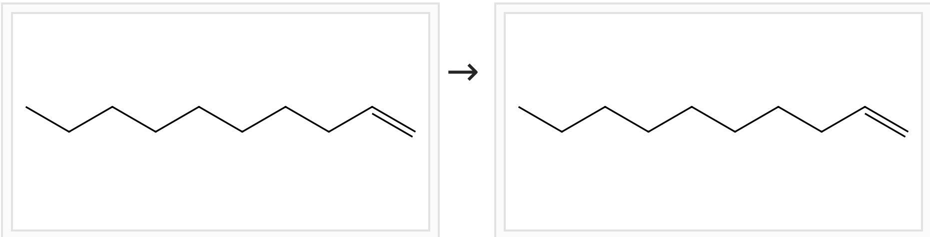
Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 315 (1 Reaction)

Steps: **1**



Supplier (1)

deuterated

31-614-CAS-24469154

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 7 d, 23 bar, 220 °C

Experimental Protocols

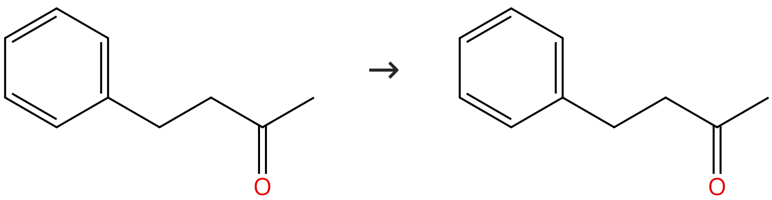
Decagram scale production of deuterated mineral oil and polydecene as solvents for polymer studies in neutron scattering

By: Klenner, Mitchell A.; et al

Polymer Chemistry (2020), 11(31), 4986-4994.

Scheme 316 (1 Reaction)

Steps: **1**



Suppliers (85)

31-614-CAS-25971159

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 110 °C

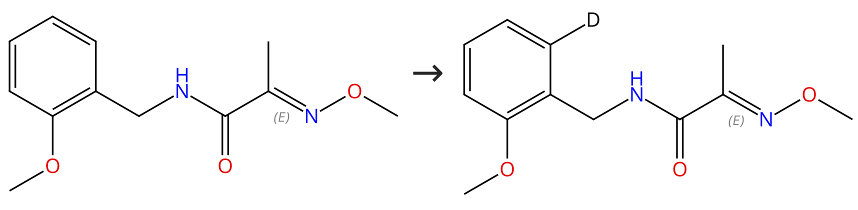
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 317 (1 Reaction) Steps: **1**



31-614-CAS-34499040 Steps: **1**

1.1 **Reagents:** Sodium acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 24 h, 130 °C

Pd-Catalyzed MIA-Directed Acetoxylation of Benzylamines and Computational Study

By: Meng, Yue-Ning; et al

European Journal of Organic Chemistry (2022), 2022(37), e202200728.

Scheme 318 (1 Reaction) Steps: **1**

Suppliers (65)

31-614-CAS-25023408 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-d_2; 6 h, 100 °C

Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 319 (2 Reactions) Steps: **1**

Suppliers (101) Suppliers (31)

31-614-CAS-42145921 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium; 48 h, rt → 120 °C

Experimental Protocols

Electrocatalytic reductive deuteration of arenes and heteroarenes

By: Bu, Faxiang; et al

Nature (London, United Kingdom) (2024), 634(8034), 592-599.

31-116-CAS-2619492 Steps: 1

1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2

Reinvestigation of the nontotally symmetric g-type normal vibrations of [$^1H_4$]- and [$^2H_4$]pyrazines

By: Hieida, Toshikazu; et al

Bulletin of the Chemical Society of Japan (1989), 62(9), 2989-91.

Scheme 320 (1 Reaction) Steps: 1

31-614-CAS-39061172 Steps: 1

1.1 **Reagents:** Silver acetate, Water-d_2
Catalysts: Acetylglycine, Palladium diacetate
Solvents: 2,2,2-Trifluoroethanol; 25 min, 60 °C

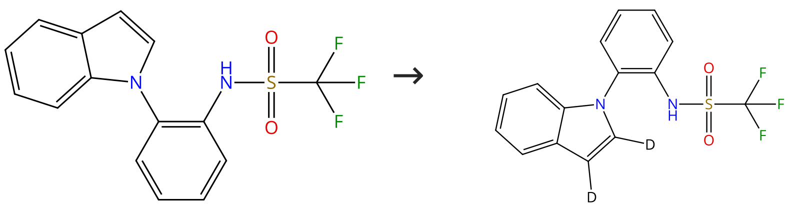
Experimental Protocols

Synthesis of Ferrocene 1,3-Derivatives by Distal C-H Activation

By: Gupta, Princi; et al

Angewandte Chemie, International Edition (2023), 62(34), e202305278.

Scheme 321 (1 Reaction) Steps: 1



31-614-CAS-37452654 Steps: 1

1.1 **Reagents:** Cupric acetate, Cesium carbonate, Water-d_2
Catalysts: Acetylglycine, Palladium diacetate
Solvents: Dimethyl sulfoxide, Toluene; 1 h, 85 °C

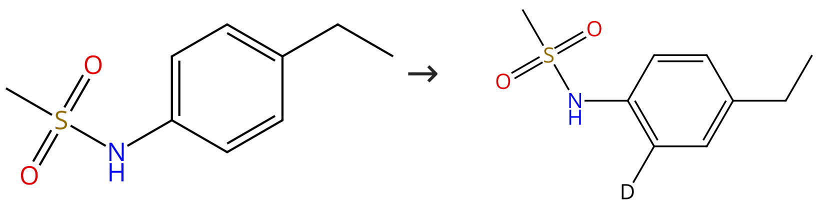
Experimental Protocols

Pd(II)-Catalyzed [5 + 2] Cycliz ation of N-Triflyl Aryl Indoles and α,γ-Substituted Allenoates: A Route to Indole-Fused Benzodia zepines

By: Chiu, Wei-Jung; et al

Organic Letters (2023), 25(34), 6246-6250.

Scheme 322 (1 Reaction) Steps: 1



Suppliers (8)

31-116-CAS-19680635 Steps: 1

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Palladium trifluoroacetate
Solvents: Toluene; 12 h, 125 °C

1.2 **Reagents:** Water; rt

Experimental Protocols

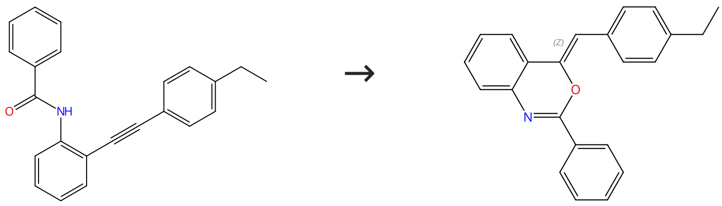
Ligand-Free Palladium(II)-Catalyzed ortho-C-H Chalcoge nations of N-Arylsulfonamide via Weak Coordi nation

By: Gu, Linghui; et al

European Journal of Organic Chemistry (2019), 2019(8), 1825-1829.

Scheme 323 (1 Reaction)

Steps: **1**



Double bond geometry shown

31-614-CAS-40270583

Steps: **1**

1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide; 2 h, 80 °C

Experimental Protocols

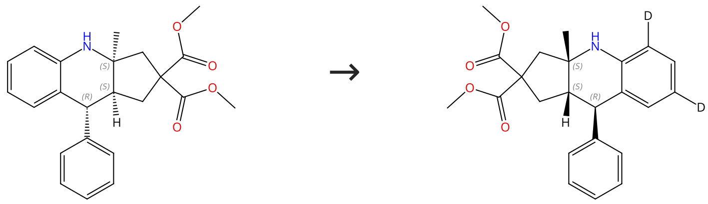
Chemoselective Oxypalladation of (o-Alkynylaryl)amide-Triggered Site-Selective C-H Annulation for Stereoselective Synthesis of Succinimide-Fused Polycycles

By: Dattatri; et al

Advanced Synthesis & Catalysis (2025), 367(3), e202301367.

Scheme 324 (1 Reaction)

Steps: **1**



Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-41503488

Steps: **1**

1.1 **Reagents:** Alumina, 2,5-Di-*tert*-butyl-1,4-benzoquinone, Water-d_2
Catalysts: Palladium chloride, Bipyrazine, Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate
Solvents: Dichloromethane; 0 °C; 72 h, 70 °C

Experimental Protocols

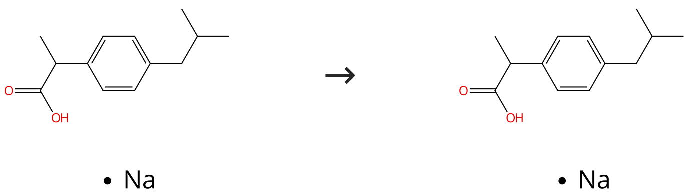
Palladium-catalyzed cascade of aza-Wacker and Povarov reactions of aryl amines and 1,6-dienes for hexahydro-cyclopenta[b]quinoline framework

By: Wu, Jiahao; et al

Nature Communications (2024), 15(1), 6776.

Scheme 325 (1 Reaction)

Steps: **1**



Suppliers (52)

31-614-CAS-29396207

Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 160 °C

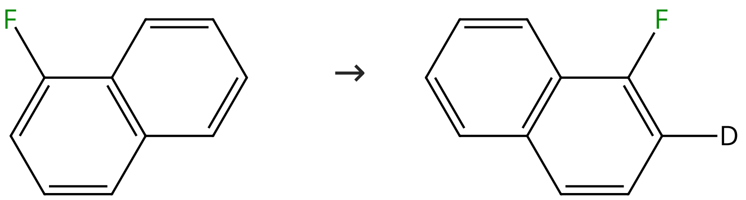
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 326 (1 Reaction) Steps: **1**



Suppliers (104)

31-116-CAS-16475236 Steps: **1**

1.1 **Reagents:** Cesium carbonate, Propanoic acid, 2,2-dimethyl-, silver(1+) salt (1:1), Water-d_2
Catalysts: Palladium diacetate, Bis(1,1-dimethylethyl)(2-methoxyphenyl)phosphine
Solvents: 1,4-Dioxane; 17 h, 120 °C; 120 °C → rt

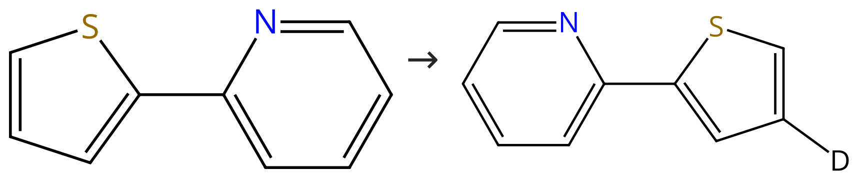
Experimental Protocols

Palladium-Catalyzed, Site-Selective Direct Allylation of Aryl C-H Bonds by Silver-Mediated C-H Activation: A Synthetic and Mechanistic Investigation

By: Lee, Sarah Yunmi; et al

Journal of the American Chemical Society (2016), 138(46), 15278-15284.

Scheme 327 (1 Reaction) Steps: **1**



Suppliers (71)

31-614-CAS-42666357 Steps: **1**

1.1 **Reagents:** Pyridine, Potassium carbonate, Silver triflate, Water-d_2, Silver oxide (Ag_2O)
Catalysts: Palladium diacetate
Solvents: Toluene; 16 h, 120 °C

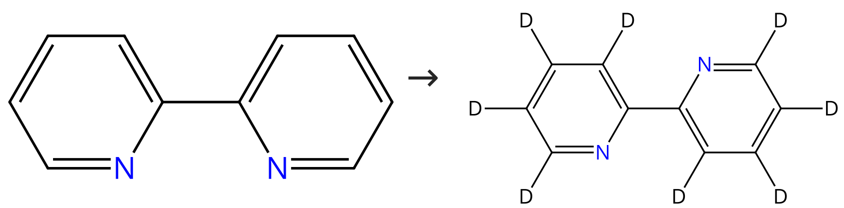
Experimental Protocols

Catalyst-Controlled Regiodivergent C-H Alkynylation of 2-Pyridylthiophenes

By: Gui, Yuting; et al

Advanced Synthesis & Catalysis (2025), 367(3), e202400856.

Scheme 328 (1 Reaction) Steps: **1**



Suppliers (120) Suppliers (41)

31-614-CAS-24108314 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 3 d, 200 °C

Experimental Protocols

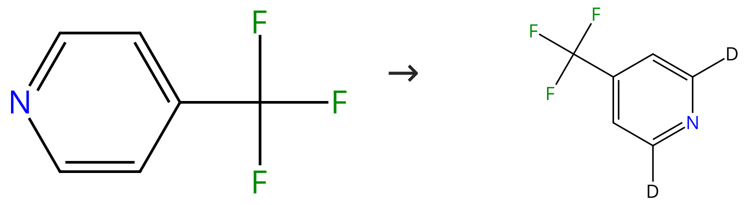
A Synthetic Route to a Ruthenium Complex via Successive Photosubstitution Reactions

By: Hirahara, Masanari; et al

Inorganic Chemistry (2021), 60(17), 13193-13199.

Scheme 329 (1 Reaction)

Steps: **1**



Suppliers (75)

31-116-CAS-13156949

Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 10 min, rt; rt → 180 °C; 24 h, 180 °C

Experimental Protocols

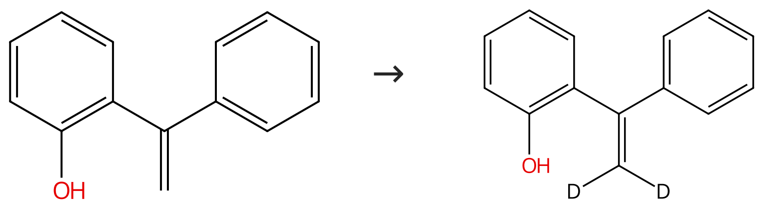
Mechanistic Insights into Two-Phase Radical C-H Arylations

By: Baxter, Ryan D.; et al

ACS Central Science (2015), 1(8), 456-462.

Scheme 330 (1 Reaction)

Steps: **1**



Suppliers (13)

Supplier (1)

31-614-CAS-38336144

Steps: **1**

1.1 **Reagents:** Sodium acetate, Cupric acetate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethylformamide; 1.5 h, 100 °C

Experimental Protocols

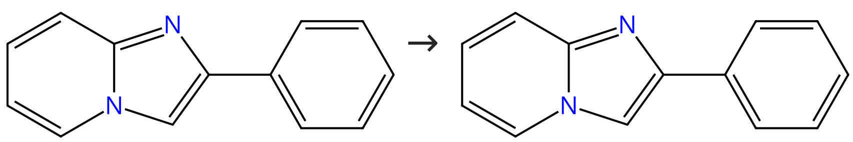
Conjugated Olefin Enabled Rollover Cyclometallation of Distant C-H Bonds: Regioselective Annulation of o-Alkenyl Phenols with Alkynes

By: Nagireddy, Attunuri; et al

Chemistry - A European Journal (2023), 29(70), e202303245.

Scheme 331 (1 Reaction)

Steps: **1**



Suppliers (83)

31-614-CAS-29385696

Steps: **1**

1.1 **Reagents:** Tetrabutylammonium bromide, Oxygen, Water-d_2
Catalysts: Cupric acetate, Palladium diacetate
Solvents: Dimethylformamide; 12 h, 100 °C

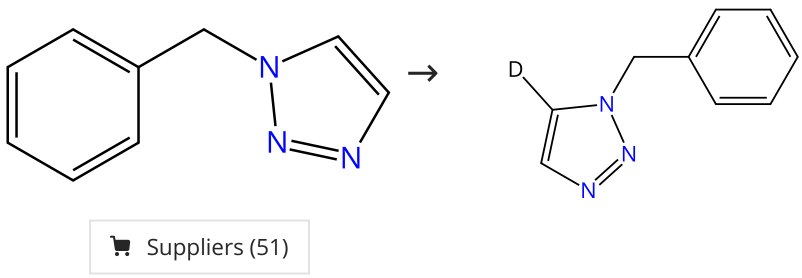
Experimental Protocols

Synthesis of Naphtho[1',2':4,5]imidazo[1,2-a]pyridines and Imidazo[5,1,2-cd]indolizines Through Pd-Catalyzed Cycloaromatization of 2-Phenylimidazo[1,2-a]pyridines with Alkynes

By: Li, Peiyuan; et al

Journal of Organic Chemistry (2015), 80(15), 7508-7518.

Scheme 332 (1 Reaction) Steps: **1**



31-116-CAS-8896772 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Toluene; 18 h, 100 °C

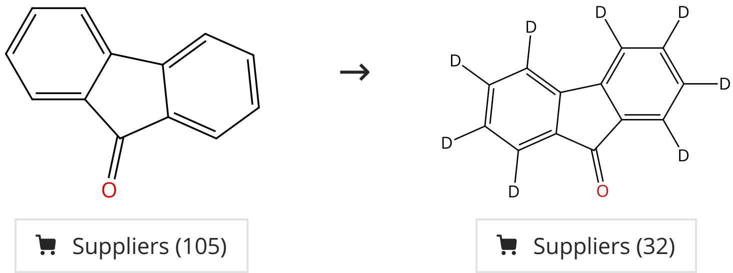
Experimental Protocols

Palladium-catalyzed oxidative C-H/C-H cross-coupling of 1-substituted 1,2,3-triazoles with furans and thiophenes

By: Yu, Xin; et al

Organic & Biomolecular Chemistry (2015), 13(15), 4459-4465.

Scheme 333 (1 Reaction) Steps: **1**



31-116-CAS-4387237 Steps: **1**

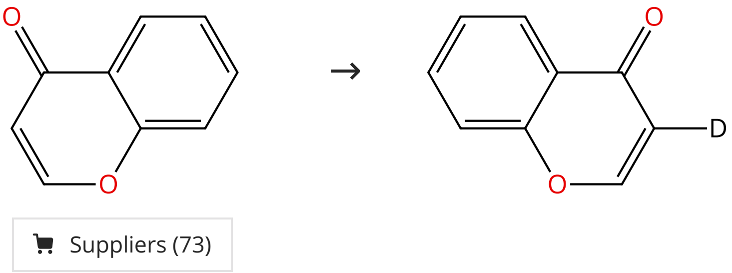
1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 30 min, rt → 250 °C; 2 h, 300 bar, 250 °C; 15 min, cooled

Continuous H/D exchange of aromatic hydrocarbons using near-critical deuterium oxide

By: Kerler, Boris; et al

Journal of Supercritical Fluids (2007), 39(3), 381-388.

Scheme 334 (1 Reaction) Steps: **1**



31-116-CAS-16107477 Steps: **1**

1.1 **Reagents:** Silver acetate, Water-d_2, Propanoic acid, 2,2-dimethyl-, cesium salt (1:1)
Catalysts: Palladium trifluoroacetate
Solvents: Pivalic acid; 6 h, 100 °C

Experimental Protocols

Unraveling innate substrate control in site-selective palladium-catalyzed C-H heterocycle functionalization

By: Choi, Hwanho; et al

Chemical Science (2016), 7(6), 3900-3909.

Scheme 335 (1 Reaction) Steps: **1**

Suppliers (4)

31-614-CAS-37171171 Steps: **1**

1.1 **Reagents:** Acetic acid, Sodium acetate, Cupric acetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: Dimethylacetamide; 1 h, 150 °C

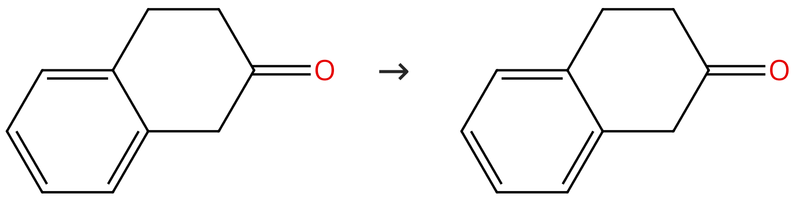
Experimental Protocols

Copper-Mediated and Palladium-Catalyzed Cross-Coupling of Indoles and N-Methylpyridinium Salts: A Practical Way to Prepare 3-(Pyridin-2-yl)indoles

By: Tang, Juan; et al

Organic Letters (2023), 25(28), 5203-5208.

Scheme 336 (1 Reaction) Steps: **1**



Suppliers (87)

31-614-CAS-24931261 Steps: **1**

1.1 **Reagents:** Sodium borodeuteride
Catalysts: Palladium
Solvents: Water-*d*$_2$; 18 h, 130 °C

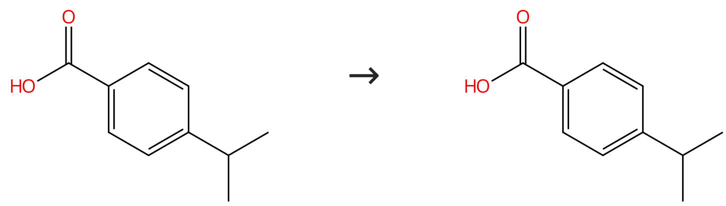
Experimental Protocols

Tandem Rh-Catalyzed [4 + 2] Vinylic C- H O-Annulation of Exocyclic Enones with Alkynes and 1,5-H Shift

By: Zhao, Yinsong; et al

Organic Letters (2018), 20(4), 1074-1077.

Scheme 337 (1 Reaction) Steps: **1**



Suppliers (96)

31-614-CAS-28594115 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 24 h, 110 °C

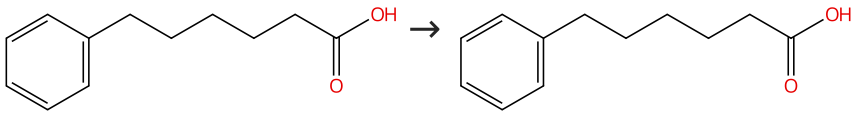
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 338 (1 Reaction) Steps: **1**



Suppliers (70)

31-614-CAS-24960178 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 24 h, 160 °C

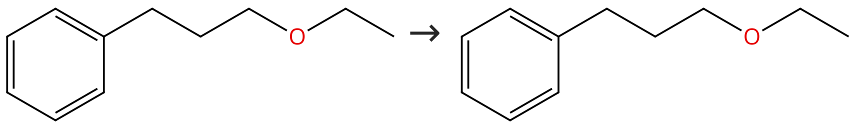
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 339 (1 Reaction) Steps: **1**



Suppliers (3)

31-614-CAS-28368784 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 24 h, 110 °C

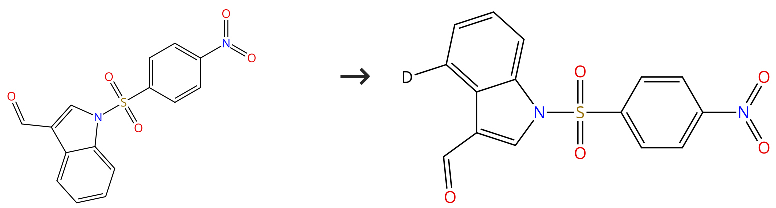
Experimental Protocols

Efficient C-H/C-D Exchange Reaction on the Alkyl Side Chain of Aromatic Compounds Using Heterogeneous Pd/C in D_2O

By: Sajiki, Hironao; et al

Organic Letters (2004), 6(9), 1485-1487.

Scheme 340 (1 Reaction) Steps: **1**



Suppliers (3)

31-614-CAS-38370053 Steps: **1**

1.1 **Reagents:** Trifluoroacetic acid, Water-*d*$_2$
Catalysts: 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt

1.2 **Reagents:** Sodium bicarbonate
Solvents: Water; rt

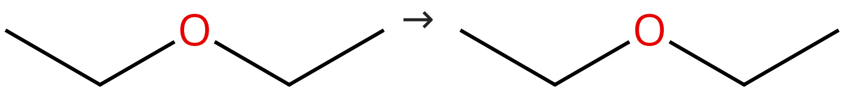
Experimental Protocols

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 341 (1 Reaction) Steps: **1**



Suppliers (224)

31-614-CAS-29300929 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-d_2; 22 h, 100 °C

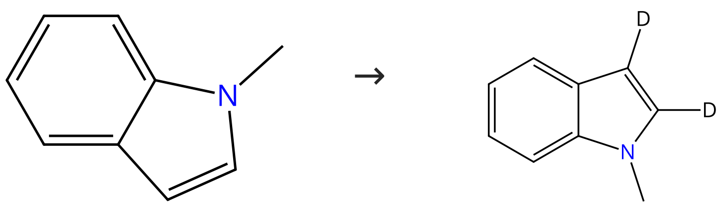
Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 342 (1 Reaction) Steps: **1**



Suppliers (107)

31-116-CAS-22753220 Steps: **1**

1.1 **Catalysts:** Palladium, bis(acetonitrile)dichloro-, Copper(II) triflate, 6-[2-[(2,2-Dimethylpropyl)sulfinyl]phenyl]-2(1*H*)-pyridinone
Solvents: Dimethylformamide; 5 min, rt

1.2 **Reagents:** Water-d_2; 31 h, 70 °C

1.3 -

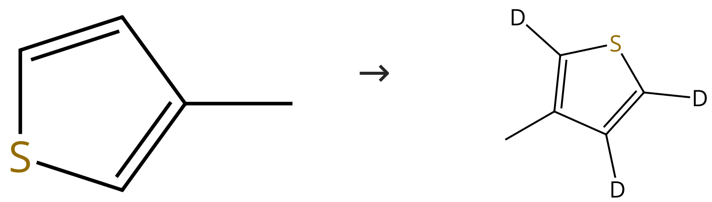
Experimental Protocols

Regiocontrol in the oxidative Heck reaction of indole by ligand-enabled switch of the regioselectivity-determining step

By: Wang, Yu-Jie; et al

Chemical Science (2020), 11(40), 11042-11054.

Scheme 343 (1 Reaction) Steps: **1**



Suppliers (65)

31-614-CAS-24544989 Steps: **1**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Palladium diacetate, 4,5-Diphenylpyrazolo[1,5-*a*][1,8]naphthyridine
Solvents: Acetic acid-d_4; 3 h, 1 atm, 60 °C

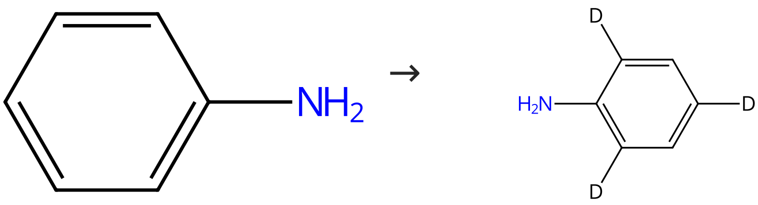
Experimental Protocols

Sterically controlled C-H alkenylation of pyrroles and thiophenes

By: Kang, Eunsu; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(89), 11791-11794.

Scheme 344 (1 Reaction) Steps: 1



Suppliers (120) Suppliers (4)

31-614-CAS-41503508 Steps: 1

1.1 **Reagents:** Alumina, 2,5-Di-*tert*-butyl-1,4-benzoquinone, Water-d_2
Catalysts: Palladium chloride, Bipyrazine, Sodium tetrakis[3,5-bis(trifluoromethyl)phenyl]borate
Solvents: Dichloromethane; 0 °C; 72 h, 70 °C

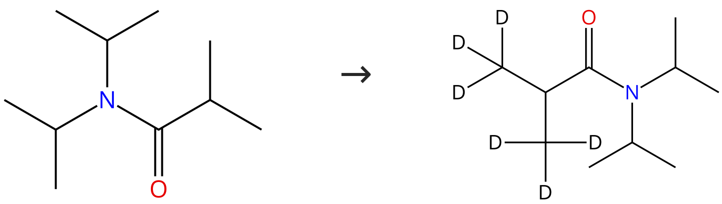
Experimental Protocols

Palladium-catalyzed cascade of aza-Wacker and Povarov reactions of aryl amines and 1,6-dienes for hexahydro-cyclopenta[b]quinoline framework

By: Wu, Jiahao; et al

Nature Communications (2024), 15(1), 6776.

Scheme 345 (1 Reaction) Steps: 1



Suppliers (37)

31-614-CAS-36010261 Steps: 1

1.1 **Reagents:** Silver trifluoroacetate, Water-d_2
Catalysts: Palladium, bis(acetonitrile)dichloro-, 6-[2-[(2,2-Dimethylpropyl)sulfinyl]phenyl]-2(1*H*)-pyridinone
Solvents: 2,2,2-Trifluoroethanol; 48 h, 100 °C

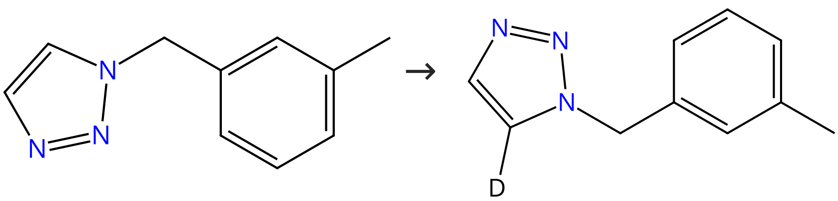
Experimental Protocols

Ligand-Enabled Palladium(II)-Catalyzed Enantioselective β-C (sp^3)-H Arylation of Aliphatic Tertiary Amides

By: Yuan, Chen-Hui; et al

Angewandte Chemie, International Edition (2023), 62(17), e202300854.

Scheme 346 (1 Reaction) Steps: 1



Suppliers (3)

31-116-CAS-2839002 Steps: 1

1.1 **Reagents:** Silver carbonate, Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide, 1,4-Dioxane; 16 h, 120 °C

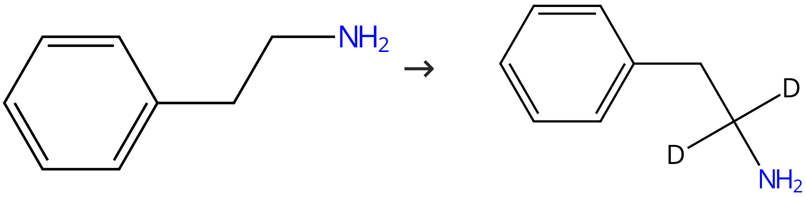
Experimental Protocols

Palladium-catalyzed oxidative CH/CH cross-coupling of pyridine N-oxides with five-membered heterocycles

By: Liu, Wei; et al

Chemical Communications (Cambridge, United Kingdom) (2014), 50(66), 9291-9294.

Scheme 347 (1 Reaction) Steps: **1**



Suppliers (62)

31-116-CAS-19759098 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-*d*$_2$
Catalysts: Palladium; 96 h, 50 °C

Rhodium(III)-catalyzed Intermolecular Unactivated Secondary C(sp^3)-H Bond Amidation Directed by 3,5-dimethylpyrazole

By: Wang, Yanwei; et al

Advanced Synthesis & Catalysis (2019), 361(7), 1564-1569.

Scheme 348 (1 Reaction) Steps: **1**

Suppliers (312)

31-614-CAS-26671500 Steps: **1**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κ*C*^{2},κ*N*^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Water-*d*$_2$; 22 h, 100 °C

Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 349 (1 Reaction) Steps: **1**

Suppliers (102)

31-614-CAS-31288249 Steps: **1**

1.1 **Reagents:** Silver trifluoroacetate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: Trifluoroacetic acid-*d*, 2-Propan-*2-d*-ol-*d*, 1,1,1,3,3,3-hexafluoro-; 6 h, 100 °C

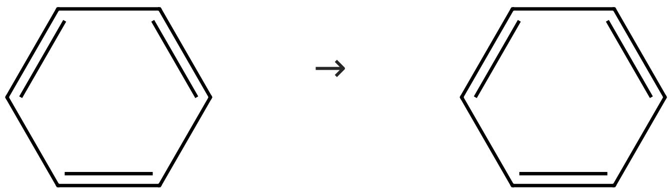
Experimental Protocols

C4-arylation and domino C4-arylation/3,2-carbonyl migration of indoles by tuning Pd catalytic modes: Pd(I)-Pd(II) catalysis vs. Pd(II) catalysis

By: Cheng, Yaohang; et al

Chemical Science (2021), 12(9), 3216-3225.

Scheme 350 (3 Reactions) Steps: **1**



Suppliers (179)

31-614-CAS-30234604 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-3-methyl-*N*-[2-methyl-1-[(phenylmethoxy-κ*O*)methyl]propyl]-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Benzene, Water-d_2; 6 h, 55 °C

Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

31-614-CAS-27830299 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-*N*-[2-(methoxy-κ*O*)ethyl]-3-methyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-4)-, tetrafluoroborate(1-) (1:1)
Solvents: Benzene, Water-d_2; 6 h, 55 °C

Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

31-614-CAS-25997926 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium(1+), (acetonitrile)[2,3-dihydro-3-[2-(hydroxy-κ*O*)ethyl]-*N*-phenyl-1*H*-benzimidazole-1-acetamidato(3-)-κC^2,κN^{N1}]-, (*SP*-4-3)-, tetrafluoroborate(1-) (1:1)
Solvents: Benzene, Water-d_2; 6 h, 100 °C

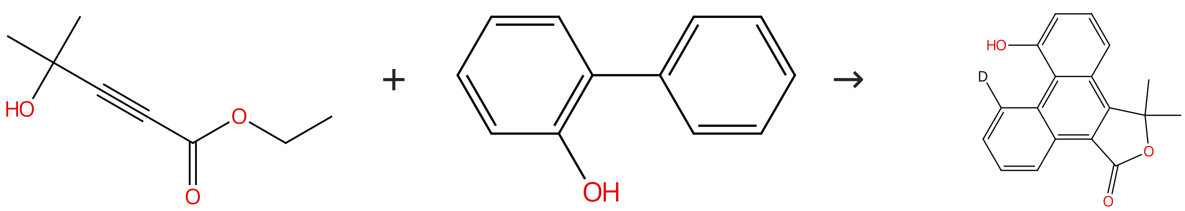
Experimental Protocols

An air/water-stable tridentate N-heterocyclic carbene-palladium(II) complex: catalytic C-H activation of hydrocarbons via hydrogen/deuterium exchange process in deuterium oxide

By: Lee, Joo Ho; et al

Advanced Synthesis & Catalysis (2009), 351(4), 563-568.

Scheme 351 (1 Reaction) Steps: **1**



Suppliers (10) Suppliers (96)

31-614-CAS-37227561 Steps: **1**

1.1 **Reagents:** Sodium acetate, Cupric acetate, Methanol-d_4
Catalysts: Palladium diacetate
Solvents: Dimethylformamide

1.2 **Reagents:** Methanol-d_4, Water-d_2; 2 h, 100 °C; 100 °C → rt

1.3 **Reagents:** Water; cooled

Experimental Protocols

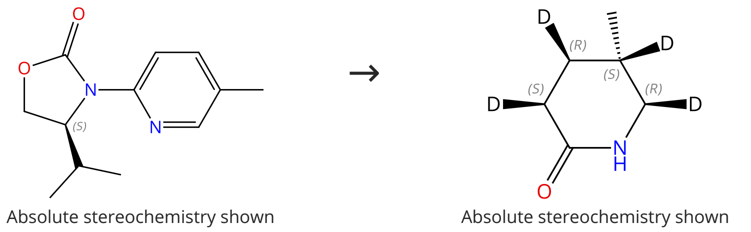
Pd-catalyzed regioselective rollover dual C-H annulation cascade: facile approach to phenanthrene derivatives

By: Kumar, Muniganti Naveen; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(64), 9714-9717.

Scheme 352 (1 Reaction)

Steps: **1**



Suppliers (2)

31-614-CAS-30314111

Steps: **1**

1.1 **Reagents:** Hydrogen, Deuterium chloride, Oxygen
Catalysts: Palladium
Solvents: Tetrahydrofuran, Water-d_2; 24 h, 30 bar, 40 °C

1.2 **Reagents:** Sodium carbonate

Experimental Protocols

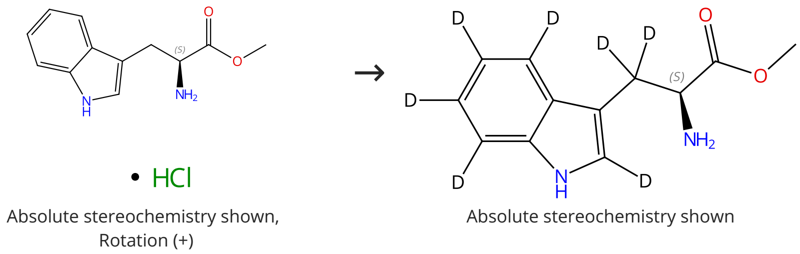
Interrupted pyridine hydrogenation: Asymmetric synthesis of δ-lactams

By: Wagener, Tobias; et al

Angewandte Chemie, International Edition (2021), 60(12), 6425-6429.

Scheme 353 (1 Reaction)

Steps: **1**



Suppliers (94)

31-116-CAS-19075955

Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Water
Solvents: Water-d_2; 18 h, 110 °C; 110 °C → rt

1.2 **Catalysts:** Platinum dioxide; rt → reflux; 8 h, reflux

Experimental Protocols

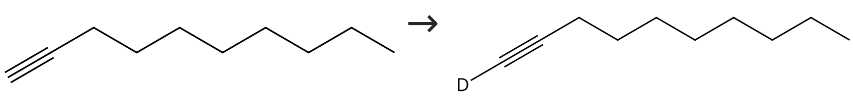
Mechanistic Investigation of Oxidative Decarboxylation Catalyzed by Two Iron(II)- and 2-Oxoglutarate-Dependent Enzymes

By: Huang, Jhih-Liang; et al

Biochemistry (2018), 57(12), 1838-1841.

Scheme 354 (1 Reaction)

Steps: **1**



Suppliers (84)

31-116-CAS-8522538

Steps: **1**

1.1 **Catalysts:** Trimethylphosphine, Palladium diacetate
Solvents: Toluene; 10 min, 110 °C

1.2 **Reagents:** Water-d_2; 8 h, 60 °C

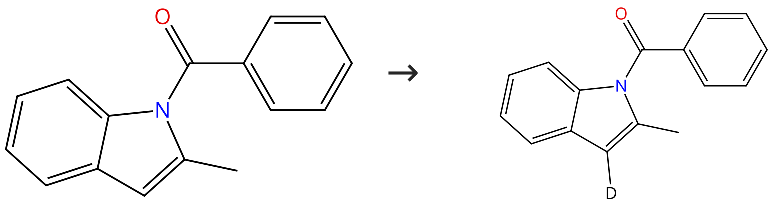
Experimental Protocols

Palladium-catalyzed 1,4-addition of terminal alkynes to acrolein

By: Wang, Haining; et al

Tetrahedron (2015), 71(35), 5866-5870.

Scheme 355 (1 Reaction) Steps: **1**



Suppliers (5)

31-614-CAS-35267189 Steps: **1**

1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: 2-Methylpyridine, Cupric acetate, Palladium diacetate
Solvents: Dimethylacetamide; 18 h, 100 °C

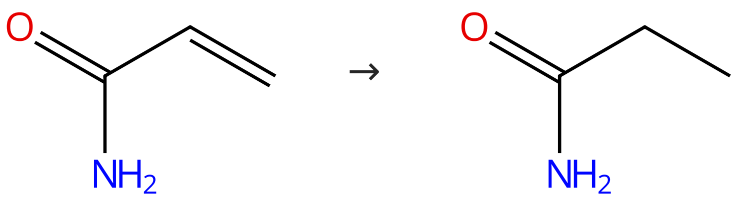
Experimental Protocols

Dearomatizing [2+2+1] Spiroannulation of Indoles with Alkynes

By: Han, Xiao-Qing; et al

Organic Letters (2023), 25(1), 261-266.

Scheme 356 (1 Reaction) Steps: **1**



Suppliers (162) Suppliers (72)

31-244-CAS-7925617 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium, Gold
Solvents: Water-d_2; 15 min, 7 °C; 7 °C

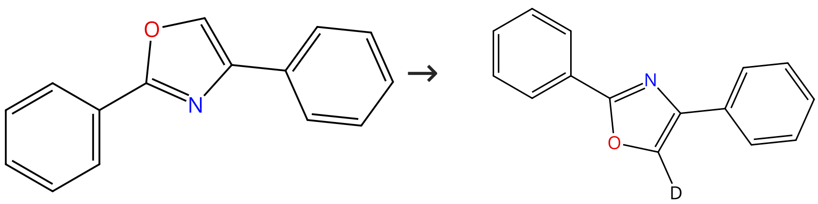
Experimental Protocols

Preparation and catalytic reaction of Au/Pd bimetallic nanoparticles in Apo-ferritin

By: Suzuki, Masako; et al

Chemical Communications (Cambridge, United Kingdom) (2009), (32), 4871-4873.

Scheme 357 (1 Reaction) Steps: **1**



Suppliers (51)

31-116-CAS-19638158 Steps: **1**

1.1 **Reagents:** Potassium carbonate, Water-d_2
Catalysts: Quinone, Palladium diacetate, *tert*-Butoxycarbonyl-L-isoleucine
Solvents: Dimethylacetamide; 30 h, 80 °C

1.2 **Reagents:** Potassium carbonate
Solvents: Water

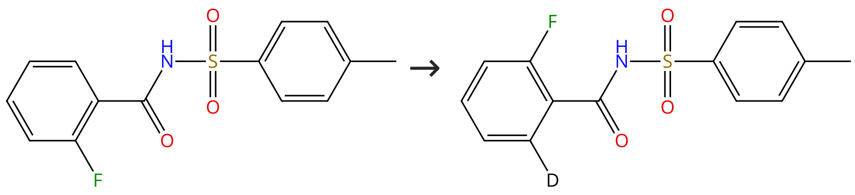
Experimental Protocols

Pd^{II}-Catalyzed Regio- and Enantioselective Oxidative C-H/C-H Cross-Coupling Reaction between Ferrocenes and Azoles

By: Cai, Zhong-Jian; et al

Angewandte Chemie, International Edition (2019), 58(7), 2149-2153.

Scheme 358 (1 Reaction) Steps: **1**



Suppliers (5)

31-116-CAS-9849757 Steps: **1**

1.1 **Reagents:** Cupric acetate, Cesium acetate, Oxygen, Water- *d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,4-Dioxane; 2 h, 100 °C
1.2 **Reagents:** Water

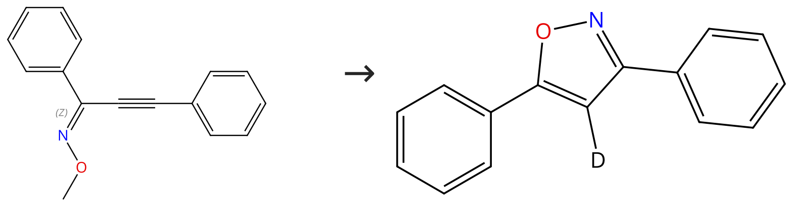
Experimental Protocols

Palladium-catalyzed C-H activation and intermolecular annulation with allenes

By: Xia, Xiao-Feng; et al

Chemistry - A European Journal (2014), 20(17), 5087-5091.

Scheme 359 (1 Reaction) Steps: **1**



Double bond geometry shown

Supplier (1)

Supplier (1)

31-614-CAS-39388519 Steps: **1**

1.1 **Reagents:** Cupric acetate, Potassium carbonate, Tetrabuty lammonium bromide, Water- *d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 12 h, 80 °C

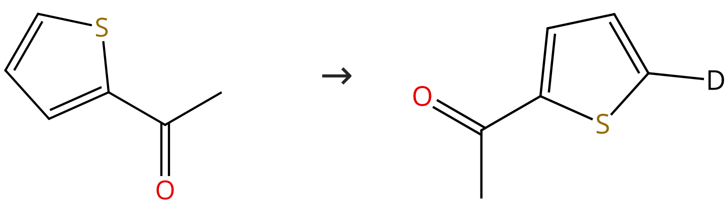
Experimental Protocols

Pd-Catalyzed Sequential Electrophilic Cyclization/Selective C-H Annulation Cascade: Synthesis of Isoxazole-Phthalimide Fused Poly Heterocyclics

By: Suresh, Vavilapalli; et al

Journal of Organic Chemistry (2024), 89(5), 3214-3225.

Scheme 360 (1 Reaction) Steps: **1**



Suppliers (80)

31-116-CAS-19640292 Steps: **1**

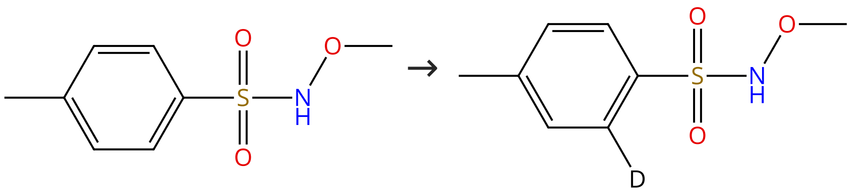
1.1 **Reagents:** Pyridine, Water- *d*$_2$
Catalysts: Cupric acetate, Palladium diacetate
Solvents: 1,4-Dioxane; 24 h, 120 °C

Direct Functionalization of C(sp^2)-H Bond in Nonaromatic Azaheterocycles: Palladium-Catalyzed Cross-Dehydrogenative Coupling (CDC) of 2H-Imidazole 1-Oxides with Pyrroles and Thiophenes

By: Akulov, Alexey A.; et al

ACS Omega (2019), 4(1), 825-834.

Scheme 361 (1 Reaction) Steps: **1**



Suppliers (9)

31-116-CAS-20990965 Steps: **1**

1.1 **Reagents:** *tert*-Butyl hydroperoxide, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,4-Dioxane, Decane; 100 °C; 15 min, 100 °C

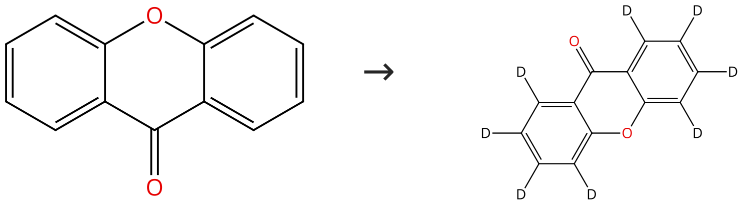
Experimental Protocols

Palladium-Catalyzed ortho-Benzoylation of Sulfonamides through C-H Activation: Expedient Synthesis of Cyclic N-Sulfonyl Ketimines

By: Ojha, Subhadra; et al

Advanced Synthesis & Catalysis (2020), 362(3), 561-571.

Scheme 362 (1 Reaction) Steps: **1**



Suppliers (102)

31-116-CAS-5929466 Steps: **1**

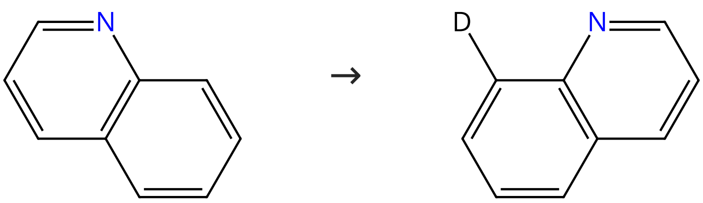
1.1 **Reagents:** Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; 30 min, rt → 250 °C; 2 h, 300 bar, 250 °C; 15 min, cooled

Continuous H/D exchange of aromatic hydrocarbons using near-critical deuterium oxide

By: Kerler, Boris; et al

Journal of Supercritical Fluids (2007), 39(3), 381-388.

Scheme 363 (1 Reaction) Steps: **1**



Suppliers (124) Suppliers (5)

31-614-CAS-34406443 Steps: **1**

1.1 **Reagents:** Palladium diacetate, N^2,N^6-Bis(2,6-dimethoxyphenyl)-2,6-pyridinedicarboxamide
Solvents: Dichloromethane; 1 h, 100 °C

1.2 **Reagents:** Silver carbonate, Water-d_2
Catalysts: *N*-Acetyl-DL-phenylalanine, Palladium diacetate
Solvents: *tert*-Butanol, 1,4-Dioxane, 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 24 h, 110 °C; 110 °C → rt

1.3 **Reagents:** 4-(Dimethylamino)pyridine
Solvents: Toluene; 30 min, 100 °C

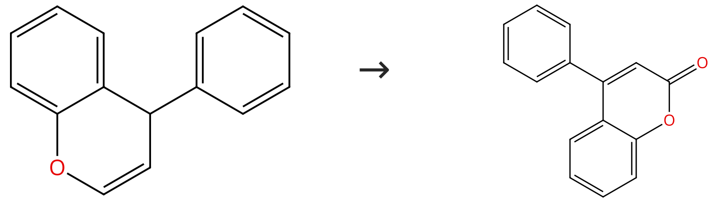
Experimental Protocols

Molecular editing of aza-arene C-H bonds by distance, geometry and chirality

By: Fan, Zhoulong; et al

Nature (London, United Kingdom) (2022), 610(7930), 87-93.

Scheme 364 (1 Reaction) Steps: **1**



Suppliers (6) Suppliers (16)

31-494-CAS-21174766 Steps: **1**

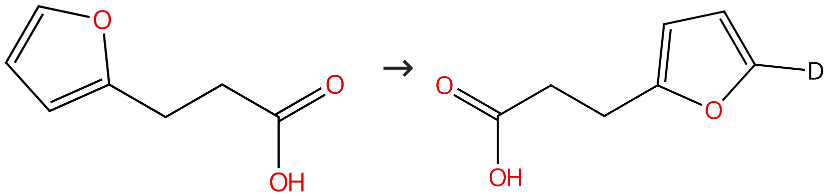
1.1 **Reagents:** Oxygen, Water-d_2
Catalysts: Palladium diacetate
Solvents: 1,4-Dioxane

Heteroatom-Guided, Palladium-Catalyzed, Site-Selective C-H Arylation of 4H-Chromenes: Diastereoselective Assembly of the Core Structure of Myristinin B through Dual C-H Functiona lization

By: Pawar, Govind Goroba; et al

Chemistry - A European Journal (2015), 21(27), 9905-9911.

Scheme 365 (1 Reaction) Steps: **1**



Suppliers (72)

31-614-CAS-35766981 Steps: **1**

1.1 **Reagents:** Oxygen, Water-d_2, Potassium fluoride
Catalysts: 1,10-Phenanthroline, Bis(benzonitrile)dichlorop alladium
Solvents: 1,2-Dichloroethane; 24 h, 50 °C

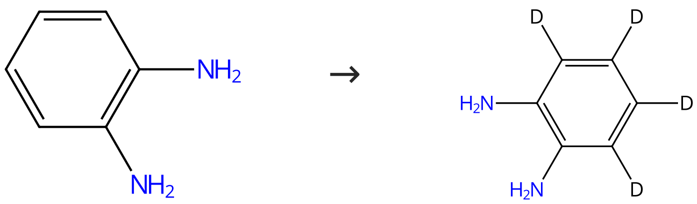
Experimental Protocols

Remote-Group-Assisted Facile Oxidative Arylation of Furans and Pyrroles

By: Jiang, Kai; et al

ACS Catalysis (2023), 13(6), 3520-3531.

Scheme 366 (1 Reaction) Steps: **1**



Suppliers (109) Suppliers (37)

31-116-CAS-23013634 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 20 min, rt; 90 h, 453 K

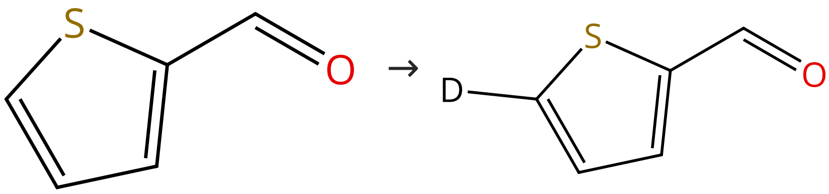
Experimental Protocols

Excited-state hydrogen detachment from a tris-(o-phenylen ediamine) iron(II) complex in THF at room temper ature

By: Nakada, Akinobu; et al

Chemical Communications (Cambridge, United Kingdom) (2020), 56(98), 15414-15417.

Scheme 367 (1 Reaction) Steps: **1**



Suppliers (104)

31-116-CAS-20966796 Steps: **1**

1.1 **Reagents:** Cupric acetate, Sodium sulfate, Water- d_2
Catalysts: Palladium diacetate; 30 min, rt

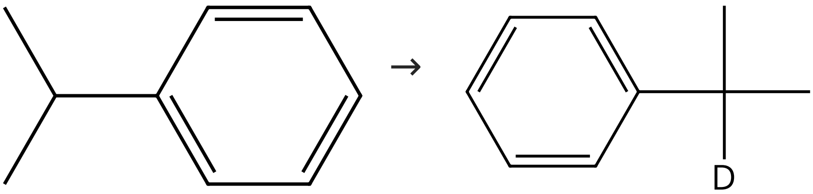
Experimental Protocols

Palladium-Catalyzed C-H/C-H Cross-Coupling by Mechanochemistry: Direct Alkenylation and Heteroarylation of N1-Protected 1H-Indazoles

By: Yu, Jingbo; et al

Journal of Organic Chemistry (2020), 85(2), 1009-1021.

Scheme 368 (2 Reactions) Steps: **1**



Suppliers (90) Suppliers (14)

31-116-CAS-12201764 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; overnight, 50 °C

Experimental Protocols

Mechanism of Selective C-H Hydroxylation Mediated by Manganese Aminopyridine Enzyme Models

By: Ottenbacher, Roman V.; et al

ACS Catalysis (2015), 5(1), 39-44.

31-116-CAS-13832562 Steps: **1**

1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium
Solvents: Water-d_2; overnight, rt

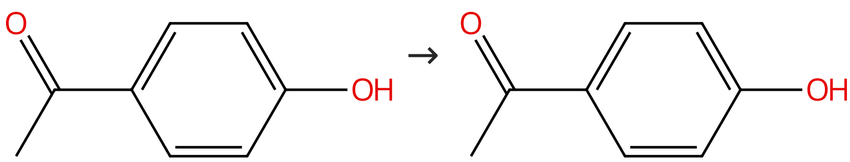
Experimental Protocols

On the Mechanism of Ligand-Assisted, Copper-Catalyzed Benzylic Amination by Chloramine-T

By: Barman, Dipti N.; et al

Organometallics (2010), 29(15), 3404-3412.

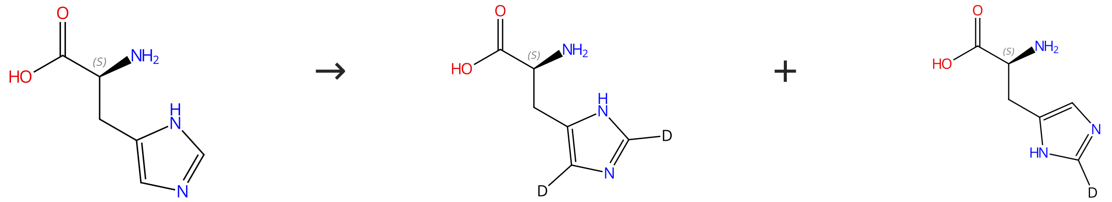
Scheme 369 (1 Reaction) Steps: **1**



Suppliers (135)

31-614-CAS-30050442	Steps: **1**	Continuous H/D exchange of aromatic hydrocarbons using near-critical deuterium oxide
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 30 min, rt → 250 °C; 2 h, 300 bar, 250 °C; 15 min, cooled	By: Kerler, Boris; et al Journal of Supercritical Fluids (2007), 39(3), 381-388.

Scheme 370 (1 Reaction) Steps: **1** Yield: **99%**



Absolute stereochemistry shown, Rotation (-)

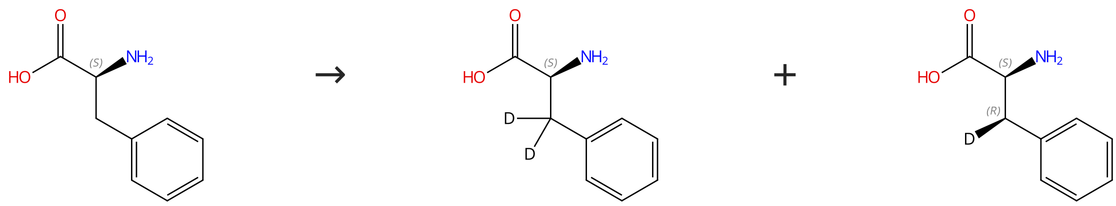
Suppliers (159)

Absolute stereochemistry shown

Absolute stereochemistry shown

31-614-CAS-39077233	Steps: **1** Yield: **99%**	Water-soluble NHC Pd/Ni bimetallic nanoparticles for H/D exchange in aromatic amino-acids
1.1	**Reagents:** Deuterium **Catalysts:** Nickel (complexes with N-heterocyclic carbenes), Palladium (complexes with N-heterocyclic carbenes), 2135813-04-4 (Palladium nanoparticle, Nickle nanoparticle, and bimetallic Palladium/...) **Solvents:** Water-d_2; 48 h, pH 8 - 9, 2 bar, 55 °C	By: Suarez-Riano, Oscar; et al Chemical Communications (Cambridge, United Kingdom) (2023), 59(8), 1062-1065.
Experimental Protocols		

Scheme 371 (1 Reaction) Steps: **1** Yield: **97%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (206)

Absolute stereochemistry shown

Suppliers (34)

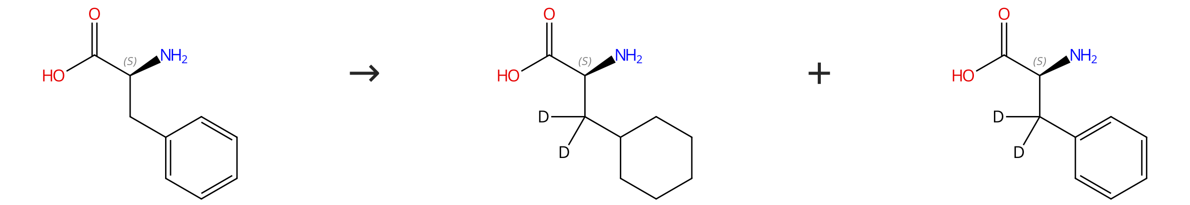
Absolute stereochemistry shown

Supplier (1)

31-614-CAS-39077232	Steps: **1** Yield: **97%**	Water-soluble NHC Pd/Ni bimetallic nanoparticles for H/D exchange in aromatic amino-acids
1.1	**Reagents:** Deuterium **Catalysts:** Nickel (complexes with N-heterocyclic carbenes), Palladium (complexes with N-heterocyclic carbenes), 2135813-04-4 (Palladium nanoparticle, Nickle nanoparticle, and bimetallic Palladium/...) **Solvents:** Water-d_2; 48 h, pH 8 - 9, 2 atm, 55 °C	By: Suarez-Riano, Oscar; et al Chemical Communications (Cambridge, United Kingdom) (2023), 59(8), 1062-1065.
Experimental Protocols		

Scheme 372 (2 Reactions)

Steps: **1** Yield: **93-97%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (206)

Absolute stereochemistry shown

Absolute stereochemistry shown

Suppliers (34)

31-116-CAS-3041450	Steps: **1** Yield: **97%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 6 h, 110 °C
1.2	**Reagents:** Water
Experimental Protocols	

Efficient and selective deuteration of phenylalanine derivatives catalyzed by Pd/C

By: Maegawa, Tomohiro; et al

Synlett (2005), (5), 845-847.

31-116-CAS-903320	Steps: **1** Yield: **93%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium; 24 h, 110 °C
1.2	**Reagents:** Water
Experimental Protocols	

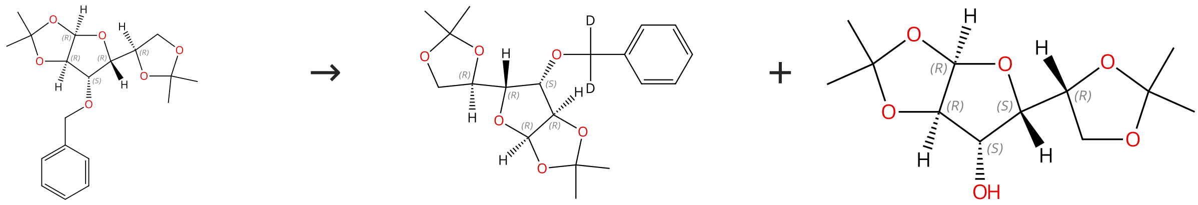
Efficient and selective deuteration of phenylalanine derivatives catalyzed by Pd/C

By: Maegawa, Tomohiro; et al

Synlett (2005), (5), 845-847.

Scheme 373 (1 Reaction)

Steps: **1** Yield: **96%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (50)

Absolute stereochemistry shown

Absolute stereochemistry shown, Rotation (-)

Suppliers (116)

31-049-CAS-12230590	Steps: **1** Yield: **96%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 24 - 72 h, 50 °C
Experimental Protocols	

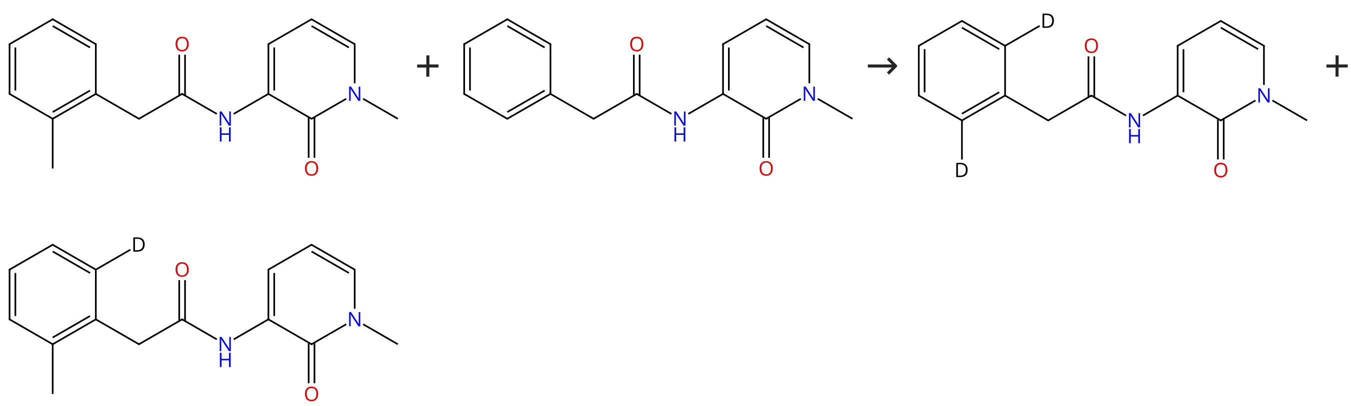
Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

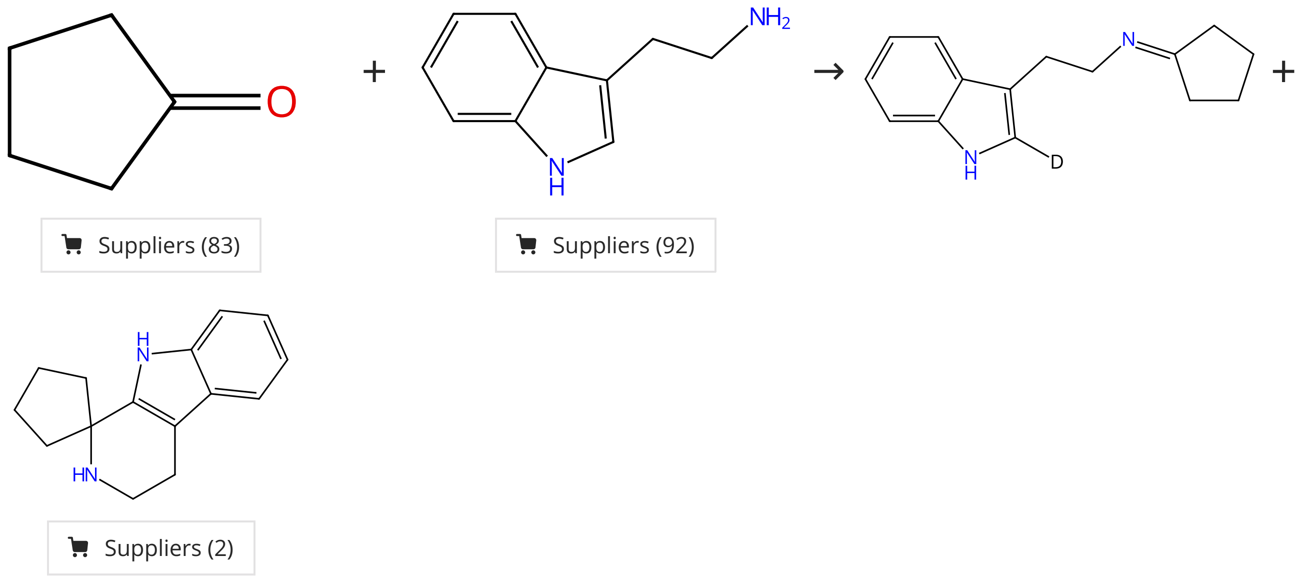
Scheme 374 (1 Reaction)

Steps: **1** Yield: **91%**



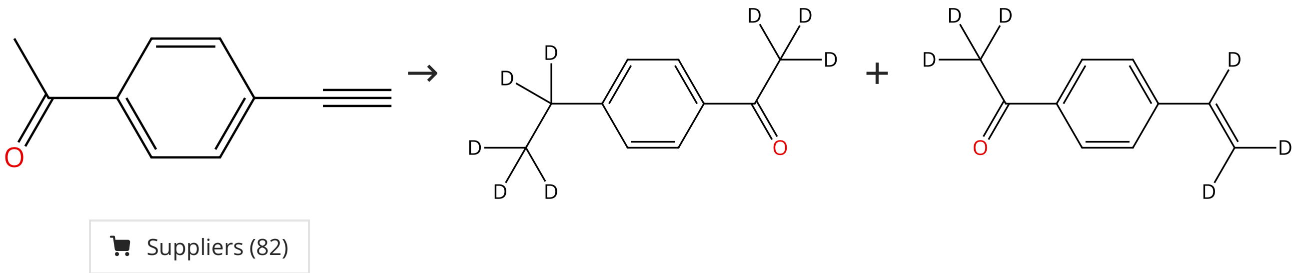
31-116-CAS-24000909	Steps: **1** Yield: **91%**	The palladium-catalyzed directed synthesis of ortho-deuterated phenylacetic acid and analogues
1.1 **Reagents:** Water-d_2 **Catalysts:** Palladium diacetate; 24 h, 120 °C		By: Manna, Priyadarshi; et al
Experimental Protocols		Organic & Biomolecular Chemistry (2021), 19(28), 6244-6249.

Scheme 375 (1 Reaction) Steps: **1** Yield: **87%**



31-116-CAS-19680337	Steps: **1** Yield: **87%**	Two-in-One Strategy for Palladium-Catalyzed C-H Functionalization in Water
1.1 **Reagents:** Sodium formate, Water-d_2 **Catalysts:** Palladium dihydroxide; 1 min, 100 °C		By: Zeng, Huiying; et al
Experimental Protocols		Angewandte Chemie, International Edition (2019), 58(9), 2859-2863.

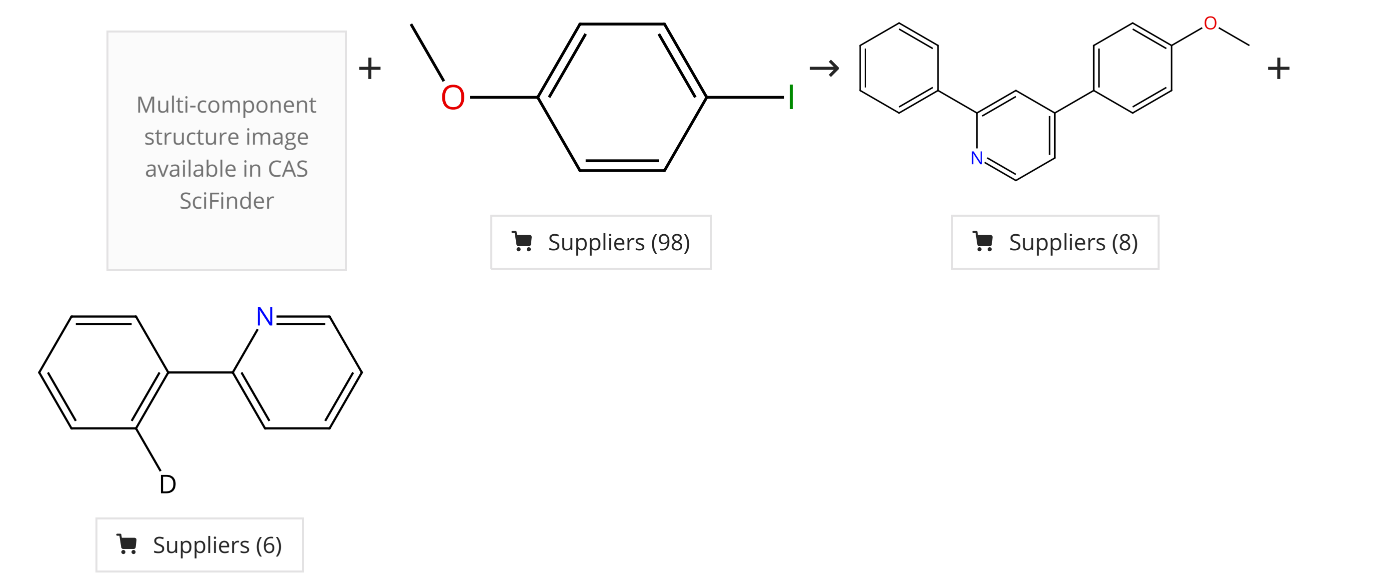
Scheme 376 (1 Reaction) Steps: **1** Yield: **87%**



31-116-CAS-22794788	Steps: **1** Yield: **87%**	Selective transfer semihydrogenation of alkynes with H_2O (D_2O) as the H (D) source over a Pd-P cathode
1.1 **Reagents:** Potassium carbonate, Water-d_2 **Catalysts:** Palladium, Phosphorus **Solvents:** 1,4-Dioxane; rt		By: Wu, Yongmeng; et al
Experimental Protocols		Angewandte Chemie, International Edition (2020), 59(47), 21170-21175.

Scheme 377 (1 Reaction)

Steps: **1** Yield: **78%**



31-116-CAS-22554566	Steps: **1** Yield: **78%**
1.1	**Reagents:** Potassium carbonate, Silver perchlorate, Water-d_2 **Catalysts:** Palladium diacetate, [2',6'-Bis(1-methylethoxy)[1,1'-biphenyl]-2-yl]dicyclohexylphosphine **Solvents:** Acetone; 12 h, 65 °C
Experimental Protocols	

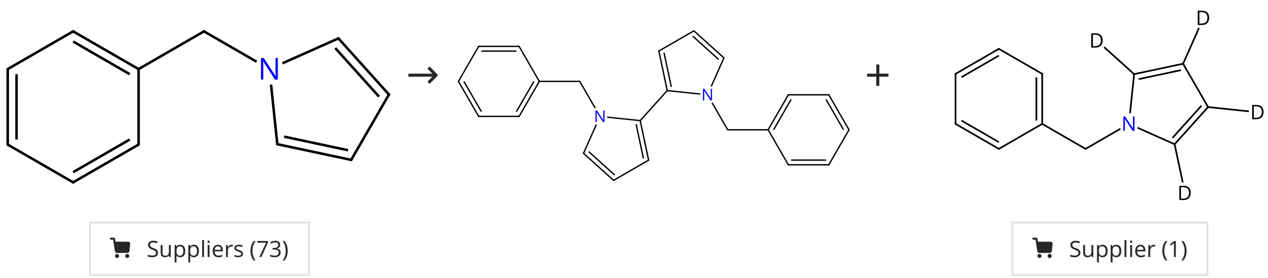
Palladium-Catalyzed Electrophilic Functionalization of Pyridine Derivatives through Phosphonium Salts

By: Che, Yuan-Yuan; et al

Angewandte Chemie, International Edition (2020), 59(38), 16414-16419.

Scheme 378 (1 Reaction)

Steps: **1** Yield: **78%**



31-614-CAS-24545005	Steps: **1** Yield: **78%**
1.1	**Reagents:** DMSO-d_6, Oxygen, Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Dimethylformamide, Acetic acid-d_4; 20 min, 1 atm, 35 °C
Experimental Protocols	

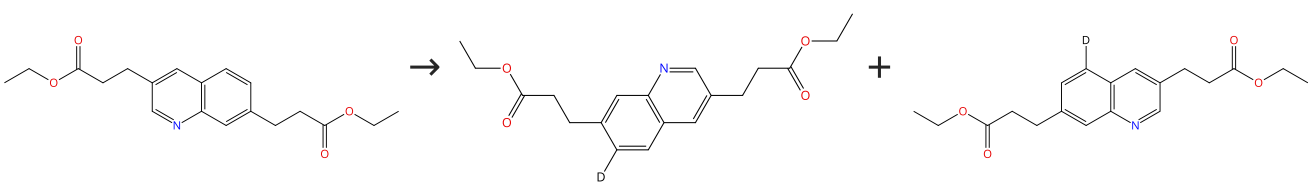
Sterically controlled C-H alkenylation of pyrroles and thiophenes

By: Kang, Eunsu; et al

Chemical Communications (Cambridge, United Kingdom) (2021), 57(89), 11791-11794.

Scheme 379 (1 Reaction)

Steps: **1** Yield: **78%**



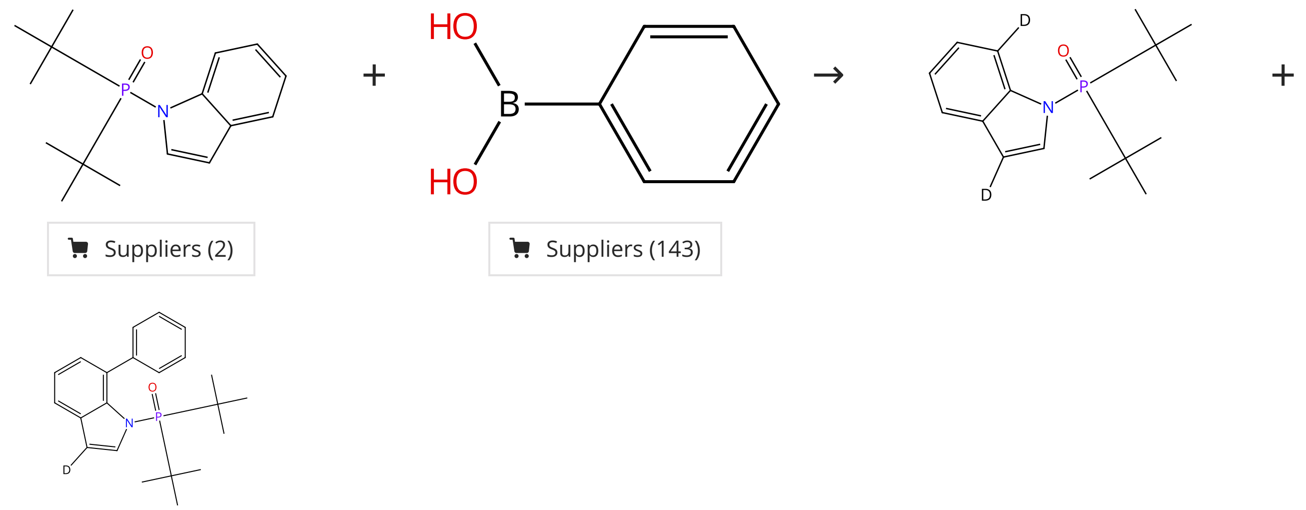
31-614-CAS-34406438	Steps: **1** Yield: **78%**
1.1	**Reagents:** Palladium diacetate, N^2-(2'-Cyano-2-ethyl-4-fluoro[1,1'-biphenyl]-3-yl)-N^6-(2,6-dimethoxyphenyl)-2,6-pyridinedicarboxamide **Solvents:** Dichloromethane; 1 h, 100 °C
1.2	**Reagents:** Silver acetate, Water-d_2 **Catalysts:** Acetylglycine, Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol-d; 16 h, 100 °C; 100 °C → rt
1.3	**Reagents:** 4-(Dimethylamino)pyridine **Solvents:** Toluene; 30 min, 100 °C

Molecular editing of aza-arene C-H bonds by distance, geometry and chirality

By: Fan, Zhoulong; et al

Nature (London, United Kingdom) (2022), 610(7930), 87-93.

Scheme 380 (1 Reaction) Steps: **1** Yield: **72%**



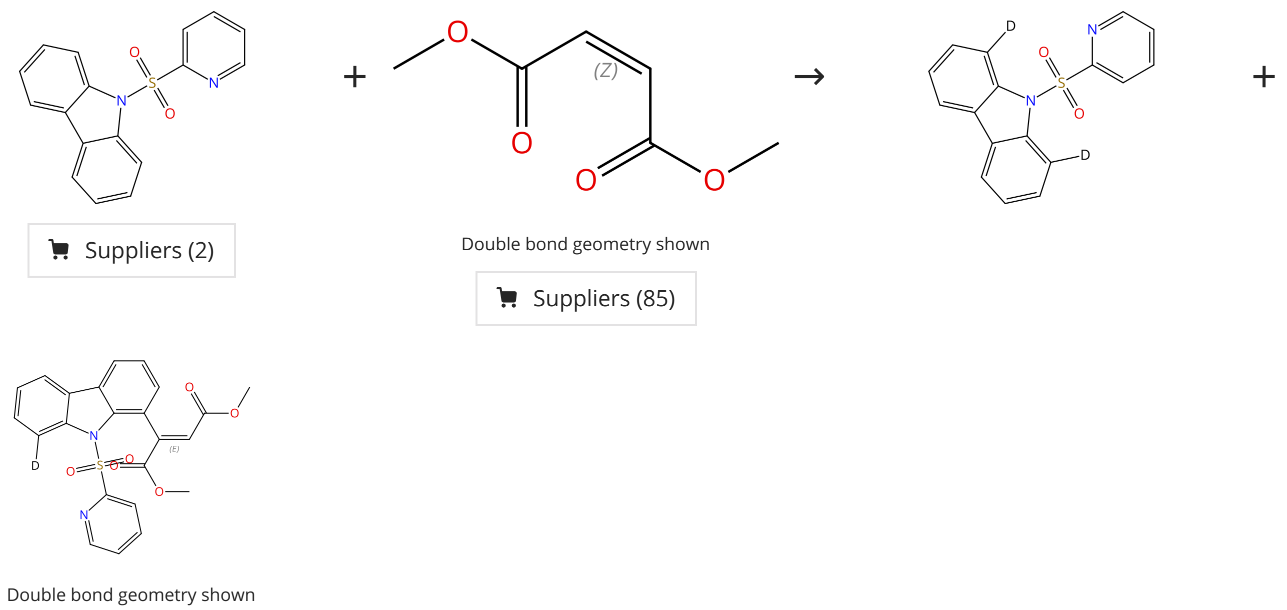
31-116-CAS-6296086	Steps: **1** Yield: **72%**
1.1	**Reagents:** Copper oxide (CuO), Water-d_2, Silver oxide (Ag_2O), Copper(II) triflate **Catalysts:** 2-Chloropyridine, Palladium diacetate **Solvents:** 1,4-Dioxane; 12 h, 120 °C
Experimental Protocols	

Palladium-Catalyzed C-H Arylation of Indoles at the C7 Position

By: Yang, Youqing; et al

Journal of the American Chemical Society (2016), 138(2), 495-498.

Scheme 381 (1 Reaction) Steps: **1** Yield: **68%**



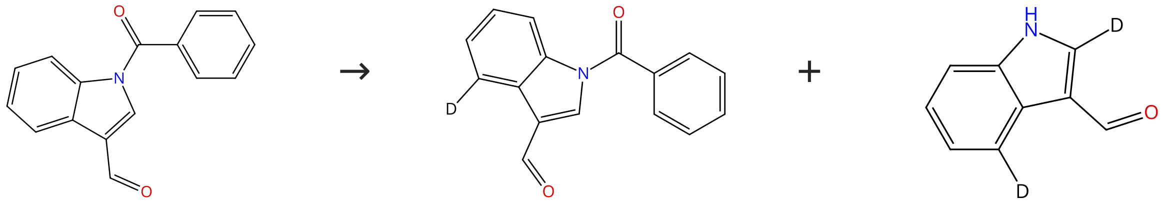
31-116-CAS-23625497	Steps: **1** Yield: **68%**
1.1	**Reagents:** Trifluoroacetic acid, Oxygen, Water- d_2 **Catalysts:** Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 1 atm, 60 °C
Experimental Protocols	

Study on Palladium(II)-Catalyzed Mono-1-alkenylation of 9H-Carbazoles

By: Guo, Dongdong; et al

Synlett (2021), 32(8), 800-804.

Scheme 382 (1 Reaction) Steps: **1** Yield: **68%**



Suppliers (42)

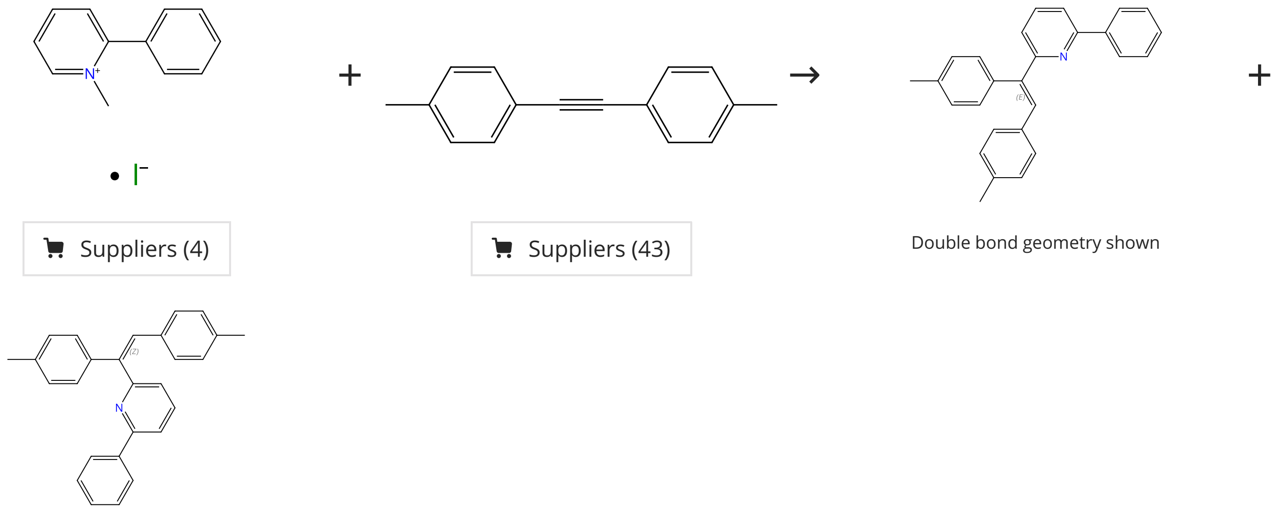
31-614-CAS-38370050	Steps: **1** Yield: **68%**
1.1	**Reagents:** Trifluoroacetic acid, Water- d_2 **Catalysts:** 2-Amino-5-methylbenzoic acid, Silver trifluoro acetate, Palladium trifluoroacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; 6 h, 100 °C; 100 °C → rt
1.2	**Reagents:** Sodium bicarbonate **Solvents:** Water; rt
Experimental Protocols	

Pd-Catalyzed Regioselective Deuteration of Indole's C4-Position with Transient Directing Groups

By: Zheng, Chenxu; et al

Journal of Organic Chemistry (2023), 88(24), 17164-17171.

Scheme 383 (1 Reaction) Steps: **1** Yield: **68%**



Suppliers (4)

Suppliers (43)

Double bond geometry shown

Double bond geometry shown

31-251-CAS-22801403	Steps: **1** Yield: **68%**
1.1	**Reagents:** Triethylamine, Water- d_2, Propanoic acid, 2,2-dimethyl-, potassium salt (1:1) **Catalysts:** Palladium diacetate, Copper bromide (CuBr), Phosphine, tricyclohexyl-, tetrafluoroborate(1-) (1:1) **Solvents:** Dimethylacetamide, Fluorobenzene; 20 h, 120 °C

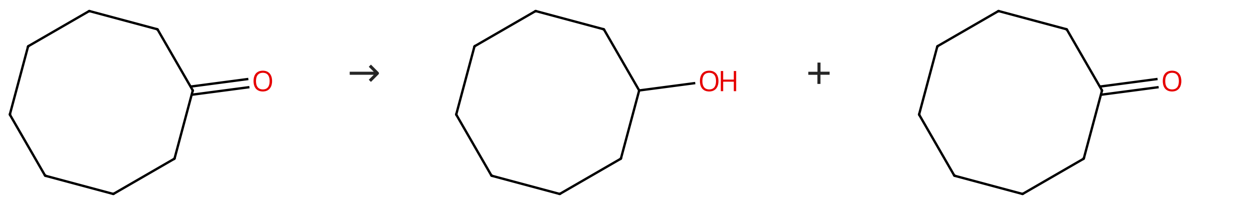
Stereodivergent Synthesis of Alkenylpyridines via Pd/Cu Catalyzed C-H Alkenylation of Pyridinium Salts with Alkynes

By: Li, Wenjing; et al

Organic Letters (2020), 22(20), 7814-7819.

Scheme 384 (1 Reaction)

Steps: **1** Yield: **65%**



Suppliers (86)

deuterated

deuterated

31-513-CAS-7851908

Steps: **1** Yield: **65%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

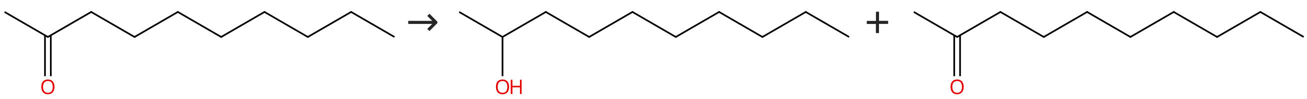
Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 385 (1 Reaction)

Steps: **1** Yield: **64%**



Suppliers (69)

deuterated

deuterated

31-513-CAS-10591334

Steps: **1** Yield: **64%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

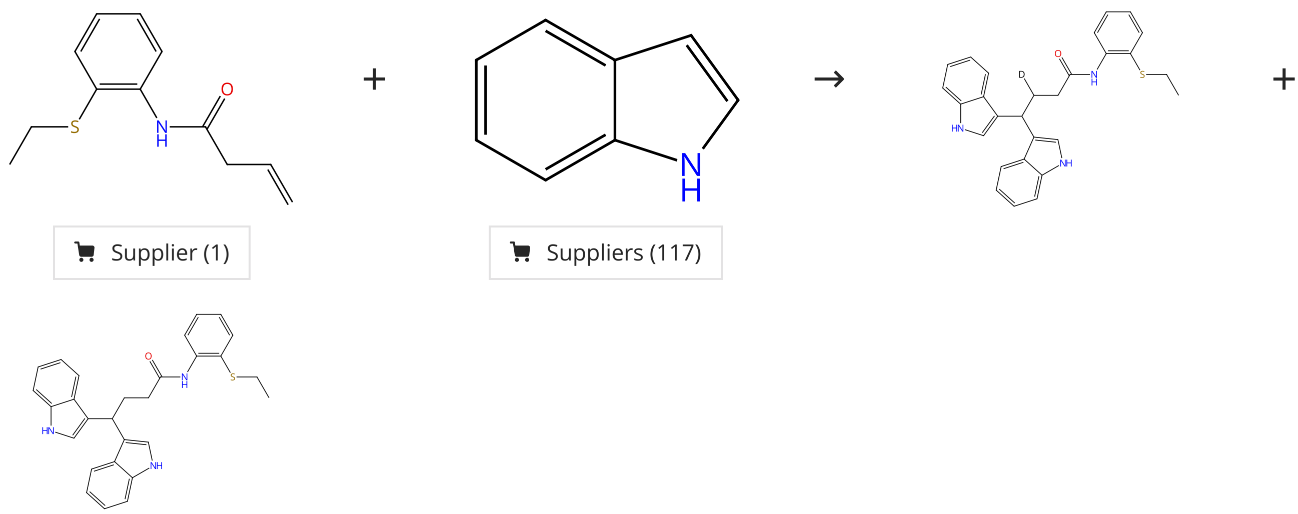
Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 386 (1 Reaction)

Steps: **1** Yield: **63%**



Supplier (1)

Suppliers (117)

31-614-CAS-35005564	Steps: **1** Yield: **63%**
1.1	**Reagents:** Benzoic acid, Ferrous acetate, Water- d_2 **Catalysts:** Palladium diacetate **Solvents:** Acetonitrile; 24 h, 90 °C
Experimental Protocols	

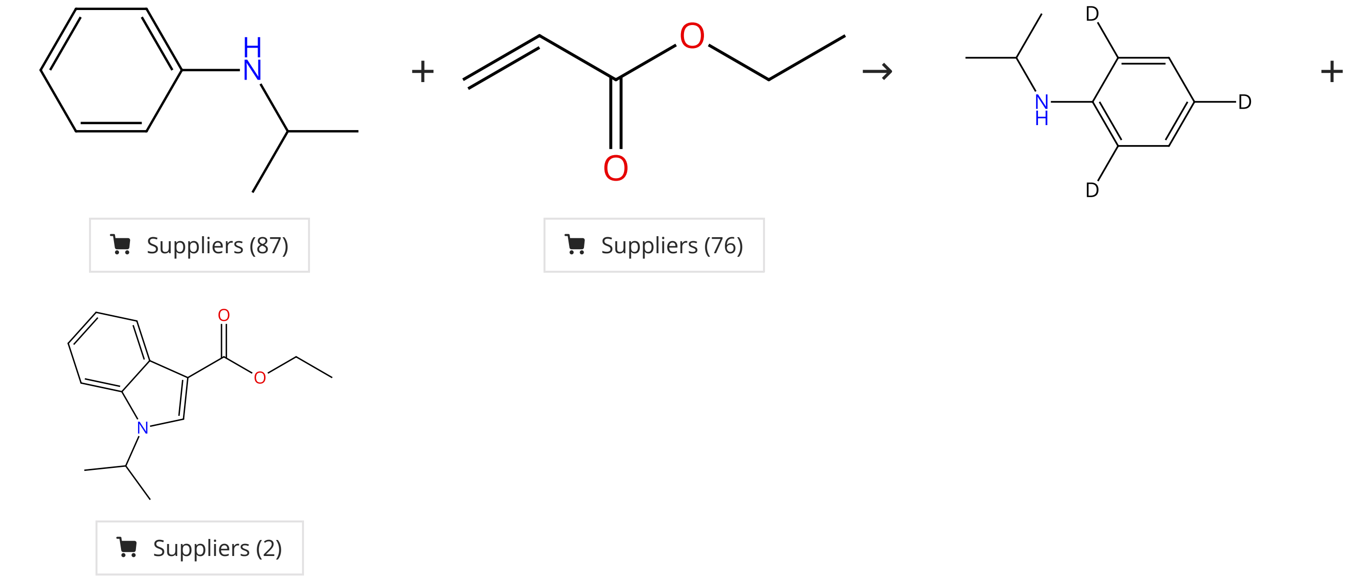
Palladium-catalyzed γ,γ-Diarylation of alkenyl carbonyl compounds assisted by N,S-Bidentate auxiliary

By: Zhang, Zhu-Zhu; et al

Tetrahedron (2022), 129, 133138.

Scheme 387 (1 Reaction)

Steps: **1** Yield: **62%**



31-614-CAS-42233717	Steps: **1** Yield: **62%**
1.1	**Reagents:** Quinone, Silver carbonate, Water- d_2 **Catalysts:** Palladium diacetate, *N*-Acetyl-D-alanine **Solvents:** 1,2-Dichloroethane; 48 h, 120 °C
Experimental Protocols	

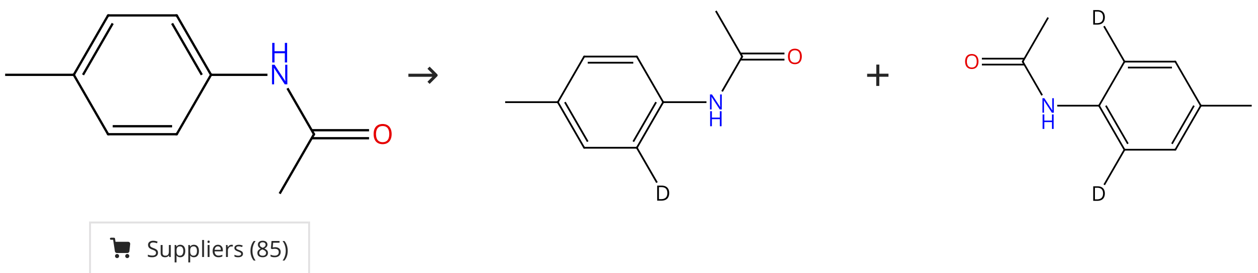
Ligand-Controlled Selective Synthesis of Indoles and Benzofurans from Secondary Anilines

By: Yuan, Chunchen; et al

Organic Letters (2024), 26(41), 8798-8802.

Scheme 388 (2 Reactions)

Steps: **1** Yield: **61%**



31-116-CAS-16462304	Steps: **1** Yield: **61%**
1.1	**Reagents:** *N*-Bromosuccinimide, Water- d_2 **Catalysts:** Palladium diacetate, Copper(II) triflate **Solvents:** 1,2-Dichloroethane; 2 h, 90 °C
Experimental Protocols	

Palladium-Catalyzed, ortho-Selective C-H Halogenation of Benzyl Nitriles, Aryl Weinreb Amides, and Anilides

By: Das, Riki; et al

Journal of Organic Chemistry (2017), 82(2), 1114-1126.

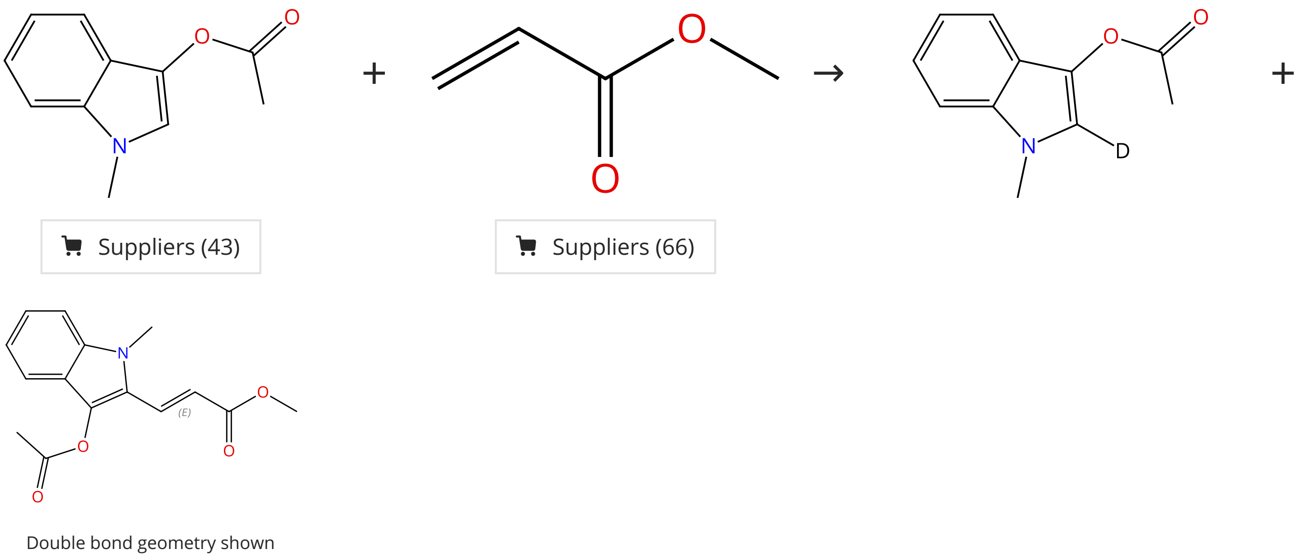
31-116-CAS-16462305	Steps: **1**
1.1	**Reagents:** Water- d_2 **Catalysts:** Palladium diacetate, Copper(II) triflate **Solvents:** 1,2-Dichloroethane; 2 h, 90 °C
Experimental Protocols	

Palladium-Catalyzed, ortho-Selective C-H Halogenation of Benzyl Nitriles, Aryl Weinreb Amides, and Anilides

By: Das, Riki; et al

Journal of Organic Chemistry (2017), 82(2), 1114-1126.

Scheme 389 (1 Reaction)
Steps: 1 Yield: 58%



31-614-CAS-37949185
Steps: 1 Yield: 58%

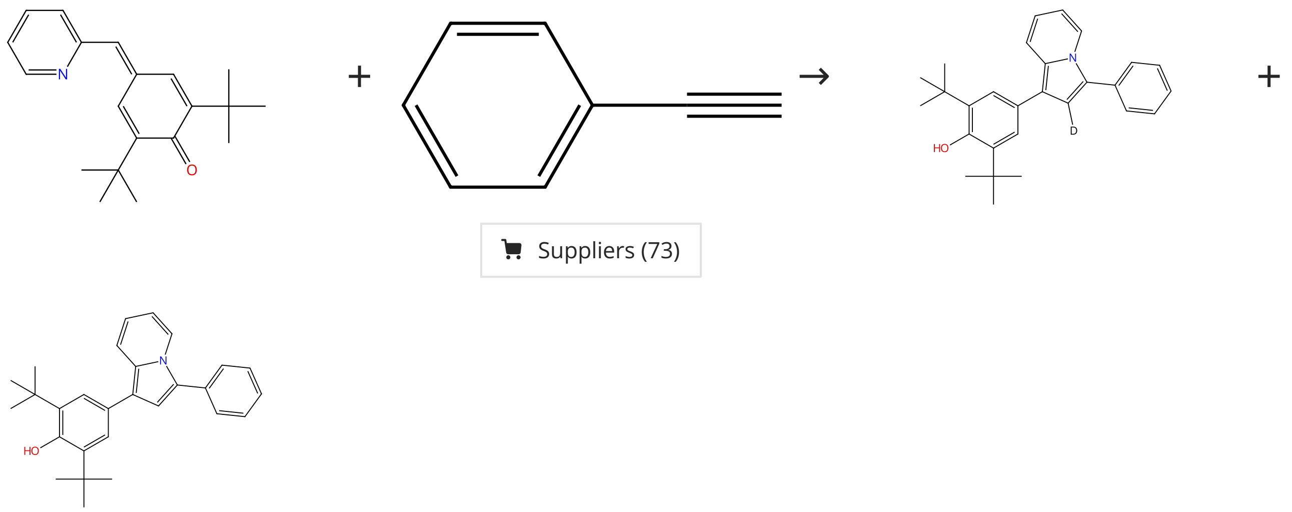
1.1 **Reagents:** Cupric acetate, Water-d_2
Catalysts: Silver carbonate, Palladium diacetate
Solvents: Acetonitrile; 4 h, 100 °C
1.2 **Reagents:** Ethyl acetate

Acetoxy Group-Directed Regioselective C2 Alkenylation of Indoles via Pd-Ag Bimetallic Catalysis

By: Paul, Aditya; et al

Journal of Organic Chemistry (2023), 88(20), 14423-14434.

Scheme 390 (1 Reaction)
Steps: 1 Yield: 57%



31-614-CAS-34895559
Steps: 1 Yield: 57%

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Acetonitrile; 50 °C

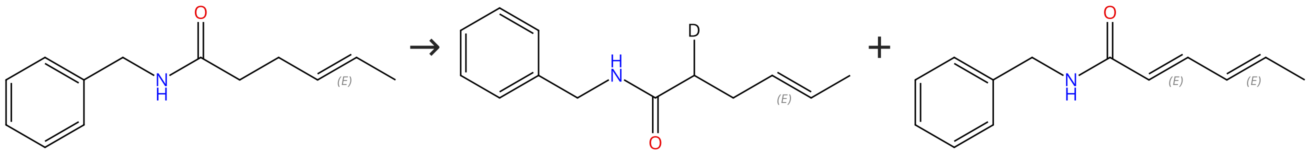
Experimental Protocols

Pd(II)-catalyzed annulation of terminal alkynes with 2-pyridinyl substituted p-quinone methides: direct access to indolizines

By: Ahmad, Feroz; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(95), 13238-13241.

Scheme 391 (1 Reaction) Steps: **1** Yield: **56%**



Double bond geometry shown | Double bond geometry shown | Double bond geometry shown

Suppliers (4)

31-614-CAS-33435614 Steps: **1** Yield: **56%**

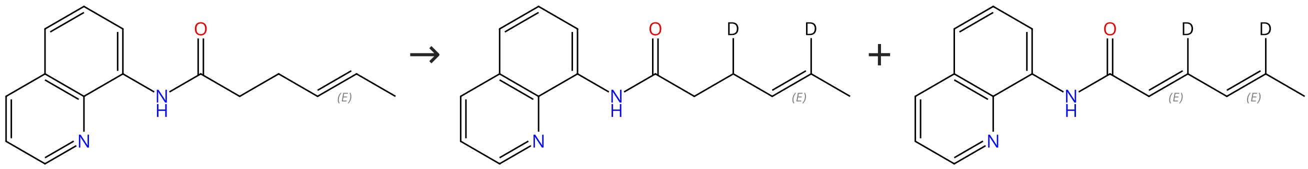
1.1 **Reagents:** Pivalic acid, Water-d_2
Catalysts: Cupric acetate, Palladium diacetate, 1,1'-[1,2-Ethanediylbis(sulfinyl)]bis[benzene]
Solvents: Acetonitrile; 24 h, 100 °C

Synthesis of conjugated dienes via palladium-catalyzed aerobic dehydrogenation of unsaturated acids and amides

By: Keerthana, Meledath Sudhakaran; et al

Chemical Communications (Cambridge, United Kingdom) (2022), 58(63), 8814-8817.

Scheme 392 (1 Reaction) Steps: **1** Yield: **56%**



Double bond geometry shown | Double bond geometry shown | Double bond geometry shown

31-614-CAS-31694757 Steps: **1** Yield: **56%**

1.1 **Reagents:** Pivalic acid, Oxygen, Water-d_2
Catalysts: Palladium diacetate, Copper diacetate monohydrate
Solvents: Acetonitrile; 12 h, 100 °C

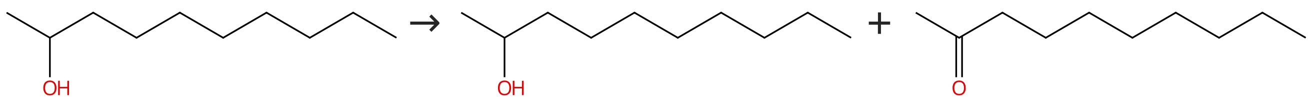
Experimental Protocols

Palladium-Catalyzed Aerobic α,β-Dehydrogenation of Aliphatic Amides

By: Keerthana, Meledath Sudhakaran; et al

Journal of Organic Chemistry (2022), 87(7), 4873-4882.

Scheme 393 (1 Reaction) Steps: **1** Yield: **55%**



Suppliers (57) | deuterated | deuterated

31-480-CAS-8460275 Steps: **1** Yield: **55%**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

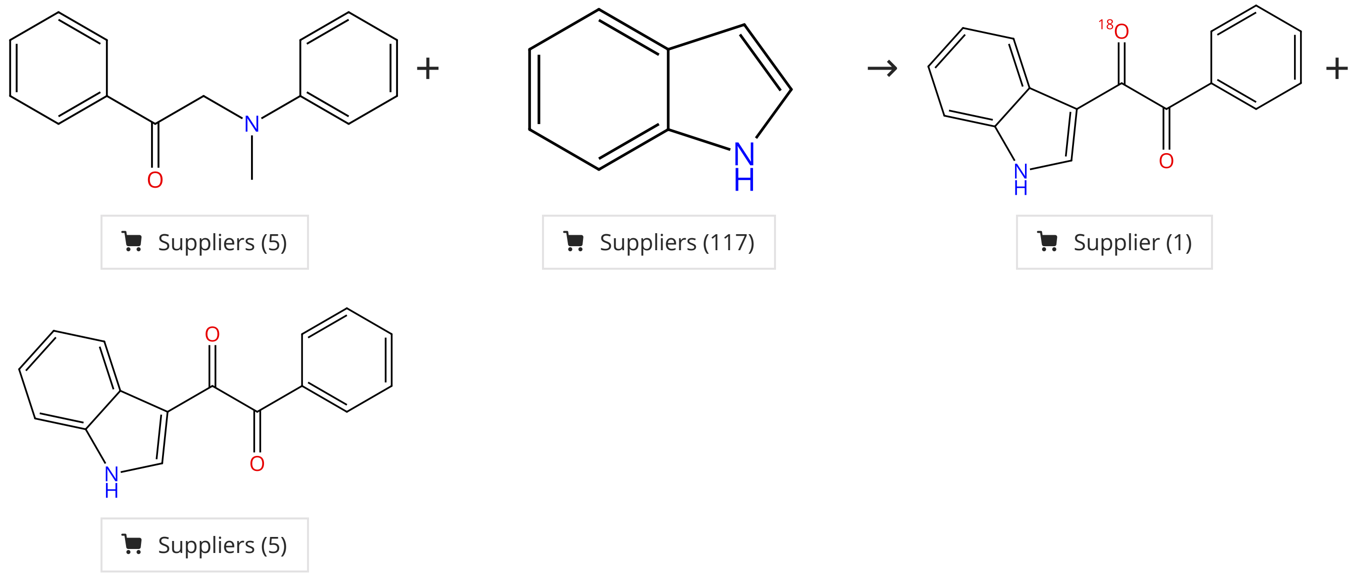
Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 394 (1 Reaction)

Steps: **1** Yield: **55%**



31-614-CAS-26742025

Steps: **1** Yield: **55%**

1.1 **Reagents:** Acetic acid, Cupric acetate, Oxygen, Water- d_2
Catalysts: Palladium diacetate
Solvents: Acetonitrile; 12 h, 80 °C

Experimental Protocols

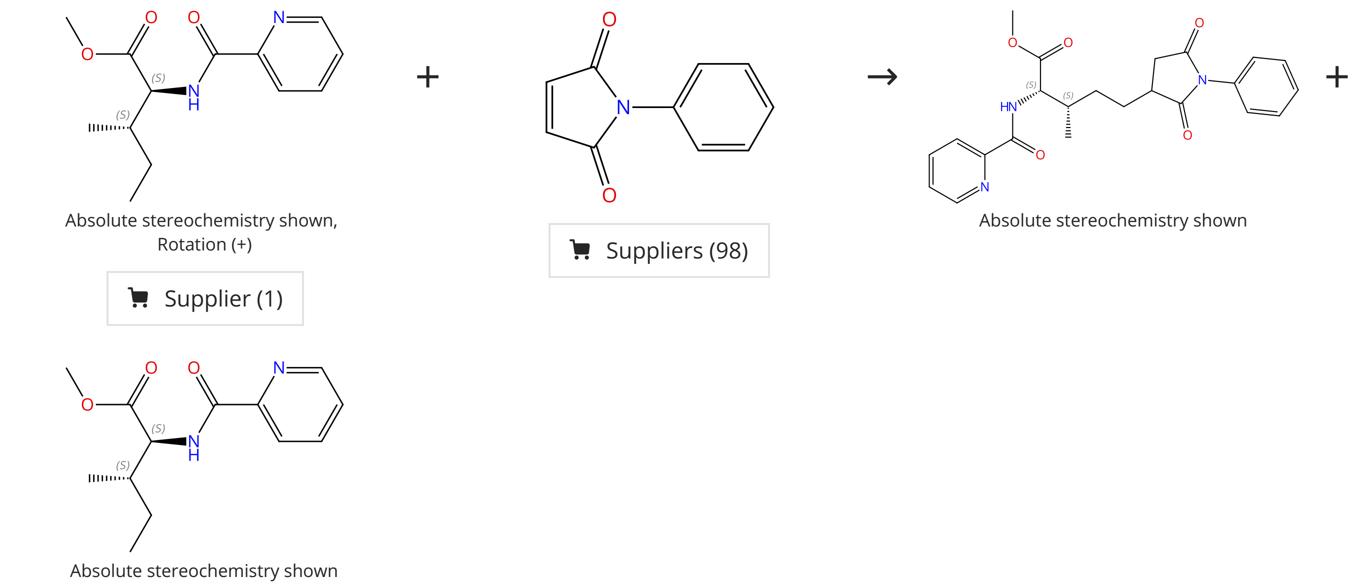
Palladium-Catalyzed Synthesis of 3-Acylated Indoles Involving Oxidative Cross-Coupling of Indoles with α-Amino Carbonyl Compounds

By: Tang, Ri-Yuan; et al

Journal of Organic Chemistry (2013), 78(22), 11163-11171.

Scheme 395 (1 Reaction)

Steps: **1** Yield: **50%**



31-614-CAS-30196609

Steps: **1** Yield: **50%**

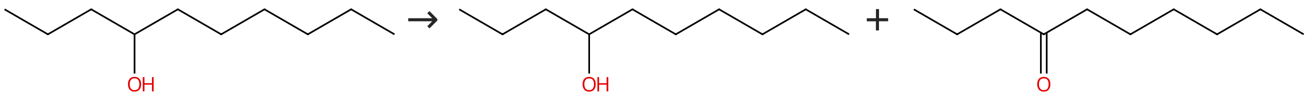
1.1 **Reagents:** Sodium carbonate, Water- d_2
Catalysts: Quinone, 1-Adamantanecarboxylic acid, Palladium diacetate
Solvents: 1,1,2-Trichloroethane; 24 h, 100 °C

Site-selective δ-C(sp^3)-H alkylation of amino acids and peptides with maleimides via a six-membered palladacycle

By: Zhan, Bei-Bei; et al

Angewandte Chemie, International Edition (2018), 57(20), 5858-5862.

Scheme 396 (1 Reaction) — Steps: **1** Yield: **49%**



Suppliers (63) — deuterated — deuterated

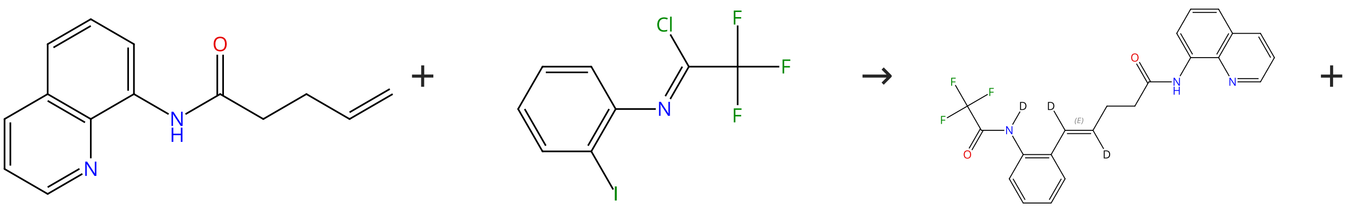
31-480-CAS-1447220	Steps: **1** Yield: **49%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 160 °C
Experimental Protocols	

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

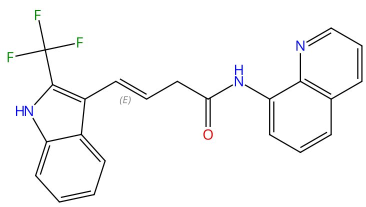
By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 397 (1 Reaction) — Steps: **1** Yield: **48%**



Supplier (1) — Suppliers (3) — Double bond geometry shown



Double bond geometry shown

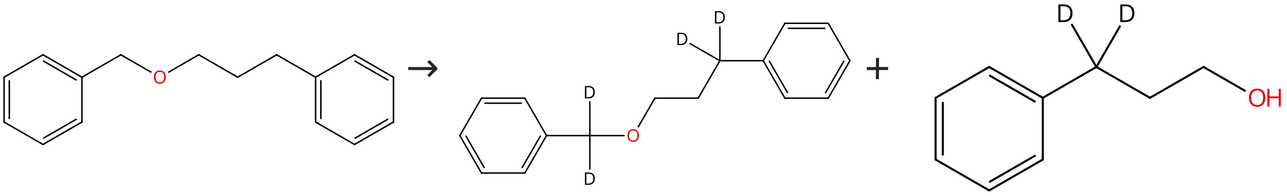
31-614-CAS-31566883	Steps: **1** Yield: **48%**
1.1	**Reagents:** Sodium carbonate, Water-d_2 **Catalysts:** Triphenylphosphine, Bis(hexafluoroacetylacetonato)palladium **Solvents:** (Trifluoromethyl)benzene, Tetrahydrofuran; 48 h, 80 °C
Experimental Protocols	

Controllable access to trifluoromethyl-containing indoles and indolines: palladium-catalyzed regioselective functionalization of unactivated alkenes with trifluoroacetimidoyl chlorides

By: Yang, Hefei; et al

Chemical Science (2022), 13(12), 3526-3532.

Scheme 398 (1 Reaction) — Steps: **1** Yield: **48%**



Suppliers (4) — Supplier (1)

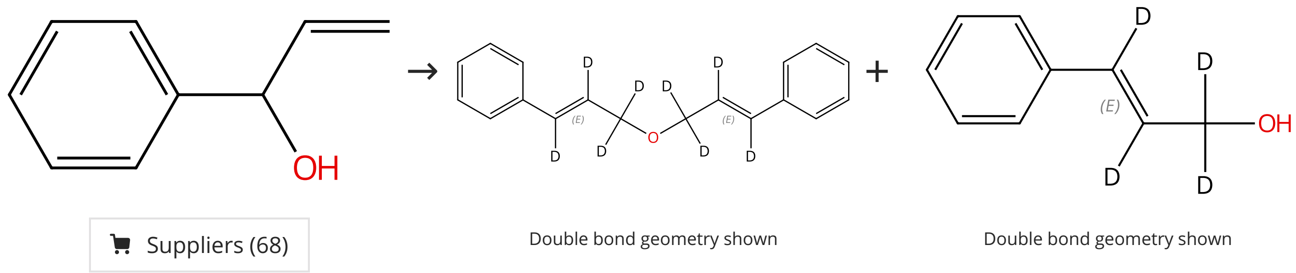
31-049-CAS-10098317	Steps: **1** Yield: **48%**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2; 6 h, 110 °C
Experimental Protocols	

Efficient and convenient heterogeneous palladium-catalyzed regioselective deuteration at the benzylic position

By: Kurita, Takanori; et al

Chemistry - A European Journal (2008), 14(2), 664-673.

Scheme 399 (1 Reaction) Steps: **1** Yield: **46%**



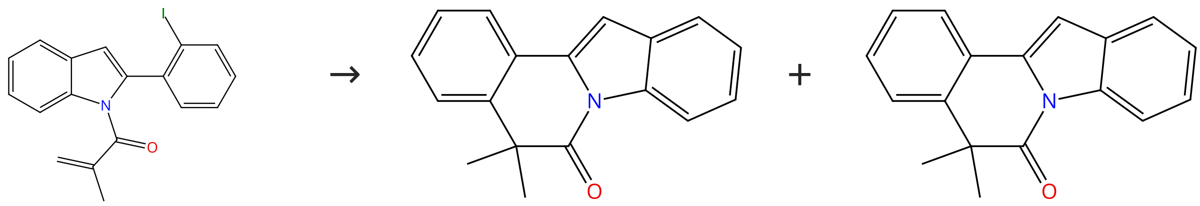
31-116-CAS-22371291	Steps: **1** Yield: **46%**
1.1	**Reagents:** Water-d_2 **Catalysts:** Tricyclohexylphosphine, Tetrakis(triphenyl phosphine)palladium, (*S*)-Mandelic acid **Solvents:** Toluene; 16 h, 120 °C
Experimental Protocols	

Functionalization of Alkenyl C-H Bonds with D_2O via Pd(0) /Carboxylic Acid Catalysis

By: Camedda, Nicola; et al

Synthesis (2020), 52(12), 1762-1772.

Scheme 400 (2 Reactions) Steps: **1** Yield: **42-45%**



31-614-CAS-28513744	Steps: **1** Yield: **45%**
1.1	**Reagents:** Sodium acetate, Water-d_2 **Catalysts:** Tetrabutylammonium bromide, [1,1'-Bis(diphenylp hosphino)ferrocene]dichloropalladium **Solvents:** Dimethylformamide; 24 h, 140 °C
Experimental Protocols	

Palladium-Catalyzed Cascade Cyclization of Alkene-Tethered Aryl Halides with o-Bromobenzoic Acids: Access to Diverse Fused Indolo[2,1-a]isoquinolines

By: Yang, Xiumei; et al

Organic Letters (2019), 21(18), 7284-7288.

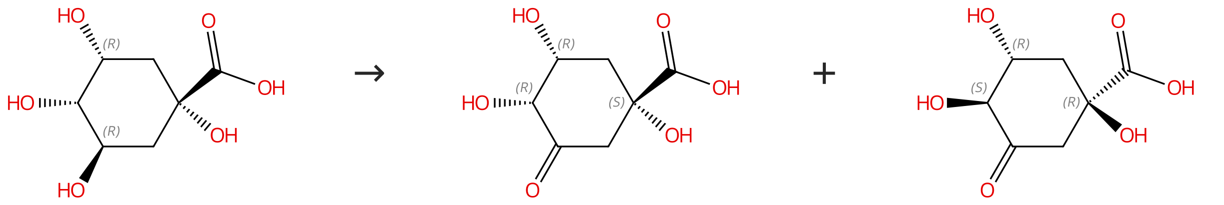
31-614-CAS-26879199	Steps: **1** Yield: **42%**
1.1	**Reagents:** Tripotassium phosphate, Water-d_2 **Catalysts:** Tricyclohexylphosphine, Palladium chloride **Solvents:** Dimethylformamide; 12 h, 120 °C
Experimental Protocols	

α-Oxocarboxylic Acids as Three-Carbon Insertion Units for Palladium-Catalyzed Decarboxylative Cascade Synthesis of Diverse Fused Heteropolycycles

By: Zhou, Liwei; et al

Organic Letters (2021), 23(8), 2878-2883.

Scheme 401 (1 Reaction)
Steps: **1** Yield: **42%**



Absolute stereochemistry shown, Rotation (-)
Suppliers (96)

Absolute stereochemistry shown
Supplier (1)

Absolute stereochemistry shown
Suppliers (12)

31-614-CAS-42164968
Steps: **1** Yield: **42%**

1.1 **Reagents:** Quinone
Catalysts: Palladium(2+), bis[μ-(acetato-κ*O*:κ*O'*)]bis(2,9-dimethyl-1,10-phenanthroline-κN^1,κN^{10})di-, 1,1,1-trifluoro methanesulfonate (1:2)
Solvents: DMSO-d_6, Water-d_2; 9 h, rt

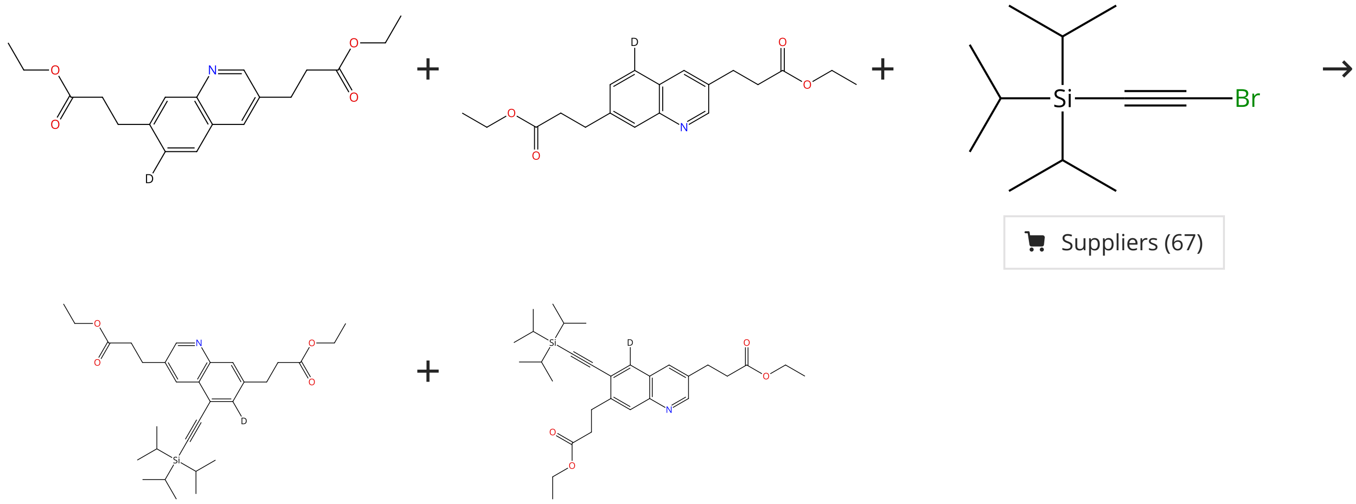
Experimental Protocols

A Predictive Model for the Pd-Catalyzed Site-Selective Oxidation of Diols

By: Marinus, Nittert; et al

Chemistry - A European Journal (2023), 29(44), e202300318.

Scheme 402 (1 Reaction)
Steps: **1** Yield: **41%**



Suppliers (67)

31-614-CAS-34406437
Steps: **1** Yield: **41%**

1.1 **Reagents:** Palladium diacetate, N^2,N^6-Dicyclohexyl-2,6-pyridinedicarboxamide
Catalysts: N^2-(2,6-Dimethoxyphenyl)-N^6-[1,2,3,4-tetrahydro-8-(5-pyrimidinyl)-2-naphthalenyl]-2,6-pyridinedicarboxamide
Solvents: Acetonitrile; 1 h, 100 °C

1.2 **Reagents:** Silver carbonate, Copper hydroxide
Catalysts: Acetylglycine, Palladium diacetate
Solvents: Dimethylformamide, 1,4-Dioxane, Water-d_2; 24 h, 100 °C; 100 °C → rt

1.3 **Reagents:** 4-(Dimethylamino)pyridine
Solvents: 2,2,2-Trifluoroethanol; 30 min, 100 °C

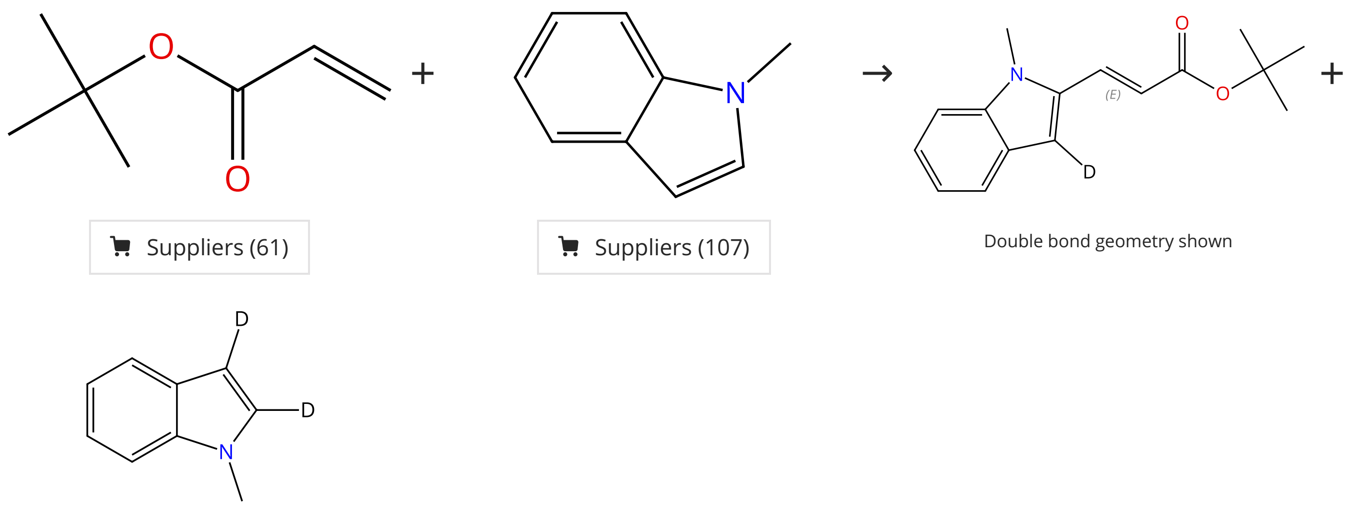
Molecular editing of aza-arene C-H bonds by distance, geometry and chirality

By: Fan, Zhoulong; et al

Nature (London, United Kingdom) (2022), 610(7930), 87-93.

Scheme 403 (1 Reaction)

Steps: 1 Yield: 41%



31-116-CAS-22753219

Steps: 1 Yield: 41%

1.1 **Reagents:** Oxygen
Catalysts: Palladium, bis(acetonitrile)dichloro-, Copper(II) triflate, 6-[2-[(2,2-Dimethylpropyl)sulfinyl]phenyl]-2(1*H*)-pyridinone
Solvents: Dimethylformamide; 5 min, rt

1.2 **Reagents:** Water-d_2; 1 h, 70 °C

1.3 -

Experimental Protocols

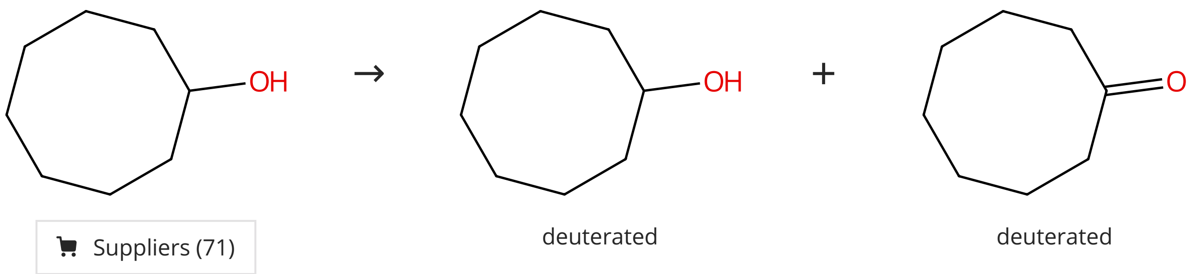
Regiocontrol in the oxidative Heck reaction of indole by ligand-enabled switch of the regioselectivity-determining step

By: Wang, Yu-Jie; et al

Chemical Science (2020), 11(40), 11042-11054.

Scheme 404 (1 Reaction)

Steps: 1 Yield: 39%



31-480-CAS-5718869

Steps: 1 Yield: 39%

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

Experimental Protocols

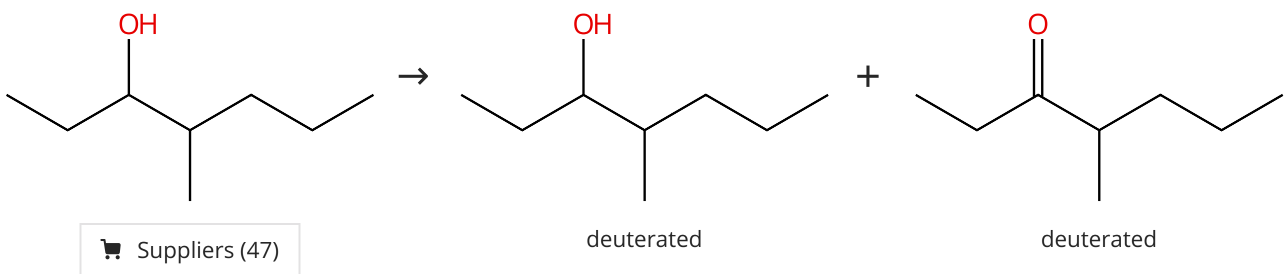
Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 405 (1 Reaction)

Steps: 1 Yield: 38%



31-480-CAS-9981733	Steps: **1** Yield: **38%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 160 °C

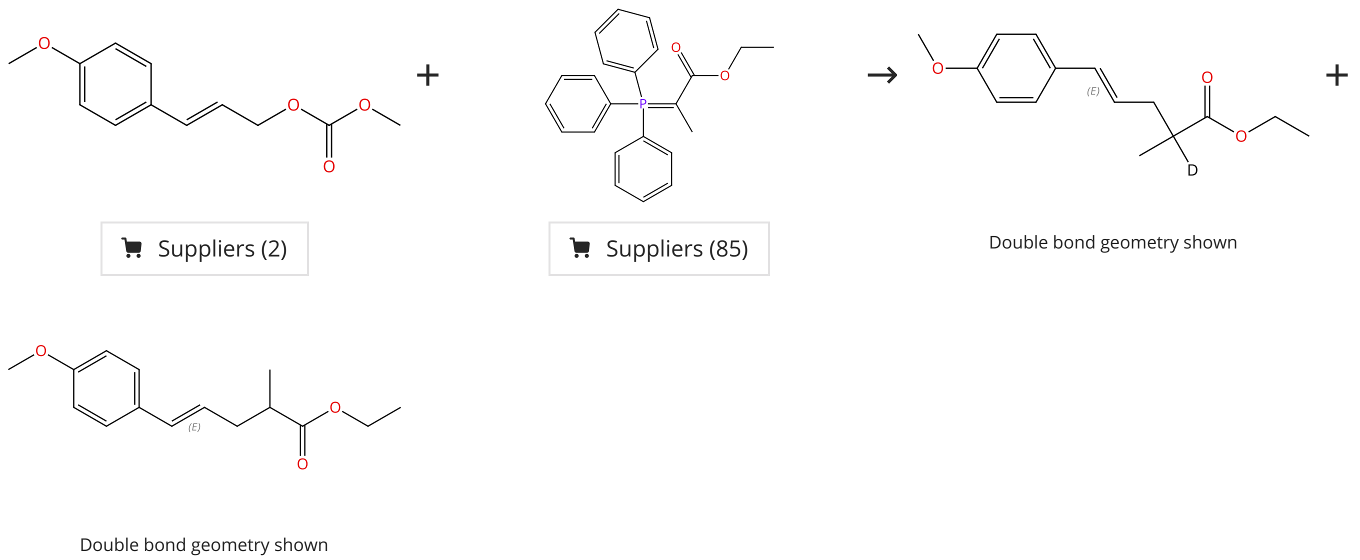
Experimental Protocols

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Condit ions: Application to H-D Exchange Reaction and the Mechan istic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 406 (1 Reaction) Steps: **1** Yield: **38%**



31-614-CAS-29514139	Steps: **1** Yield: **38%**
1.1	**Reagents:** Water-*d*$_2$ **Catalysts:** Di-μ-chlorobis(η^3-2-propenyl)dipalladium, *rel*-*N*,*N*'-(1*R*,2*R*)-1,2-Cyclohexanediylbis[2-(diphenylphosphino)benzamide] **Solvents:** 1,4-Dioxane; 20 min, rt
1.2	10 min, rt
1.3	**Reagents:** Cesium carbonate; reflux

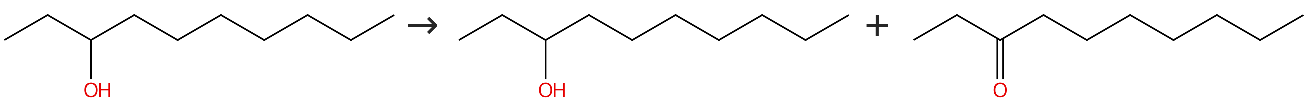
Experimental Protocols

A one-pot palladium-catalyzed allylic alkylation and Wittig reaction of phosphorus ylides

By: Liu, Wen-Bo; et al

Chemistry - A European Journal (2010), 16(25), 7376-7379, S7376/1-S7376/83.

Scheme 407 (1 Reaction) Steps: **1** Yield: **37%**



Suppliers (54) deuterated deuterated

31-480-CAS-12719150	Steps: **1** Yield: **37%**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 160 °C

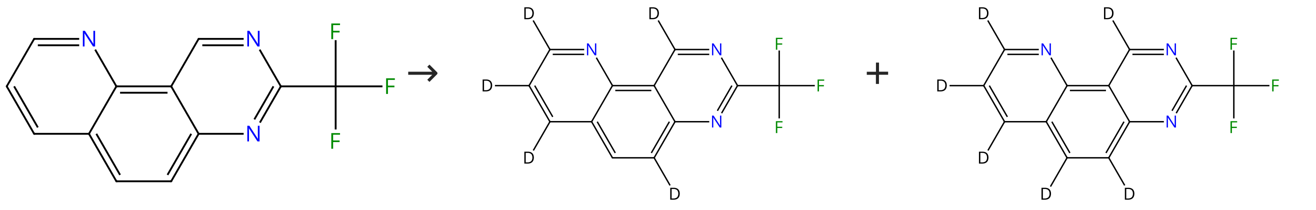
Experimental Protocols

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Condit ions: Application to H-D Exchange Reaction and the Mechan istic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 408 (1 Reaction) Steps: **1** Yield: **23%**



Suppliers (5)

31-614-CAS-42868434 Steps: **1** Yield: **23%**

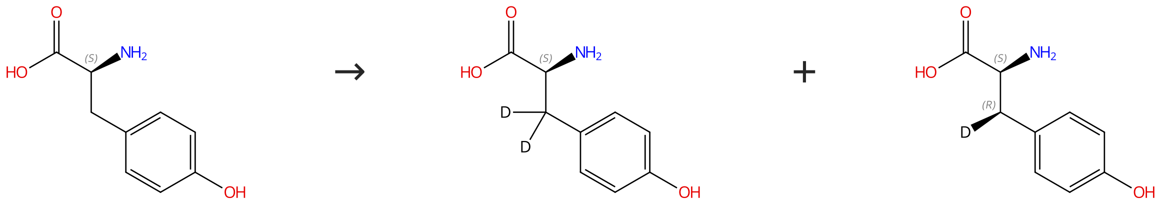
1.1 **Reagents:** Hydrogen, Water-d_2
Catalysts: Palladium; 24 h, 180 °C

Polyatomic molecules with emission quantum yields >20% enable efficient organic light-emitting diodes in the NIR(II) window

By: Wang, Sheng-Fu; et al

Nature Photonics (2022), 16(12), 843-850.

Scheme 409 (1 Reaction) Steps: **1** Yield: **21%**



Absolute stereochemistry shown, Rotation (-)

Suppliers (178)

Absolute stereochemistry shown

Suppliers (32)

Absolute stereochemistry shown

Supplier (1)

31-614-CAS-39077236 Steps: **1** Yield: **21%**

1.1 **Reagents:** Deuterium
Catalysts: Nickel (complexes with N-heterocyclic carbenes), Palladium (complexes with N-heterocyclic carbenes), 2135813-04-4 (Palladium nanoparticle, Nickle nanoparticle, and bimetallic Palladium/...)
Solvents: Water-d_2; 48 h, pH 11 - 12, 2 bar, 55 °C

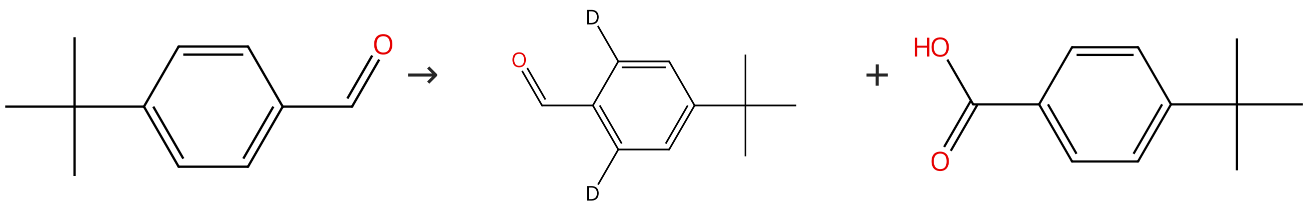
Experimental Protocols

Water-soluble NHC Pd/Ni bimetallic nanoparticles for H/D exchange in aromatic amino-acids

By: Suarez-Riano, Oscar; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(8), 1062-1065.

Scheme 410 (1 Reaction) Steps: **1** Yield: **11%**



Suppliers (78)

Suppliers (92)

31-614-CAS-24154372 Steps: **1** Yield: **11%**

1.1 **Reagents:** Trifluoroacetic acid, Water-d_2
Catalysts: Palladium diacetate, *tert*-Leucine
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 120 °C

1.2 **Reagents:** Hydrochloric acid
Solvents: Dichloromethane, Water; 1 - 2 h, rt

Experimental Protocols

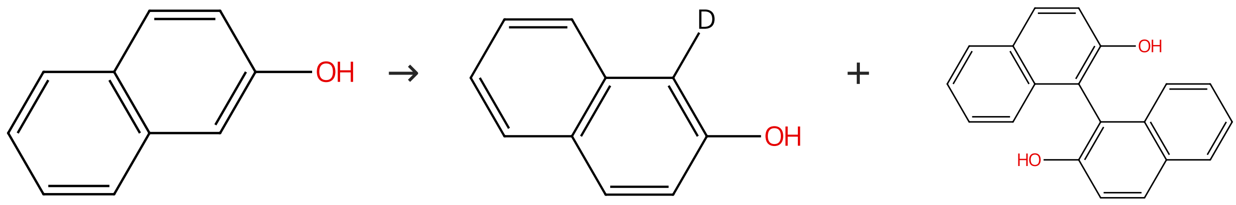
Ortho-Deuteration of Aromatic Aldehydes via a Transient Directing Group-Enabled Pd-Catalyzed Hydrogen Isotope Exchange

By: Kong, Junhua; et al

Journal of Organic Chemistry (2021), 86(19), 13350-13359.

Scheme 411 (1 Reaction)

Steps: **1** Yield: **8%**



Suppliers (124)

Supplier (1)

Suppliers (78)

31-089-CAS-3680889

Steps: **1** Yield: **8%**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate
Solvents: Dimethyl sulfoxide; 48 h, 120 °C

Experimental Protocols

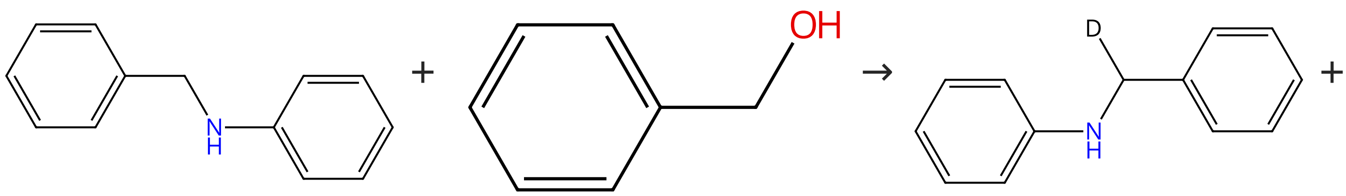
Palladium(II)-Catalyzed Oxidative Dearomatization of Free Naphthols with Two Alkyne Units

By: Gu, Songlin; et al

Organic Letters (2014), 16(23), 6132-6135.

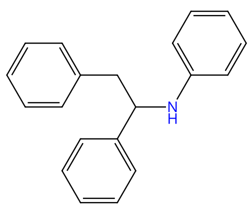
Scheme 412 (1 Reaction)

Steps: **1**



Suppliers (91)

Suppliers (161)



Suppliers (3)

31-116-CAS-8375605

Steps: **1**

1.1 **Reagents:** Oxygen
Catalysts: Palladium diacetate, Benzenesulfonic acid, 3-(diphenylphosphino)-, sodium salt (1:1)
Solvents: Water-d_2; 2 h, 120 °C

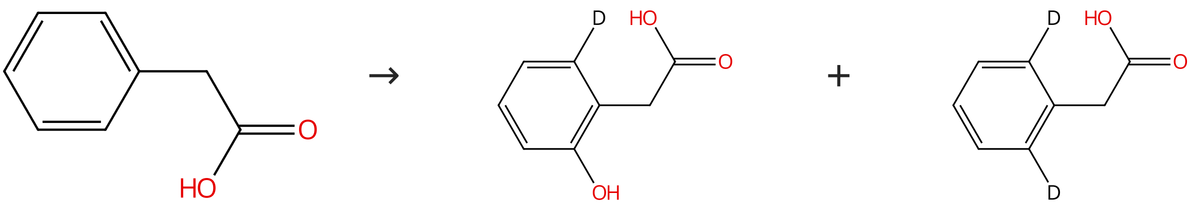
Palladium-Catalyzed Benzylic C-H Benzylation via Bis-Benzylpalladium(II) Complexes in Water: An Effective Pathway for the Direct Construction of N-(1,2-Diphenylethyl)anilines

By: Hikawa, Hidemasa; et al

Advanced Synthesis & Catalysis (2015), 357(5), 1037-1048.

Scheme 413 (1 Reaction)

Steps: **1**



Suppliers (40)

31-614-CAS-34212615 Steps: **1**

1.1 **Reagents:** Dipotassium phosphate
Catalysts: Palladium diacetate, 1,6-Dihydro-α,α-dimethyl-6-oxo-2-pyridineacetic acid
Solvents: Acetonitrile; 5 min, rt

1.2 **Reagents:** Hydrogen peroxide, Water-d_2
Solvents: Water; 24 h, rt

1.3 **Reagents:** Sodium sulfite
Solvents: Water; rt

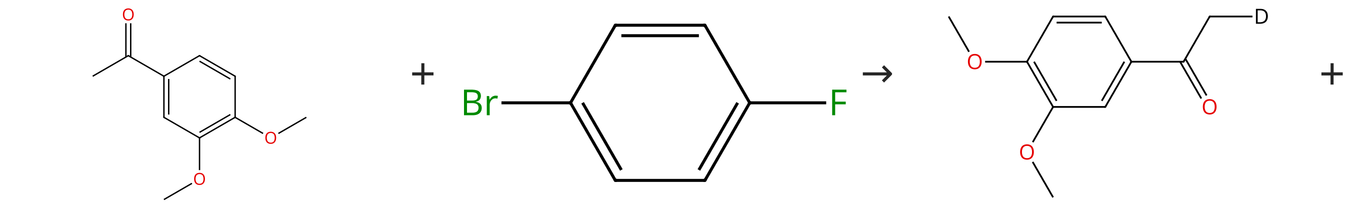
1.4 **Reagents:** Formic acid; acidified, rt

Ligand-Enabled C-H Hydroxylation with Aqueous H_2O_2 at Room Temperature

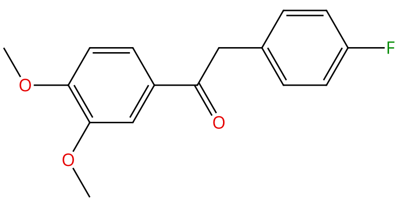
By: Li, Zhen; et al

Journal of the American Chemical Society (2022), 144(39), 18109-18116.

Scheme 414 (1 Reaction) Steps: **1**



Suppliers (86)　Suppliers (119)



Suppliers (10)

31-614-CAS-41662937 Steps: **1**

1.1 **Reagents:** Tripotassium phosphate, Water-d_2, 3,3',5,5'-Tetramethylbenzidine
Catalysts: [2'-(Amino-κ*N*)[1,1'-biphenyl]-2-yl-κ*C*]chloro[[5-(diphenylphosphino)-9,9-dimethyl-9*H*-xanthen-4-yl]diphenylphosphine-κ*P*]palladium
Solvents: 1,4-Dioxane; 20 h, 80 °C

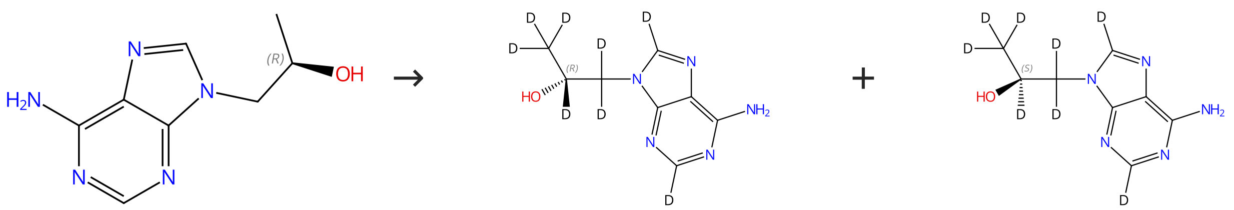
Experimental Protocols

Investigating the Origin of Epimerization Attenuation during Pd-Catalyzed Cross-Coupling Reactions

By: Cai, Isabelle; et al

ACS Catalysis (2024), 14(16), 12331-12341.

Scheme 415 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)　Absolute stereochemistry shown　Absolute stereochemistry shown

Suppliers (89)

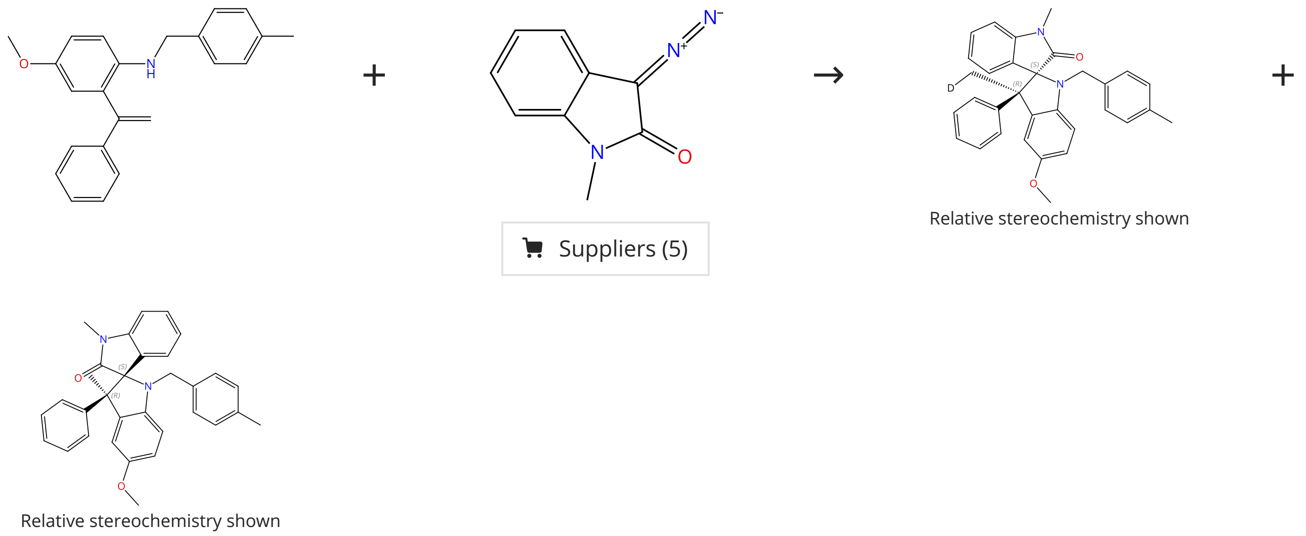
31-614-CAS-35092830	Steps: **1**
1.1	**Reagents:** Sodium borohydride **Catalysts:** Platinum dioxide, Palladium; 10 min, rt; 3 h, 145 °C
1.2	**Reagents:** Water-d_2; 3 h, 145 °C

An Efficient Pd & Pt-Catalyzed H/D Exchange Approach towards the Synthesis of Deuterium-Labeled Antiviral Prodrugs, Tenofovir Disoproxil Fumarate and Tenofovir Alafenamide

By: Shen, Hangzhou; et al

ChemistrySelect (2018), 3(30), 8724-8728.

Scheme 416 (1 Reaction) Steps: **1**



31-034-CAS-21445366	Steps: **1**
1.1	**Reagents:** Water-d_2 **Catalysts:** Di-μ-chlorobis[(1,2,3-η)-1-phenyl-2-propen-1-yl] dipalladium **Solvents:** Toluene; 120 °C; 5 h, 120 °C

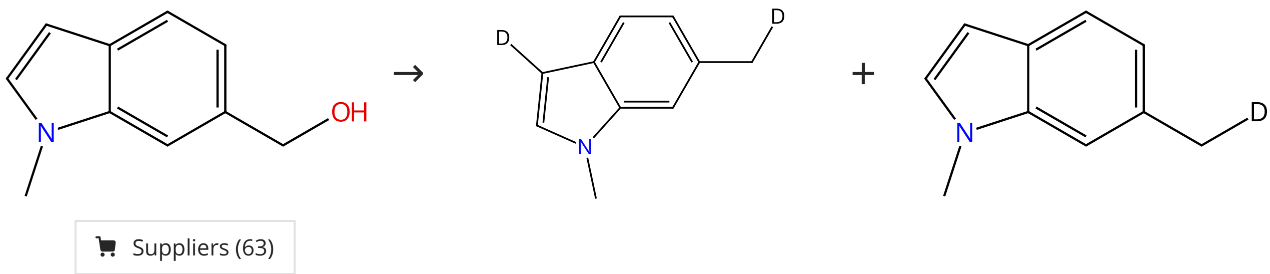
Experimental Protocols

Diastereoselective Palladium Catalyzed Carbenylative Amination of ortho-Vinylanilines with 3-Diazoindolin-2-ones

By: Reddy, Angula Chandra Shekar; et al

Advanced Synthesis & Catalysis (2020), 362(4), 801-806.

Scheme 417 (1 Reaction) Steps: **1**



31-116-CAS-23324313	Steps: **1**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium diacetate **Solvents:** Chlorobenzene; 12 h, 1 atm, rt

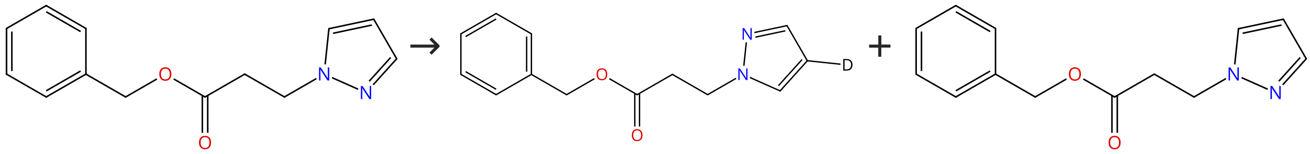
Experimental Protocols

Room-Temperature Palladium-Catalyzed Deuterogenolysis of Carbon Oxygen Bonds towards Deuterated Pharmaceuticals

By: Ou, Wei; et al

Angewandte Chemie, International Edition (2021), 60(12), 6357-6361.

Scheme 418 (2 Reactions) Steps: **1**



Supplier (1)

31-614-CAS-29207896 Steps: **1**

1.1 **Reagents:** Potassium acetate, Water-d_2
Catalysts: Acetylvaline, Palladium diacetate
Solvents: 1,4-Dioxane, Dimethylacetamide; 6 h, 100 °C

Experimental Protocols

Ligand-controlled Regiodivergent C-H Alkenylation of Pyrazoles and its Application to the Synthesis of Indazoles

By: Kim, Hyun Tae; et al

Angewandte Chemie, International Edition (2017), 56(51), 16262-16266.

31-614-CAS-28405700 Steps: **1**

1.1 **Reagents:** Quinone, Oxygen, Water-d_2
Catalysts: Trifluoroacetic acid, Palladium diacetate, 4,5-Diazafluoren-9-one
Solvents: 1,4-Dioxane; 12 h, 1 atm, 100 °C

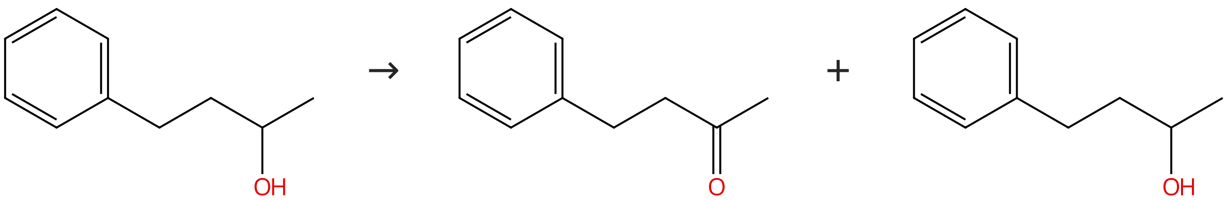
Experimental Protocols

Ligand-controlled Regiodivergent C-H Alkenylation of Pyrazoles and its Application to the Synthesis of Indazoles

By: Kim, Hyun Tae; et al

Angewandte Chemie, International Edition (2017), 56(51), 16262-16266.

Scheme 419 (1 Reaction) Steps: **1**



Suppliers (65)

deuterated

deuterated

31-480-CAS-12442366 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 1 atm, 110 °C

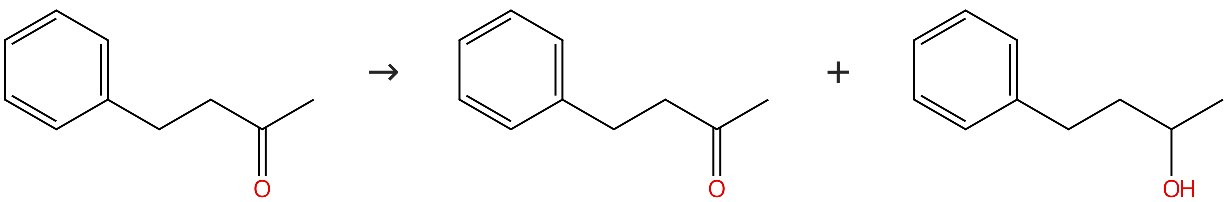
Experimental Protocols

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 420 (1 Reaction) Steps: **1**



Suppliers (85)

deuterated

deuterated

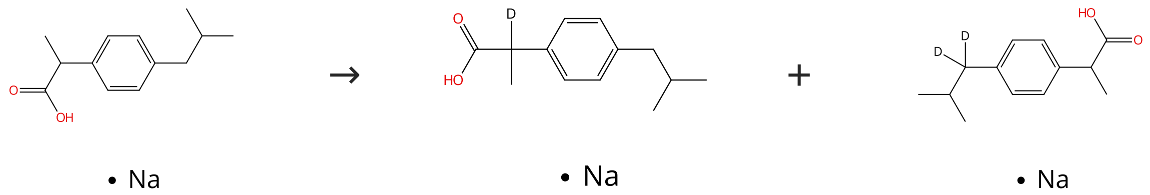
31-513-CAS-14572813	Steps: **1**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 24 h, 160 °C
Experimental Protocols	

Novel Pd/C-Catalyzed Redox Reactions between Aliphatic Secondary Alcohols and Ketones under Hydrogenation Conditions: Application to H-D Exchange Reaction and the Mechanistic Study

By: Esaki, Hiroyoshi; et al

Journal of Organic Chemistry (2007), 72(6), 2143-2150.

Scheme 421 (1 Reaction) Steps: **1**



Suppliers (52)

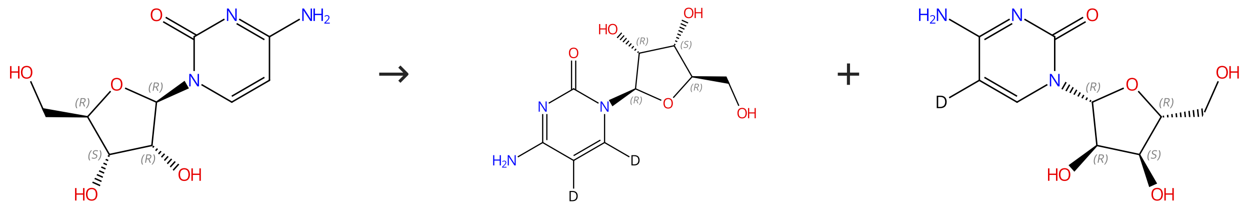
31-116-CAS-11475794	Steps: **1**
1.1	**Reagents:** Hydrogen, Water-d_2 **Catalysts:** Palladium **Solvents:** Water-d_2
Experimental Protocols	

Pd/C-H_2-catalyzed deuterium exchange reaction of the benzylic site in D_2O

By: Sajiki, Hironao; et al

Synlett (2002), (7), 1149-1151.

Scheme 422 (1 Reaction) Steps: **1**



Absolute stereochemistry shown

Suppliers (135)

Absolute stereochemistry shown, Rotation (+)

Suppliers (30)

Absolute stereochemistry shown

Supplier (1)

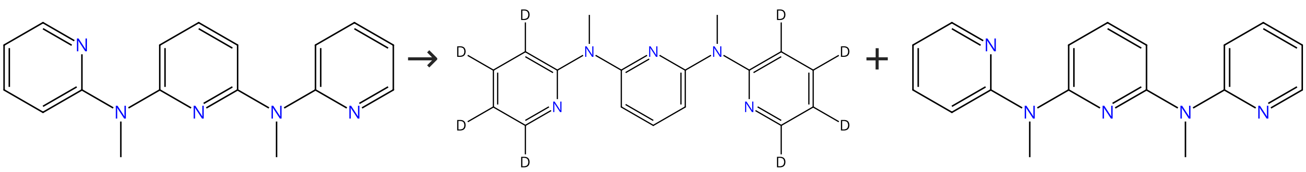
31-116-CAS-3357669	Steps: **1**
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-d_2; 48 h, 140 °C; cooled

Synthesis of base-selectively deuterium-labeled nucleosides by the pd/C-catalyzed H-D exchange reaction in deuterium oxide

By: Esaki, Hiroyoshi; et al

Heterocycles (2005), 66, 361-369.

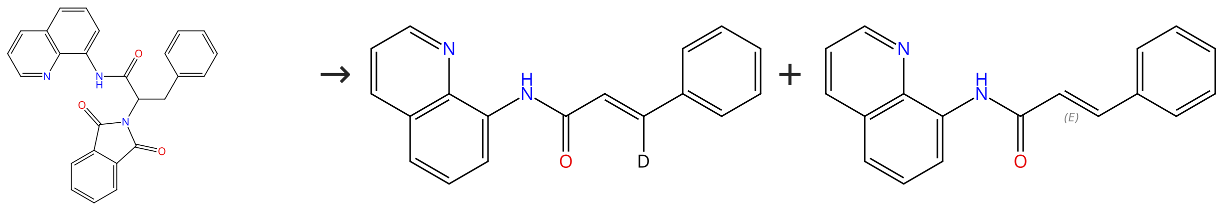
Scheme 423 (1 Reaction) Steps: **1**



Suppliers (5)

31-614-CAS-26601844	Steps: **1**	**Deuterated Molecular Ruby with Record Lumine scence Quantum Yield**
1.1	**Reagents:** Water-d_2 **Catalysts:** Palladium; 11 h, 215 °C	By: Wang, Cui; et al Angewandte Chemie, International Edition (2018), 57(4), 1112-1116.
Experimental Protocols		

Scheme 424 (1 Reaction) Steps: **1**



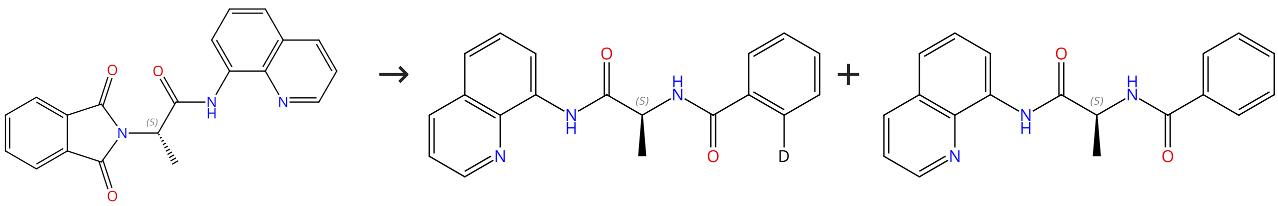
Suppliers (3)

Double bond geometry shown

Suppliers (6)

31-116-CAS-19205231	Steps: **1**	**Bioinspired Deamination of α-Amino Acid Derivatives Catalyzed by a Palladium/Nickel Complex**
1.1	**Reagents:** Water-d_2 **Catalysts:** Benzoic acid, Nickel acetate, Palladium diacetate **Solvents:** 1,1,1,3,3,3-Hexafluoro-2-propanol; rt → 120 °C	By: Deng, Gongtao; et al Advanced Synthesis & Catalysis (2018), 360(20), 3900-3905.
Experimental Protocols		

Scheme 425 (1 Reaction) Steps: **1**



Absolute stereochemistry shown, Rotation (+)

Absolute stereochemistry shown

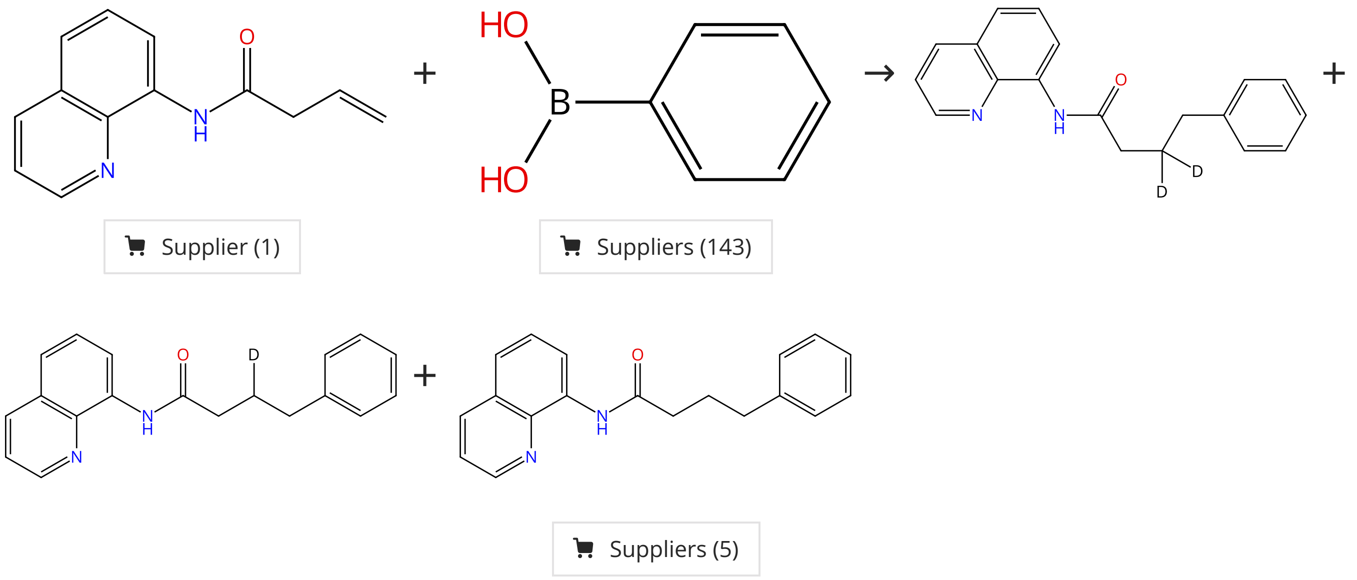
Absolute stereochemistry shown

Suppliers (4)

31-614-CAS-31637758	Steps: **1**	**Transamidation and decarbonylation of N-phthaloyl-amino acid amides enabled by palladium-catalyzed selective C-N bond cleavage**
1.1	**Reagents:** Benzoic acid, Potassium carbonate **Catalysts:** Palladium diacetate **Solvents:** 2-Methyl-2-butanol, Water-d_2; 24 h, 100 °C	By: Zhang, Hao-Yu; et al Journal of Organic Chemistry (2022), 87(1), 231-242.
Experimental Protocols		

Scheme 426 (1 Reaction)

Steps: 1 Yield: 49%



31-116-CAS-19338812

Steps: 1 Yield: 49%

1.1 **Reagents:** Sodium fluoride, Water-d_2
Catalysts: Palladium diacetate
Solvents: (Trifluoromethyl)benzene; 12 h, 100 °C

Experimental Protocols

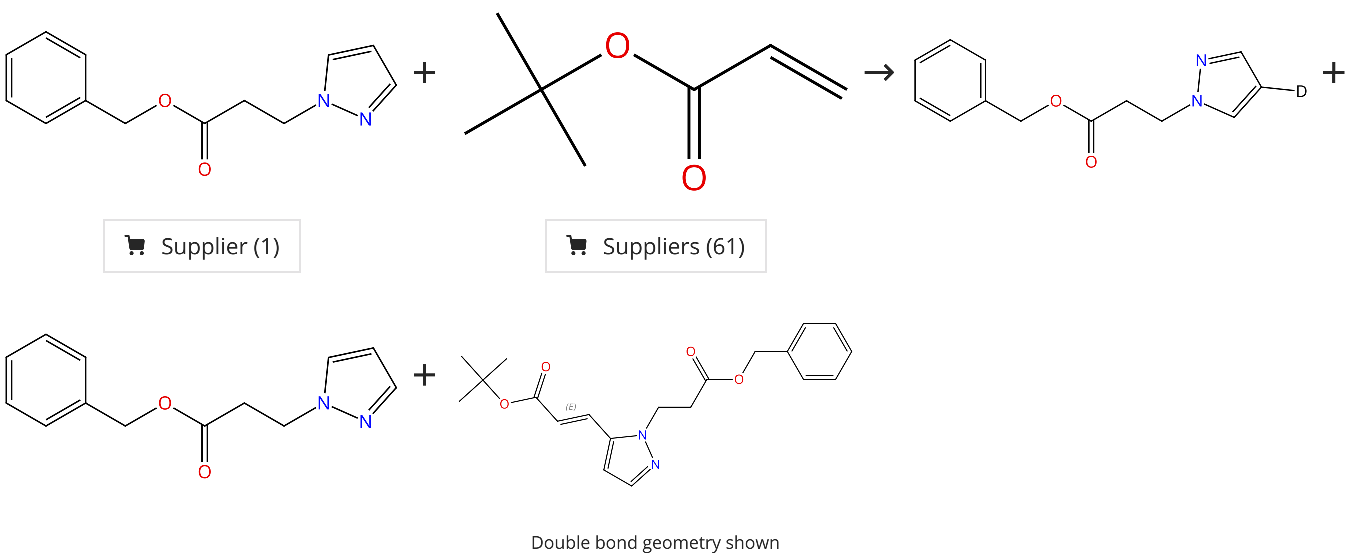
Palladium(II)-catalyzed γ-selective hydroarylation of alkenyl carbonyl compounds with arylboronic acids

By: Matsuura, Rei; et al

Chemical Science (2018), 9(44), 8363-8368.

Scheme 427 (1 Reaction)

Steps: 1 Yield: 33%



31-614-CAS-30006951

Steps: 1 Yield: 33%

1.1 **Reagents:** Potassium acetate, Water-d_2
Catalysts: Acetylvaline, Palladium diacetate
Solvents: 1,4-Dioxane, Dimethylacetamide; 6 h, 100 °C

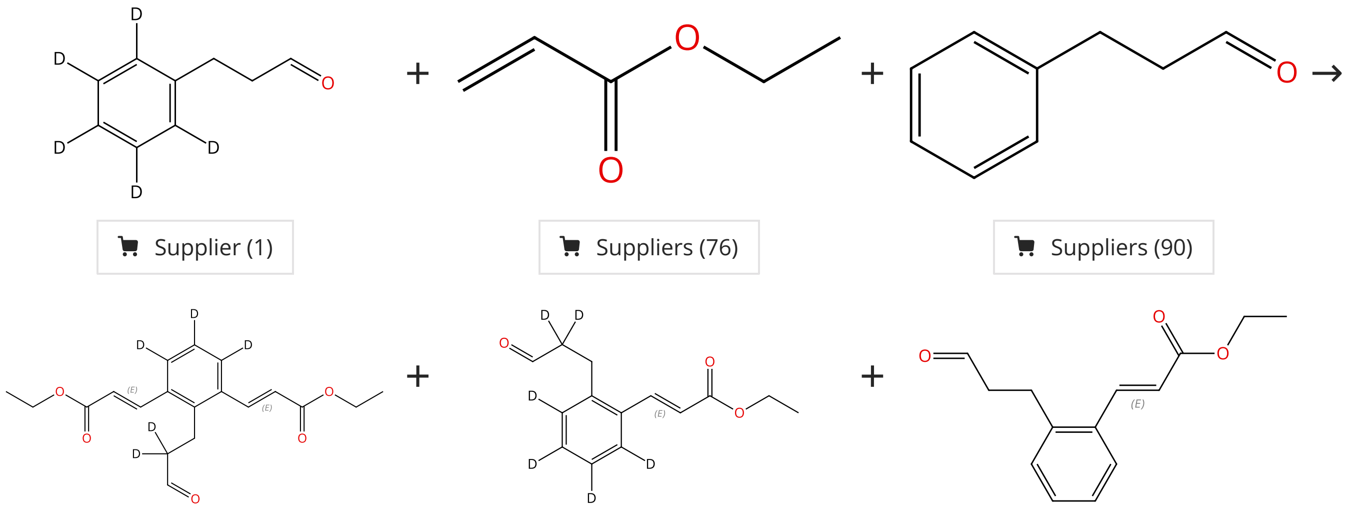
Experimental Protocols

Ligand-controlled Regiodivergent C-H Alkenylation of Pyrazoles and its Application to the Synthesis of Indazoles

By: Kim, Hyun Tae; et al

Angewandte Chemie, International Edition (2017), 56(51), 16262-16266.

Scheme 428 (1 Reaction) Steps: **1**



Supplier (1) | Suppliers (76) | Suppliers (90)

Double bond geometry shown | Double bond geometry shown | Double bond geometry shown

Suppliers (2)

31-116-CAS-22712575 Steps: **1**

1.1 **Reagents:** Cupric acetate, Acetic acid-*d*$_4$, Oxygen, Water-*d*$_2$, 2489404-31-9
Catalysts: Palladium diacetate
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol-*d*; 10 min, rt; 6 h, 50 °C

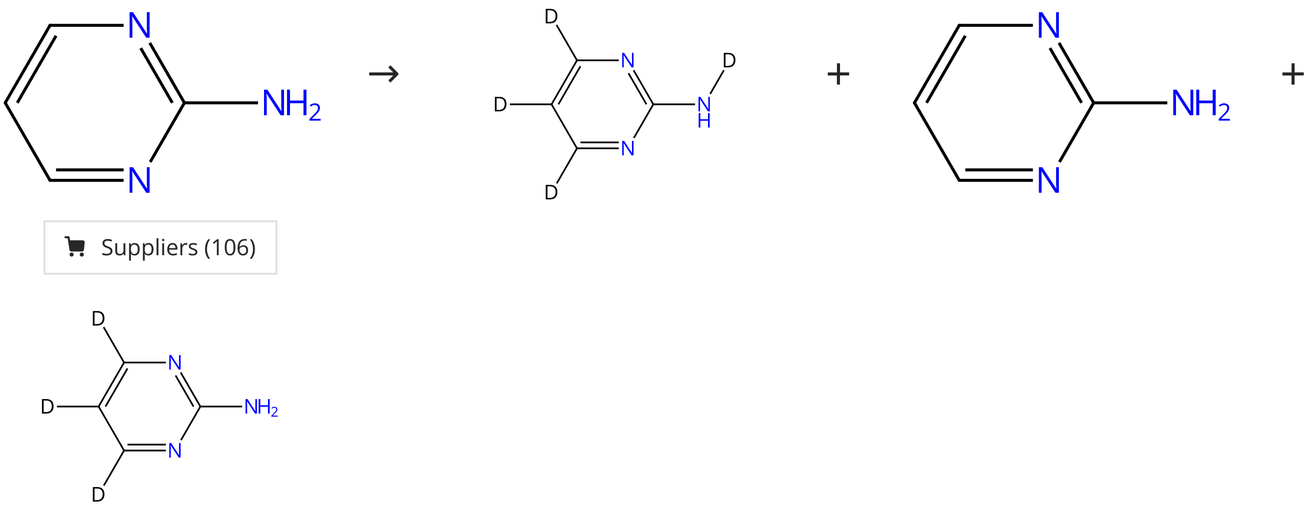
Experimental Protocols

Direct remote δ-C(sp^2)-H olefination of β-aryl-substituted aliphatic aldehydes via palladium/enamine co-catalysis

By: Richa; et al

Organic Chemistry Frontiers (2020), 7(19), 2965-2974.

Scheme 429 (1 Reaction) Steps: **1**



Suppliers (106)

Suppliers (6)

31-614-CAS-28518442 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

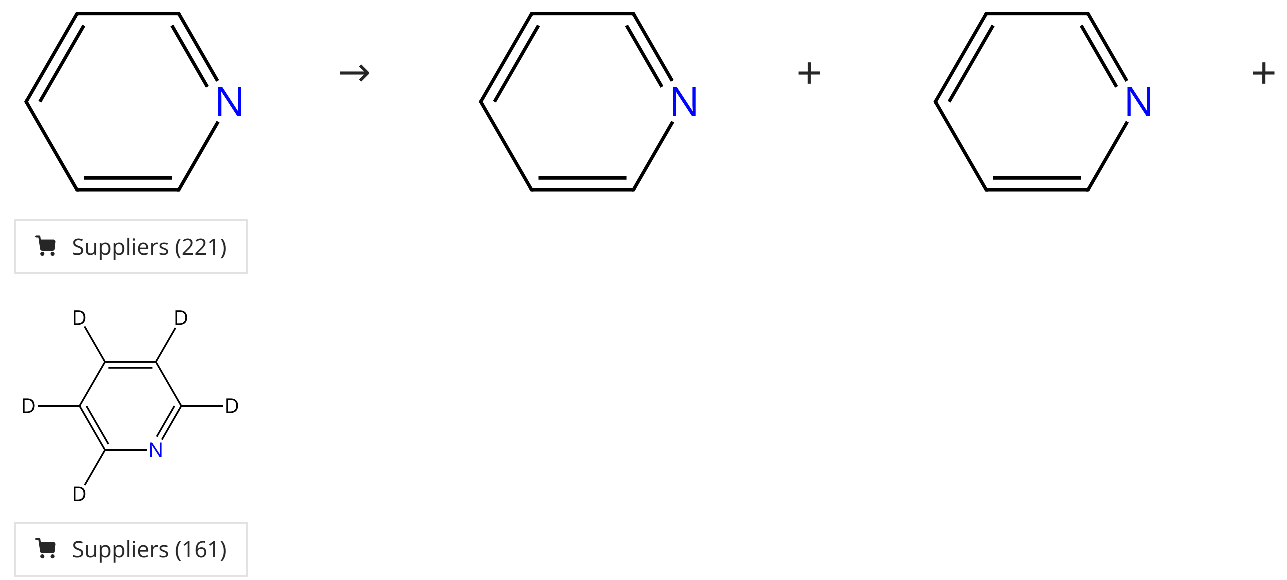
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 430 (1 Reaction)

Steps: **1**



31-614-CAS-29255861

Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 110 °C

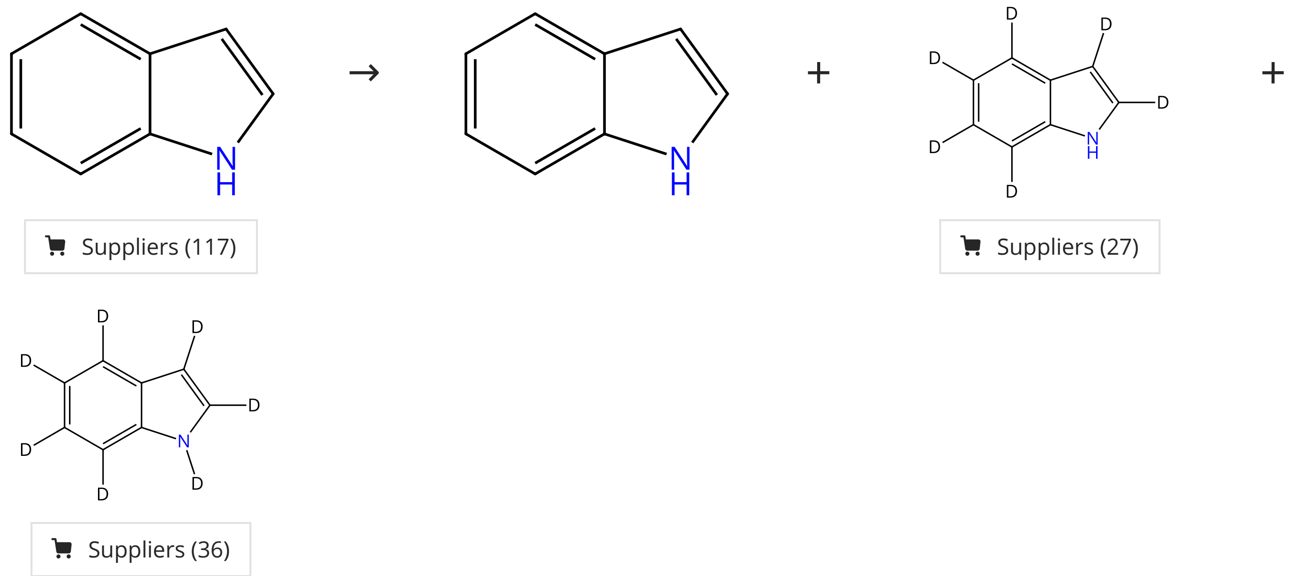
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 431 (1 Reaction)

Steps: **1**



31-614-CAS-29236929

Steps: **1**

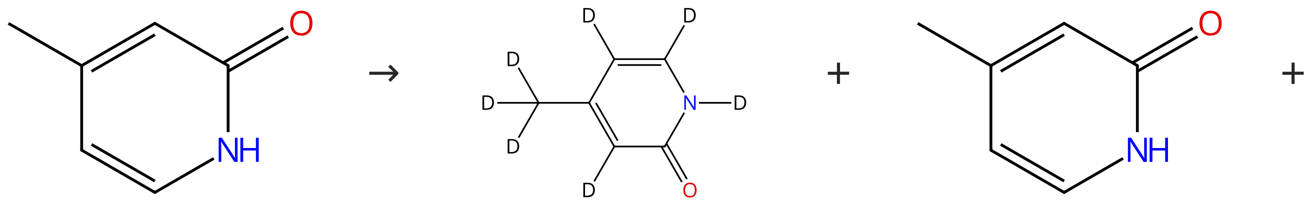
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

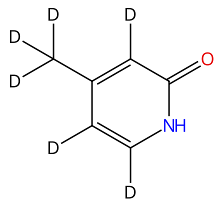
By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 432 (1 Reaction) Steps: **1**



Suppliers (102)



Suppliers (17)

31-614-CAS-30978151 Steps: **1**

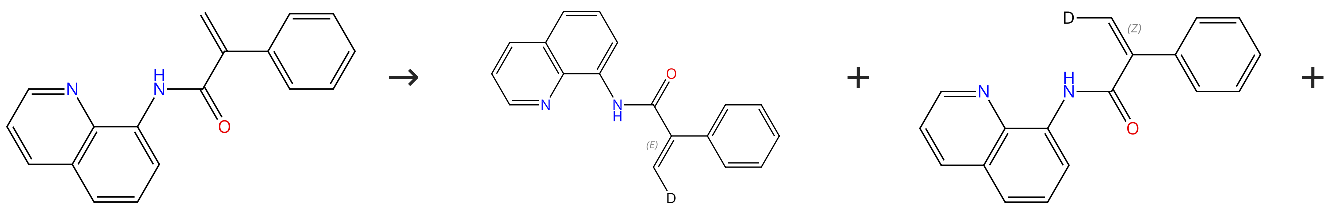
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 180 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D$_2$O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

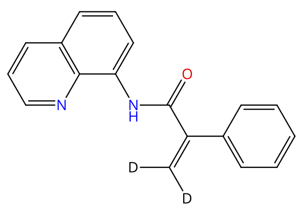
Scheme 433 (1 Reaction) Steps: **1**



Supplier (1)

Double bond geometry shown

Double bond geometry shown



31-116-CAS-19395602 Steps: **1**

1.1 **Reagents:** Water-*d*$_2$
Catalysts: Palladium chloride
Solvents: *N*,*N*-Dimethylformamide-*d*$_7$; 50 min, 80 °C

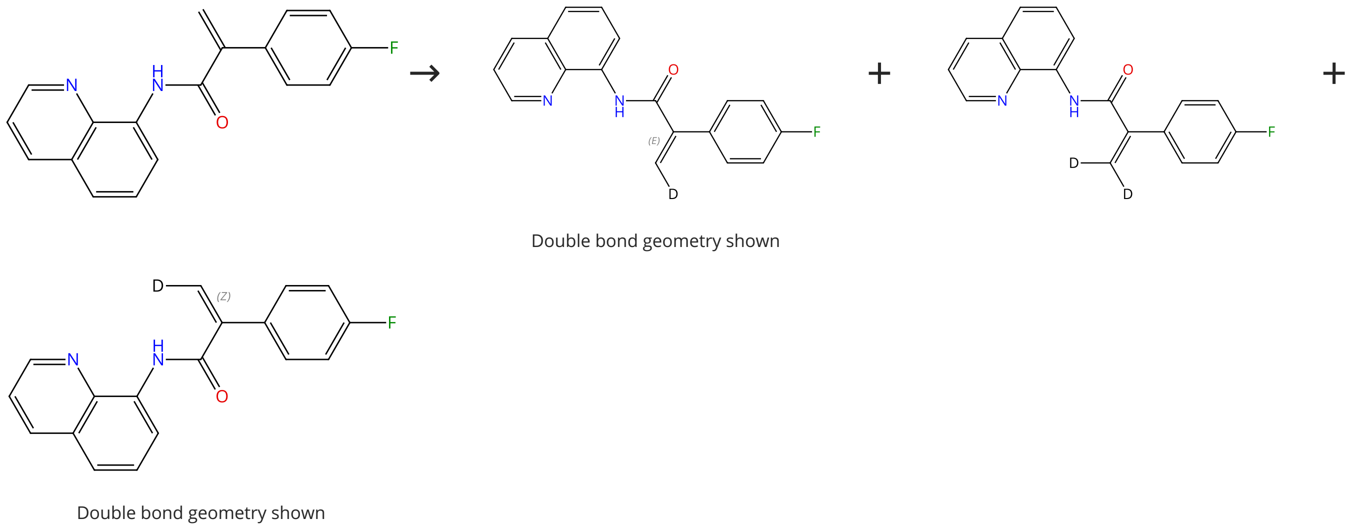
Experimental Protocols

Pd-Catalyzed Trifluoromethylthiolation of Unsaturated Compounds: A General Approach

By: Zhao, Qun; et al

European Journal of Organic Chemistry (2018), 2018(44), 6167-6175.

Scheme 434 (1 Reaction) Steps: **1**



31-116-CAS-22750150 Steps: **1**

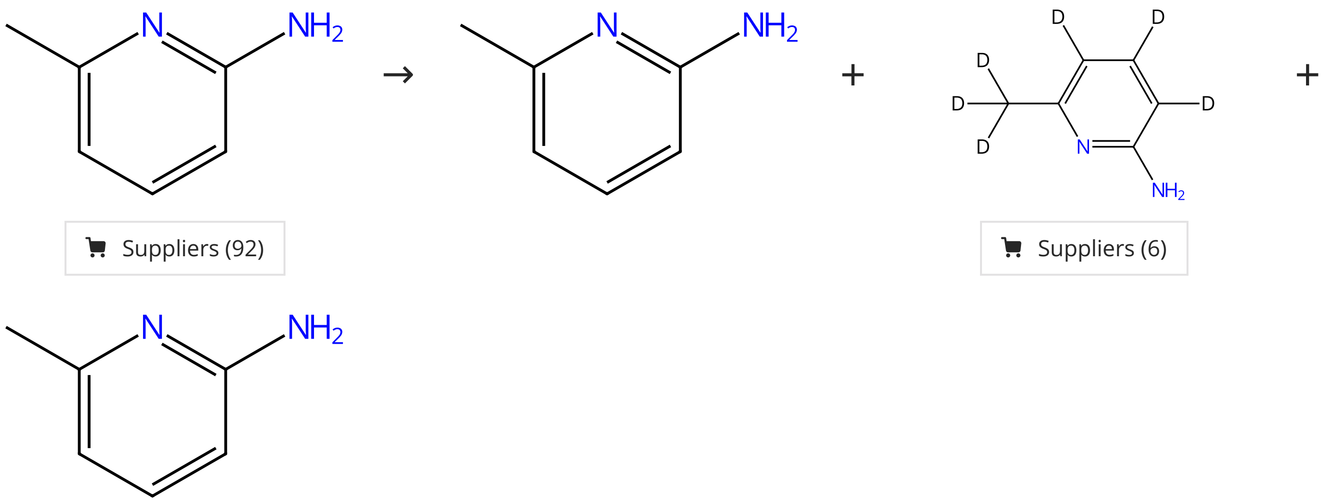
1.1 **Reagents:** Water-d_2
Catalysts: Palladium chloride
Solvents: *N*,*N*-Dimethylformamide-d_7; 1 h, 25 °C

Pd-Catalyzed Selective Chlorination of Acrylamides at Room Temperature

By: Chen, Mu-Yi; et al

Organic Letters (2020), 22(19), 7556-7561.

Scheme 435 (1 Reaction) Steps: **1**



31-614-CAS-30170940 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 180 °C

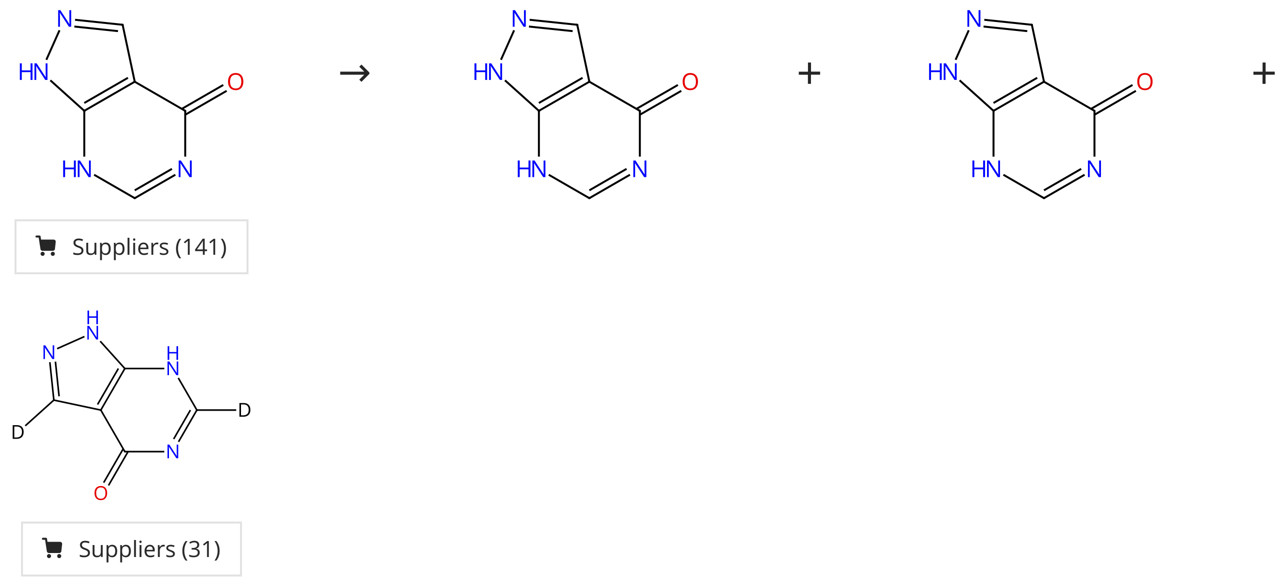
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 436 (1 Reaction)

Steps: 1



31-614-CAS-27482521	Steps: 1
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 160 °C

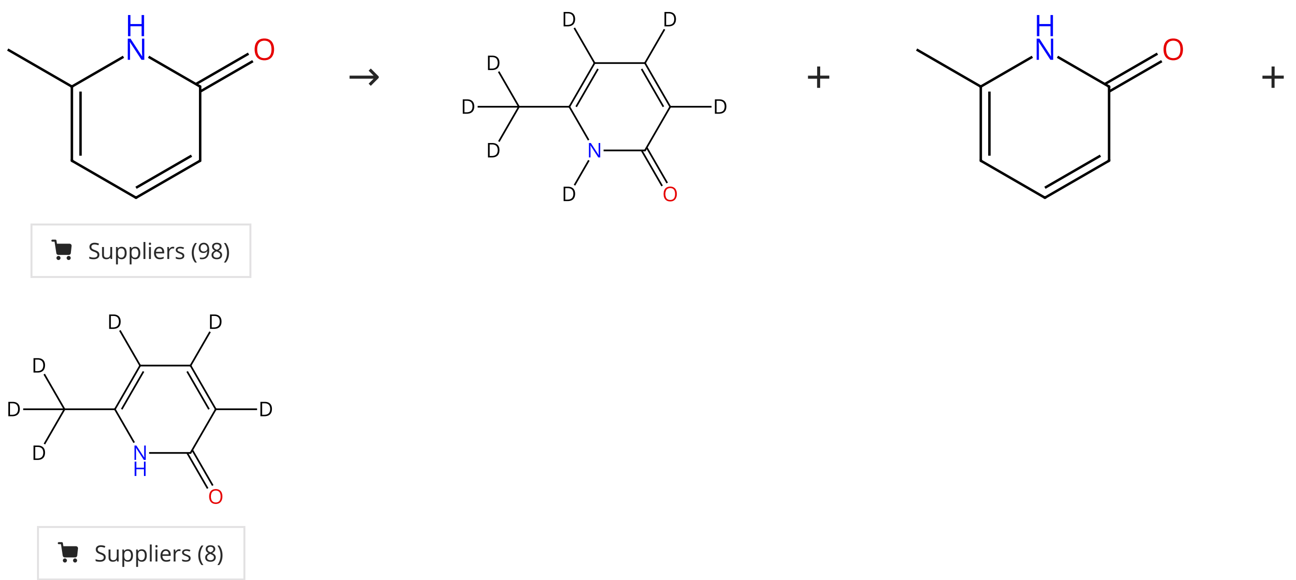
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 437 (1 Reaction)

Steps: 1



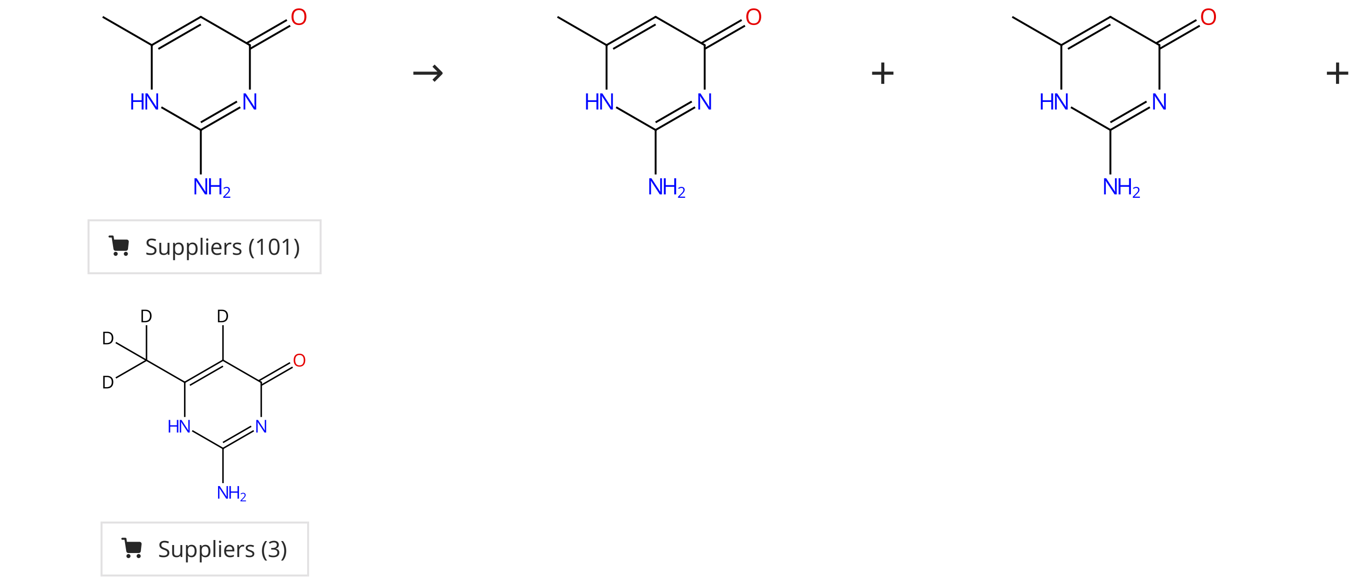
31-614-CAS-25933604	Steps: 1
1.1	**Reagents:** Hydrogen **Catalysts:** Palladium **Solvents:** Water-*d*$_2$; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 438 (1 Reaction) Steps: **1**



31-614-CAS-30132137 Steps: **1**

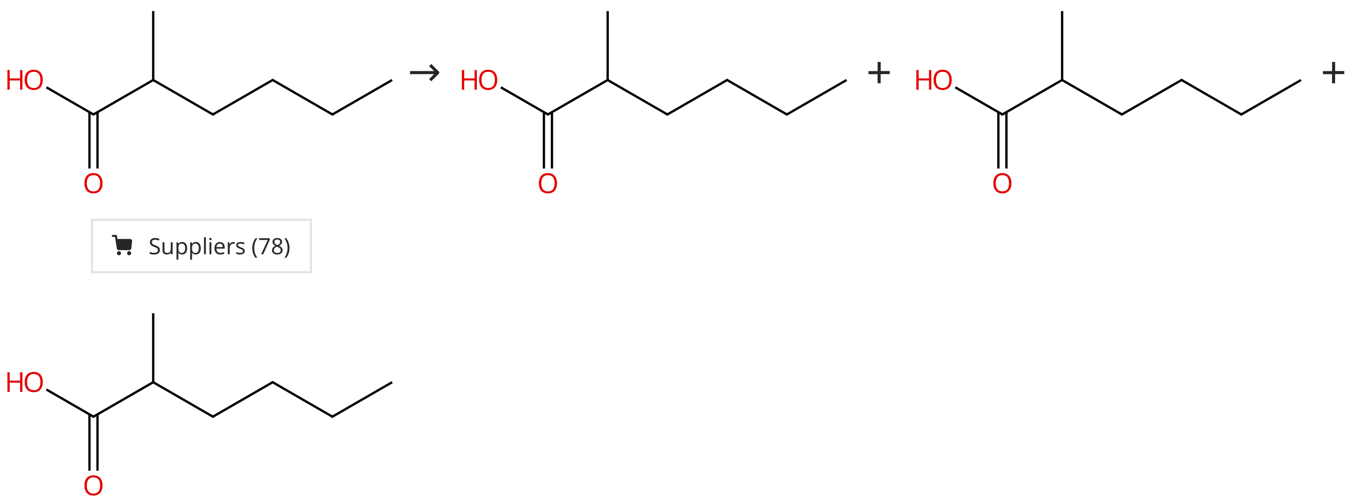
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 110 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 439 (1 Reaction) Steps: **1**



31-614-CAS-26011118 Steps: **1**

1.1 **Reagents:** Silver carbonate, Water-*d*$_2$
Catalysts: Palladium diacetate, *N*-[2-(Dimethylamino)ethyl]-2,4,6-tris(1-methylethyl)benzamide
Solvents: 1,1,1,3,3,3-Hexafluoro-2-propanol; 24 h, 90 °C; 90 °C → rt

1.2 **Reagents:** Formic acid; rt

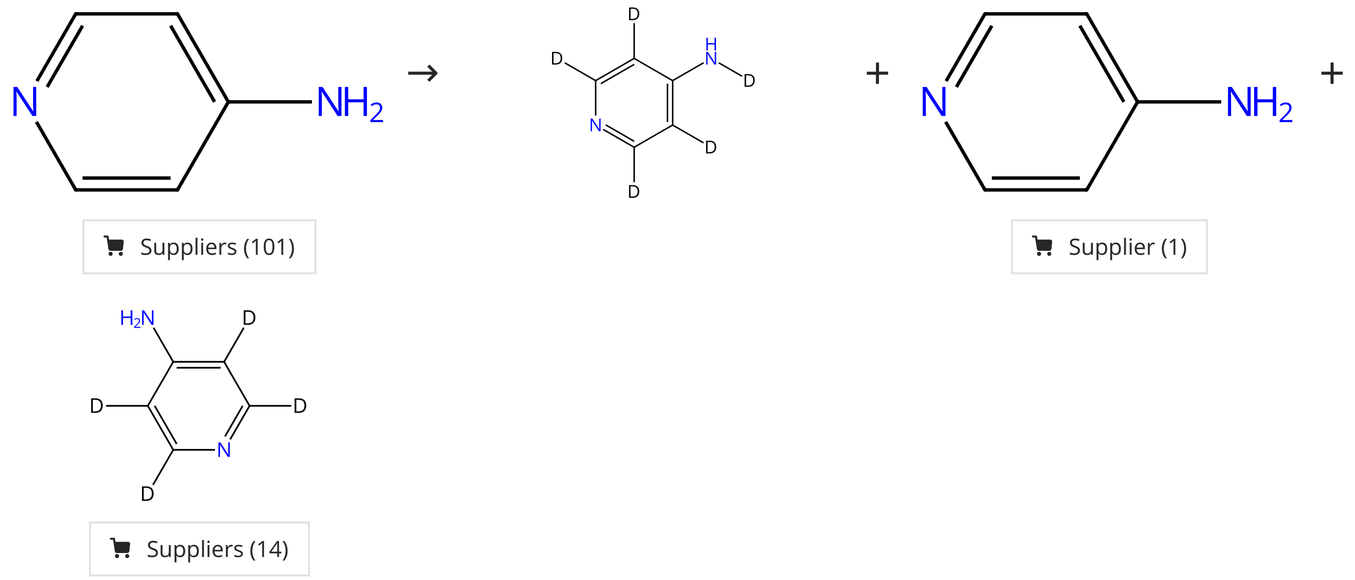
Experimental Protocols

Late-Stageβ-C(sp^3)-H Deuteration of Carboxylic Acids

By: Uttry, Alexander; et al

Journal of the American Chemical Society (2021), 143(29), 10895-10901.

Scheme 440 (1 Reaction) Steps: 1



31-614-CAS-30067920 Steps: 1

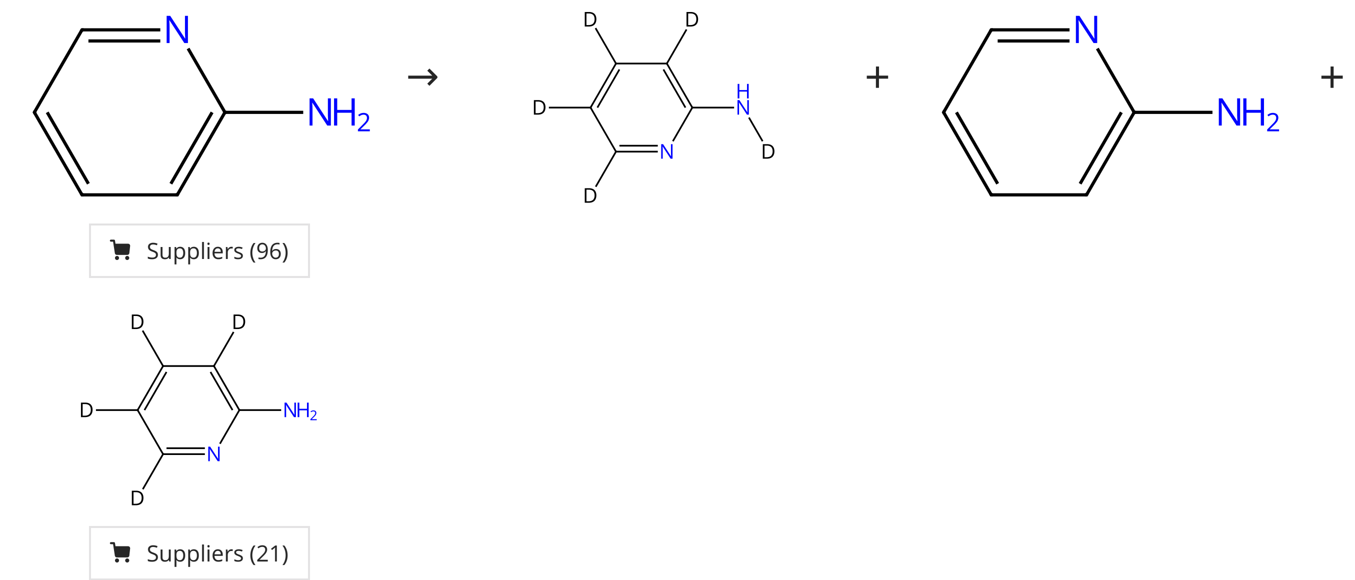
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*2; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 441 (1 Reaction) Steps: 1



31-614-CAS-30874874 Steps: 1

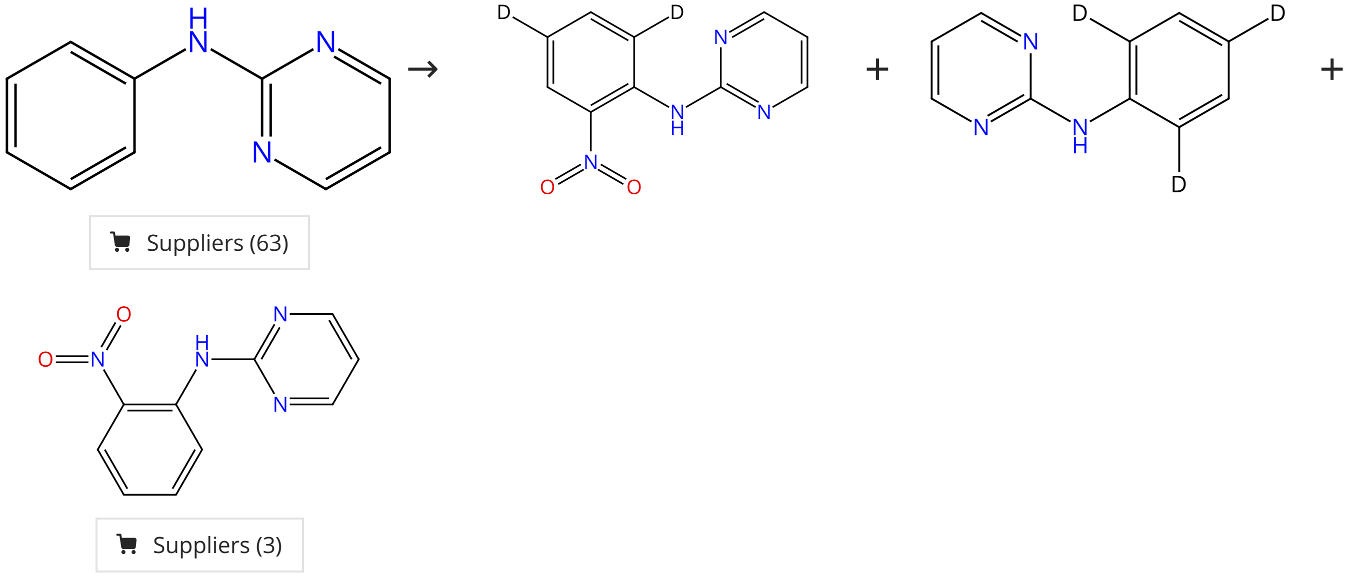
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*2; 24 h, 180 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 442 (1 Reaction) Steps: **1**



31-076-CAS-13475865 Steps: **1**

1.1 **Reagents:** Acetic acid, Potassium persulfate, Silver nitrate, Water-*d*$_2$
Catalysts: Palladium diacetate
Solvents: 1,2-Dichloroethane; 2 - 3 h, 80 °C

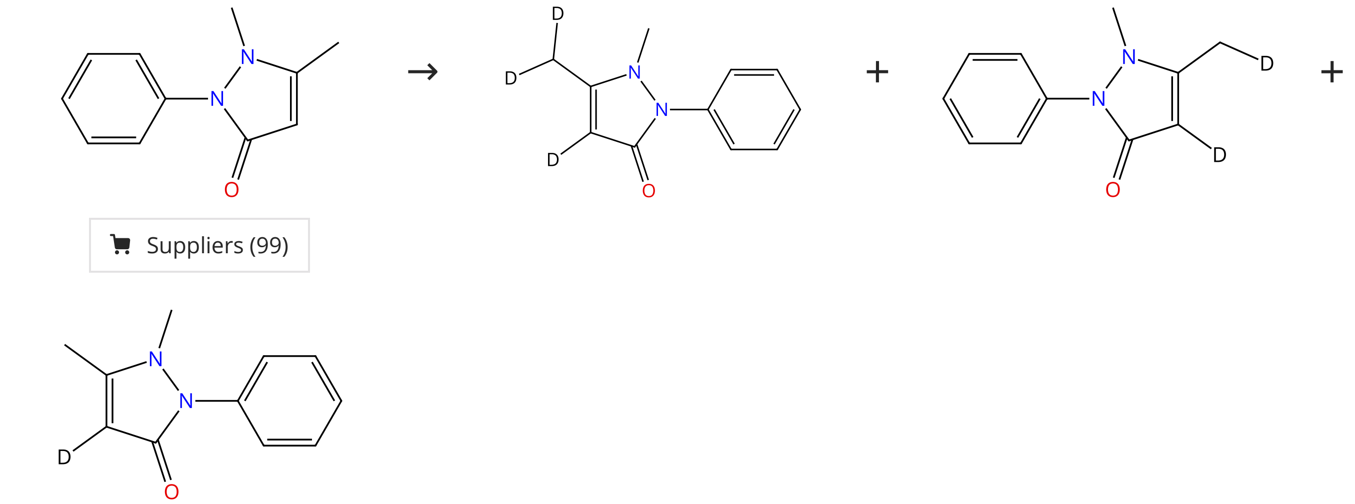
Experimental Protocols

Palladium(II)-Catalyzed, Heteroatom-Directed, Regioselective C-H Nitration of Anilines Using Pyrimidine as a Removable Directing Group

By: Pawar, Govind Goroba; et al

Organic Letters (2016), 18(3), 448-451.

Scheme 443 (1 Reaction) Steps: **1**



31-116-CAS-8275327 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

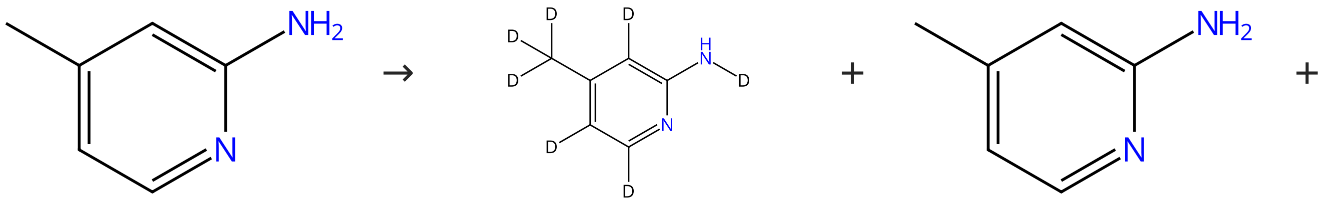
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

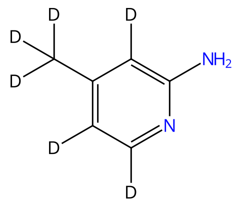
Tetrahedron (2006), 62(47), 10954-10961.

Scheme 444 (1 Reaction)

Steps: 1



Suppliers (108)



Suppliers (21)

31-614-CAS-25803713

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*2; 24 h, 180 °C

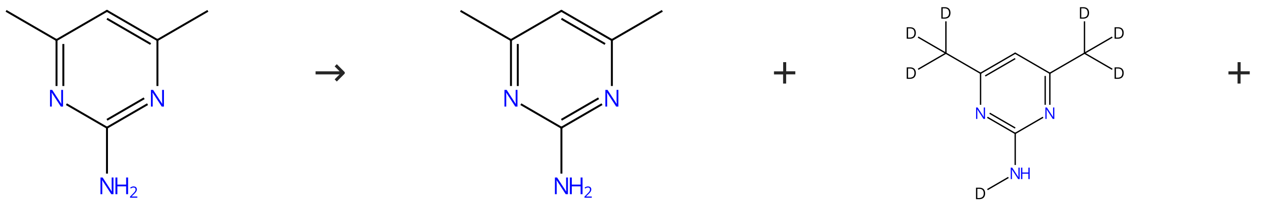
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

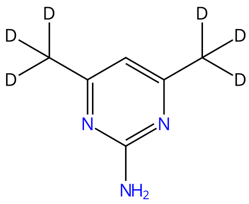
Tetrahedron (2006), 62(47), 10954-10961.

Scheme 445 (1 Reaction)

Steps: 1



Suppliers (96)



31-614-CAS-29320127

Steps: 1

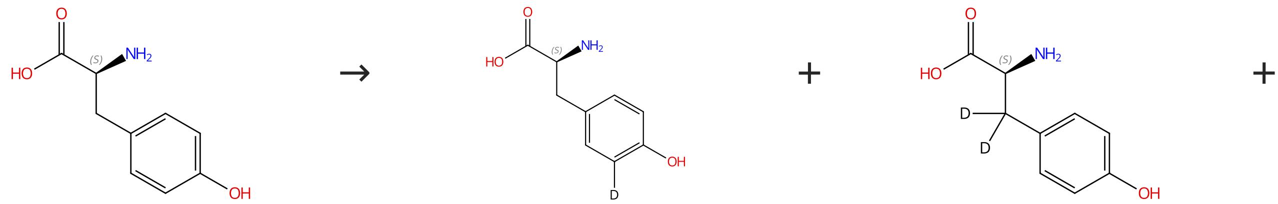
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*2; 24 h, 110 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

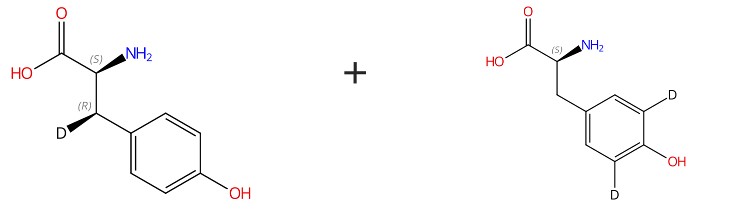
Scheme 446 (1 Reaction) Steps: **1** Yield: **5%**



Absolute stereochemistry shown, Rotation (-) | Suppliers (178)

Absolute stereochemistry shown

Absolute stereochemistry shown | Suppliers (32)



Absolute stereochemistry shown | Supplier (1)

Absolute stereochemistry shown | Suppliers (38)

31-614-CAS-39077230 Steps: **1** Yield: **5%**

1.1 **Reagents:** Deuterium
Catalysts: Nickel (complexes with N-heterocyclic carbenes), Palladium (complexes with N-heterocyclic carbenes), 2135813-04-4 (Palladium nanoparticle, Nickle nanoparticle, and bimetallic Palladium/...)
Solvents: Water-d_2; 48 h, pH 11 - 12, 2 bar, 120 °C

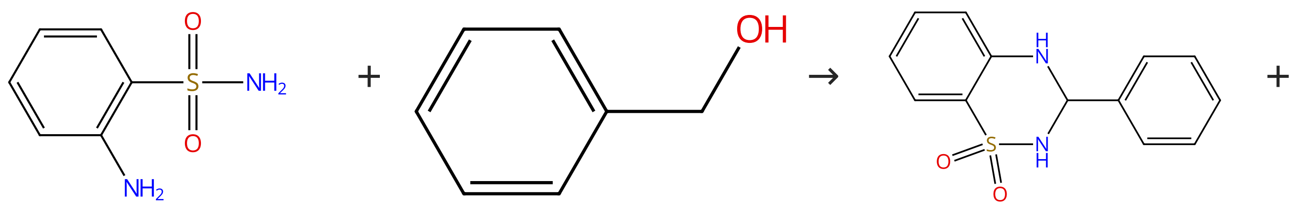
Experimental Protocols

Water-soluble NHC Pd/Ni bimetallic nanoparticles for H/D exchange in aromatic amino-acids

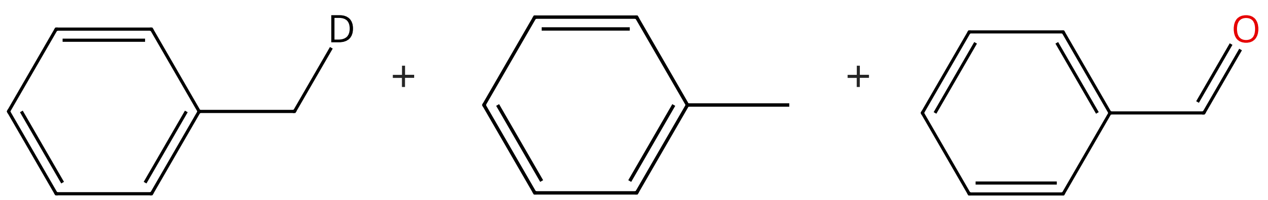
By: Suarez-Riano, Oscar; et al

Chemical Communications (Cambridge, United Kingdom) (2023), 59(8), 1062-1065.

Scheme 447 (1 Reaction) Steps: **1**



Suppliers (85) | Suppliers (161) | Suppliers (6)



Suppliers (301) | Suppliers (80)

31-032-CAS-24181964 Steps: **1**

1.1 **Reagents:** Water-d_2
Catalysts: Palladium diacetate, Benzenesulfonic acid, 3-(diphenylphosphino)-, sodium salt (1:1); 16 h, 100 °C

Experimental Protocols

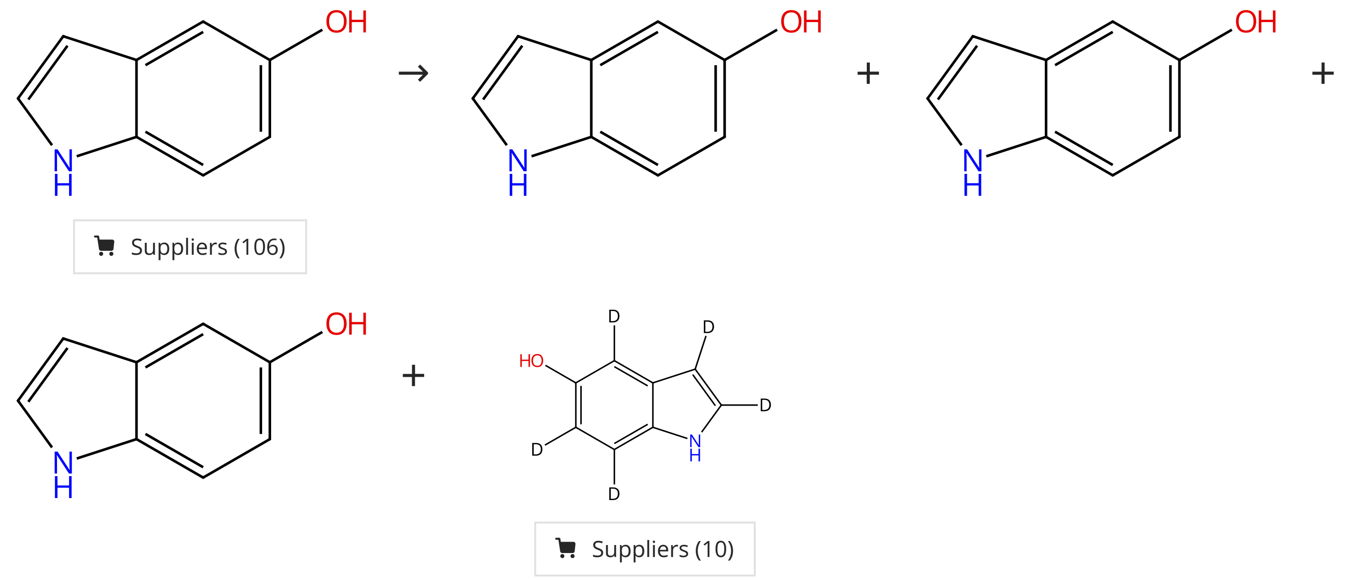
Direct Use of Benzylic Alcohols for Multico mponent Synthesis of 2-Aryl Quinazolinones Utilizing the π-Benzylpalladium(II) System in Water

By: Hikawa, Hidemasa; et al

Advanced Synthesis & Catalysis (2021), 363(16), 4075-4084.

Scheme 448 (1 Reaction)

Steps: **1**



31-614-CAS-27397918

Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

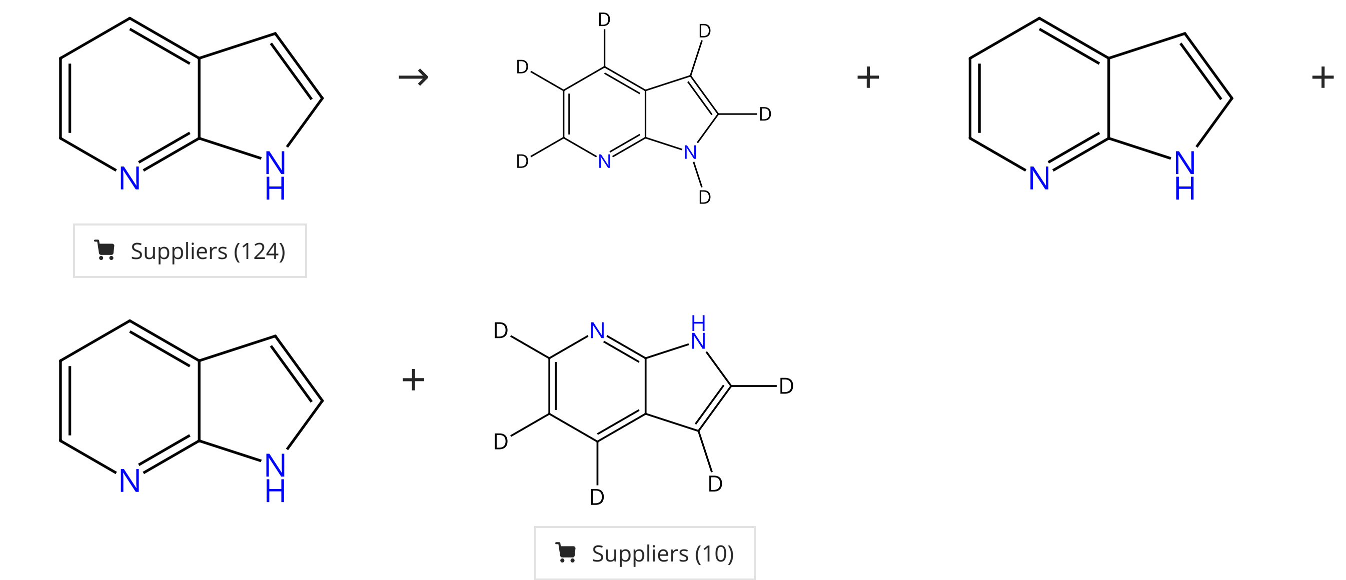
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 449 (1 Reaction)

Steps: **1**



31-614-CAS-29811457

Steps: **1**

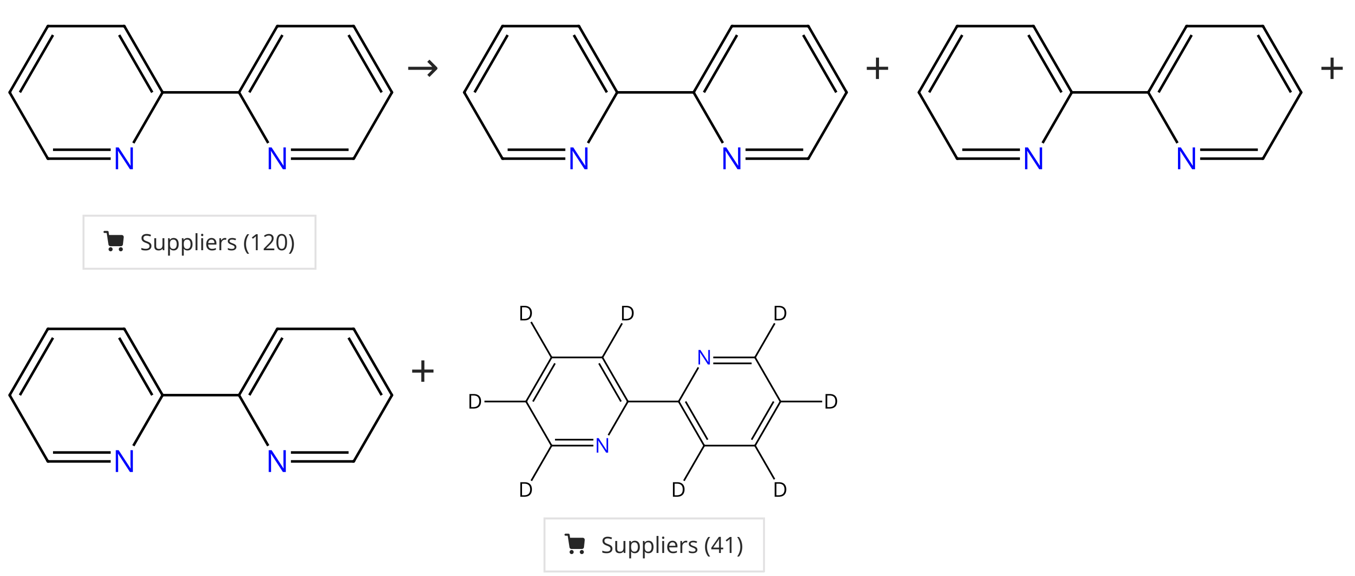
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 450 (1 Reaction) Steps: **1**



31-614-CAS-28331642 Steps: **1**

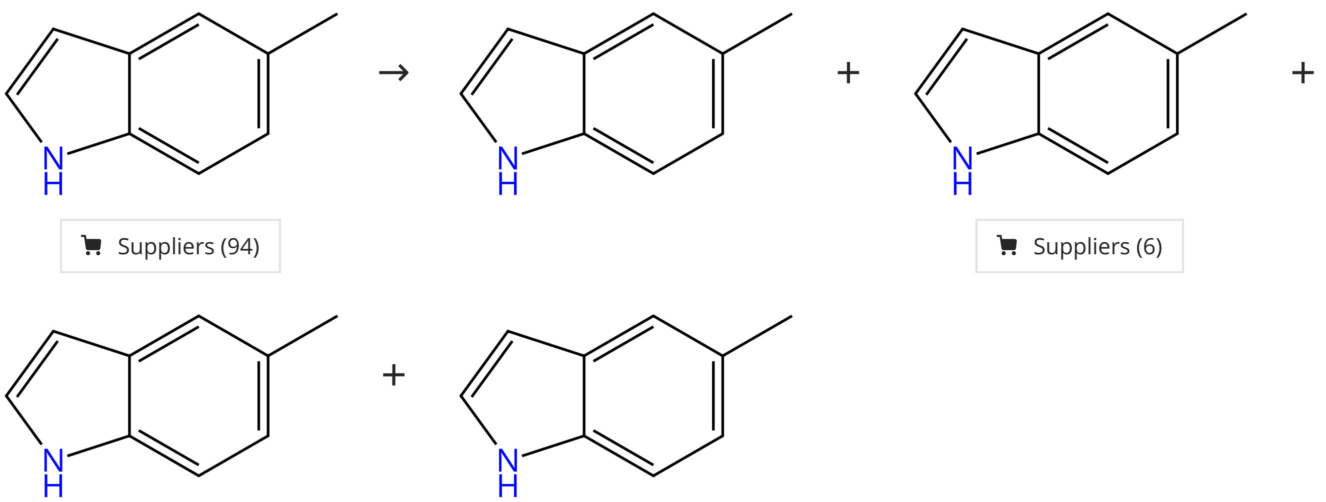
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 451 (1 Reaction) Steps: **1**



31-614-CAS-30856092 Steps: **1**

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

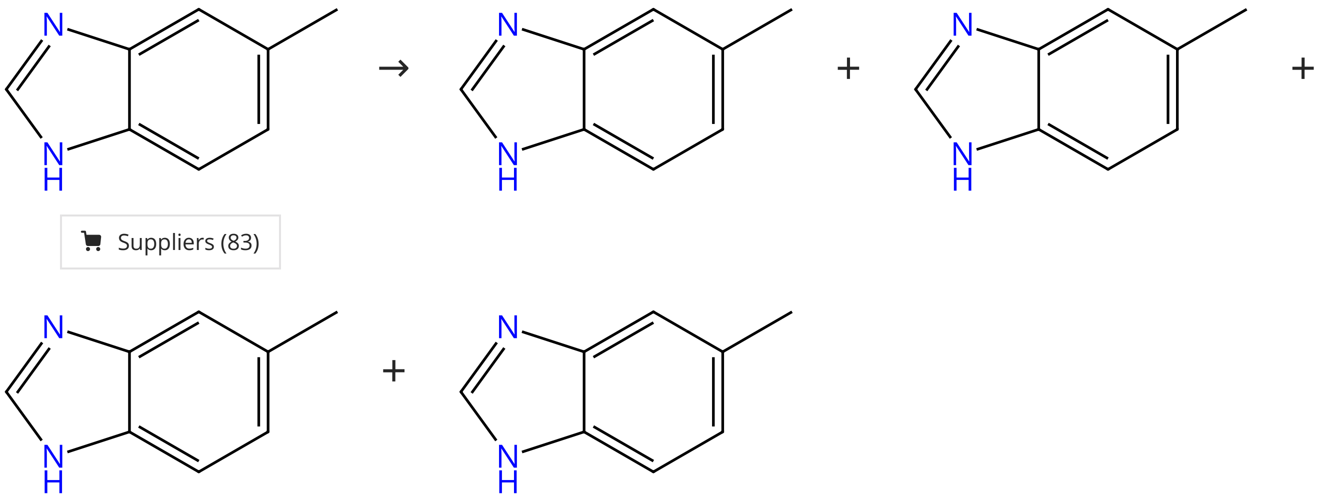
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 452 (1 Reaction)

Steps: 1



31-614-CAS-30610858

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

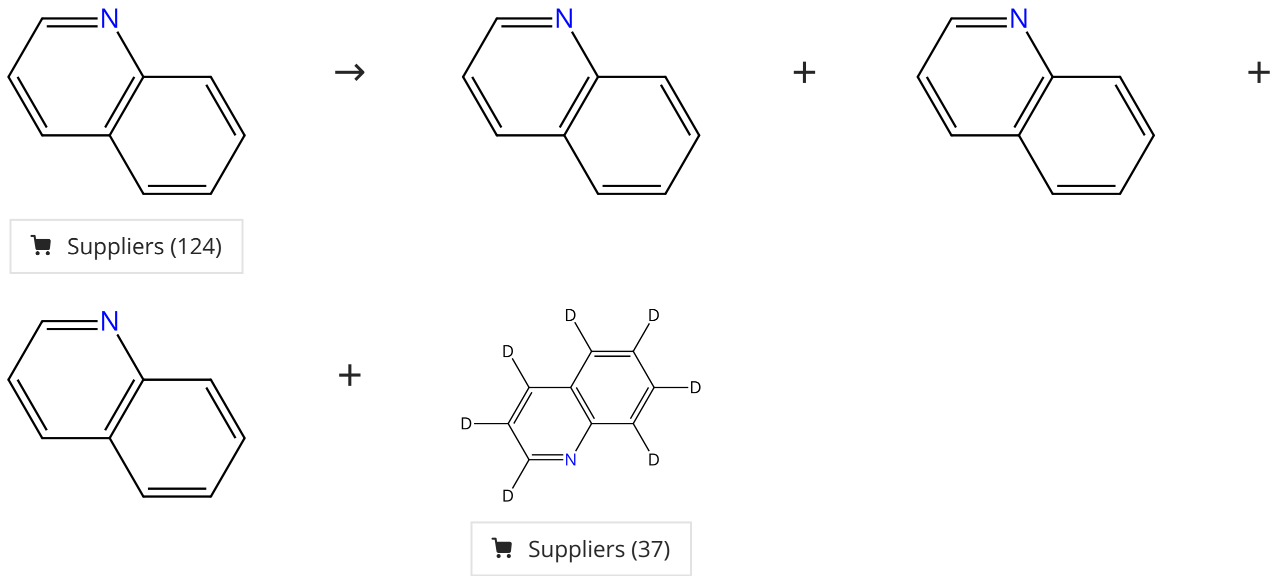
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 453 (1 Reaction)

Steps: 1



31-614-CAS-27728178

Steps: 1

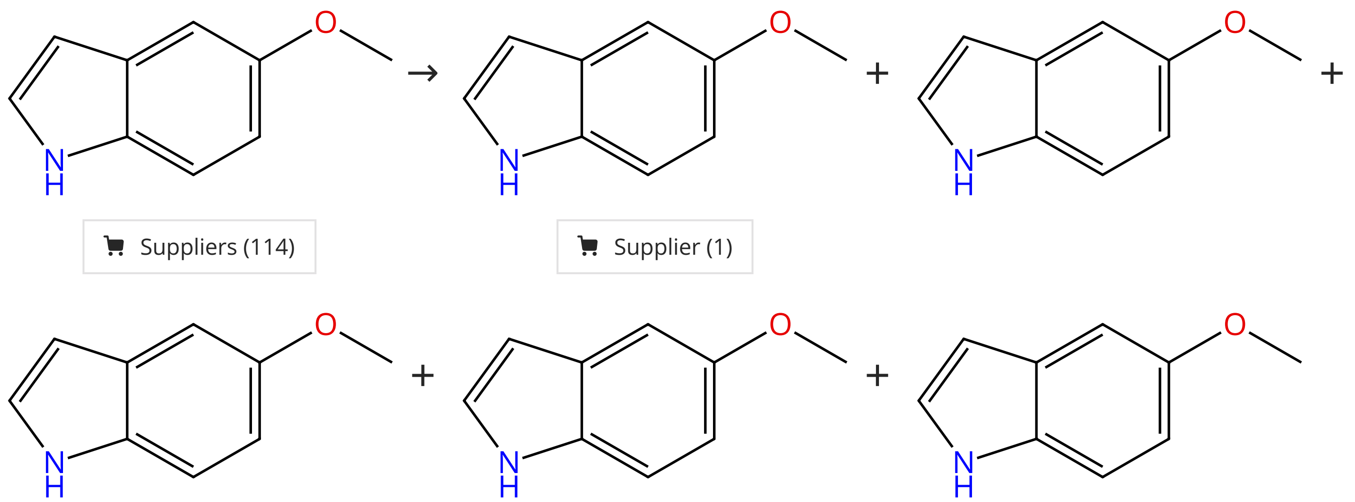
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 180 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 454 (1 Reaction) Steps: 1



31-614-CAS-28206565 Steps: 1

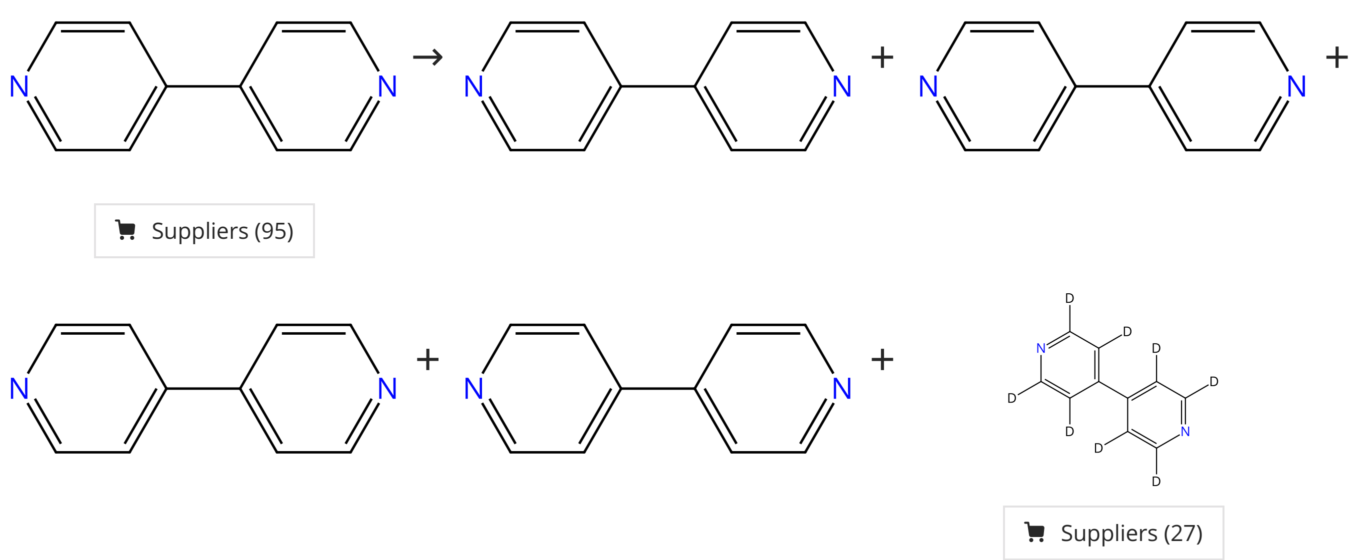
1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 455 (1 Reaction) Steps: 1



31-614-CAS-27521134 Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

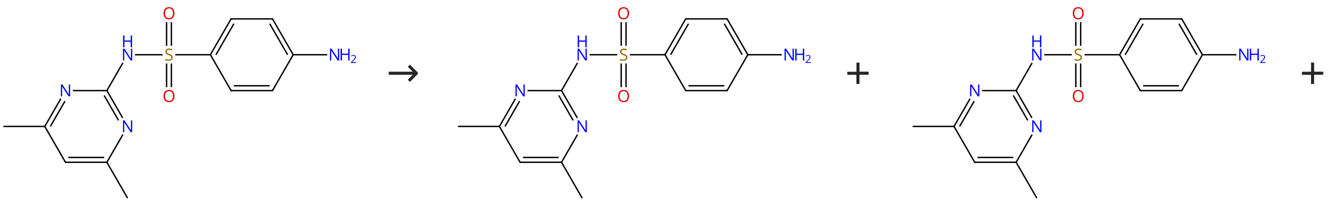
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

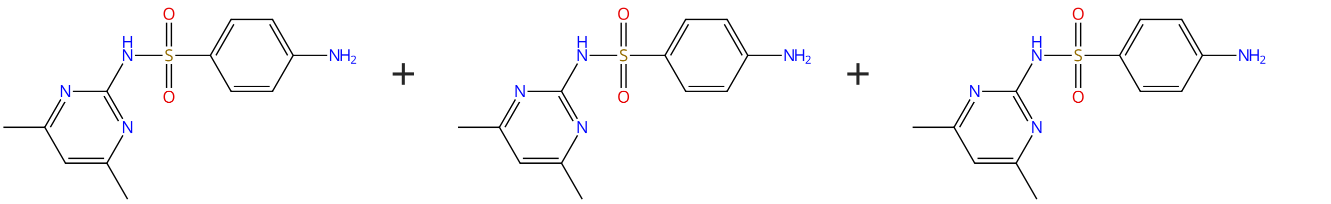
Tetrahedron (2006), 62(47), 10954-10961.

Scheme 456 (1 Reaction)

Steps: 1



Suppliers (97)



31-614-CAS-25894721

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

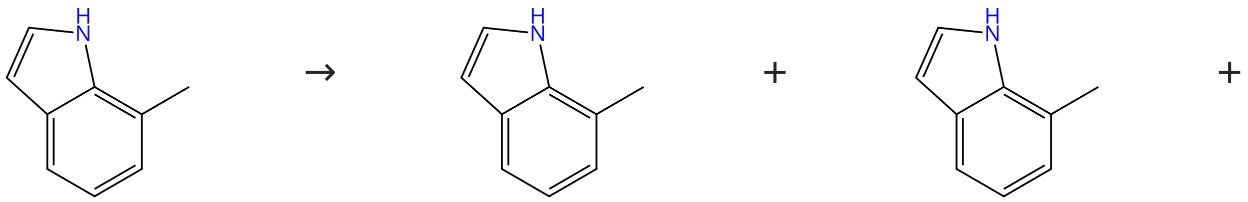
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

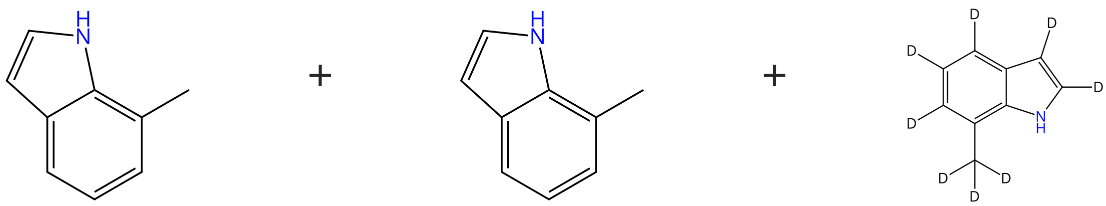
Tetrahedron (2006), 62(47), 10954-10961.

Scheme 457 (1 Reaction)

Steps: 1



Suppliers (94)



31-614-CAS-25784853

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-*d*$_2$; 24 h, 160 °C

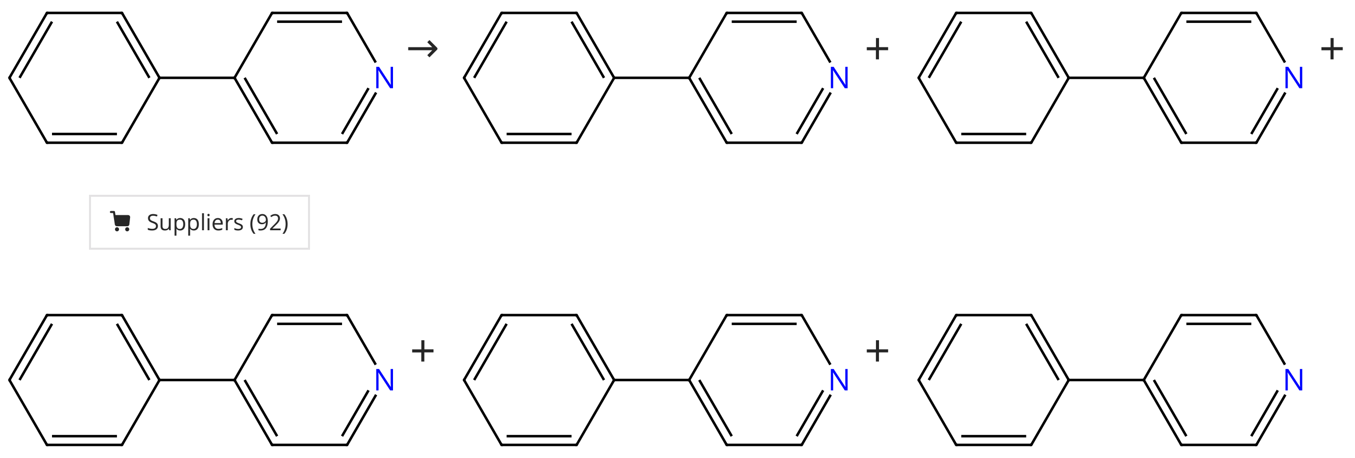
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 458 (1 Reaction)

Steps: 1



31-614-CAS-26730879

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

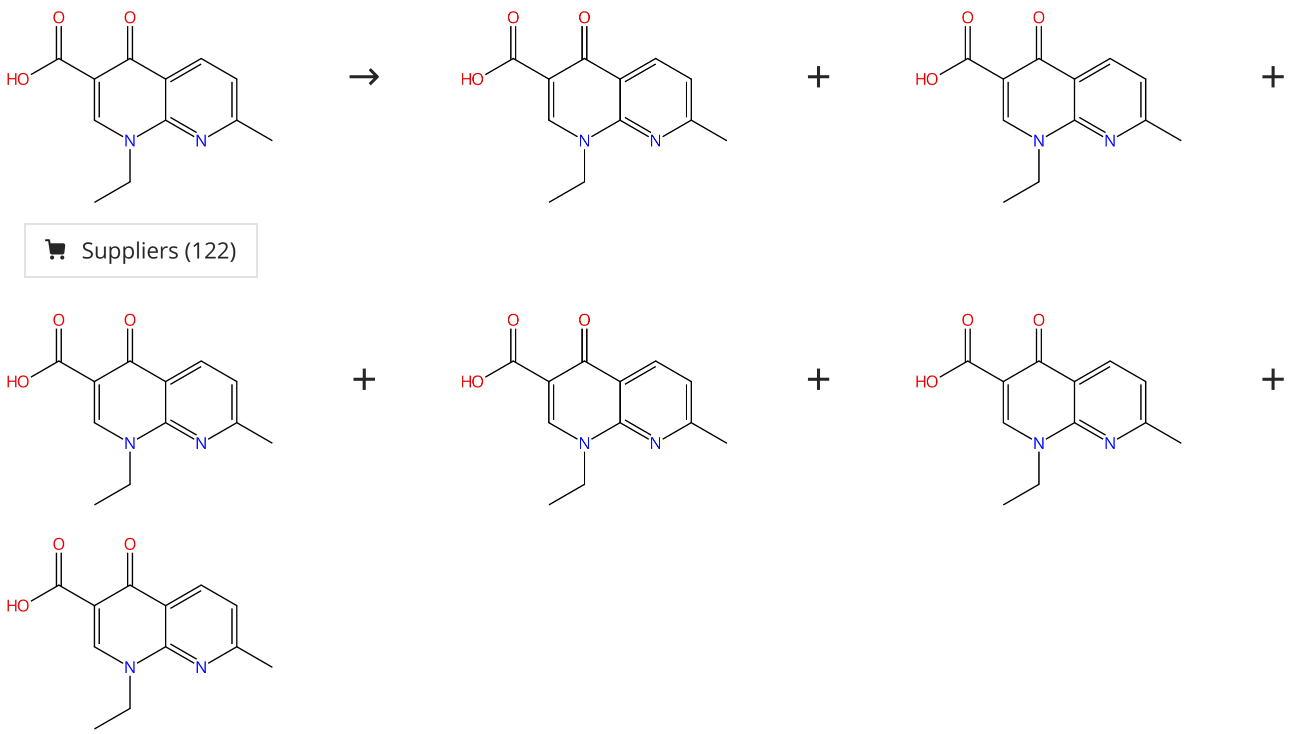
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 459 (1 Reaction)

Steps: 1



31-614-CAS-26690853

Steps: 1

1.1 **Reagents:** Hydrogen
Catalysts: Palladium
Solvents: Water-d_2; 24 h, 160 °C

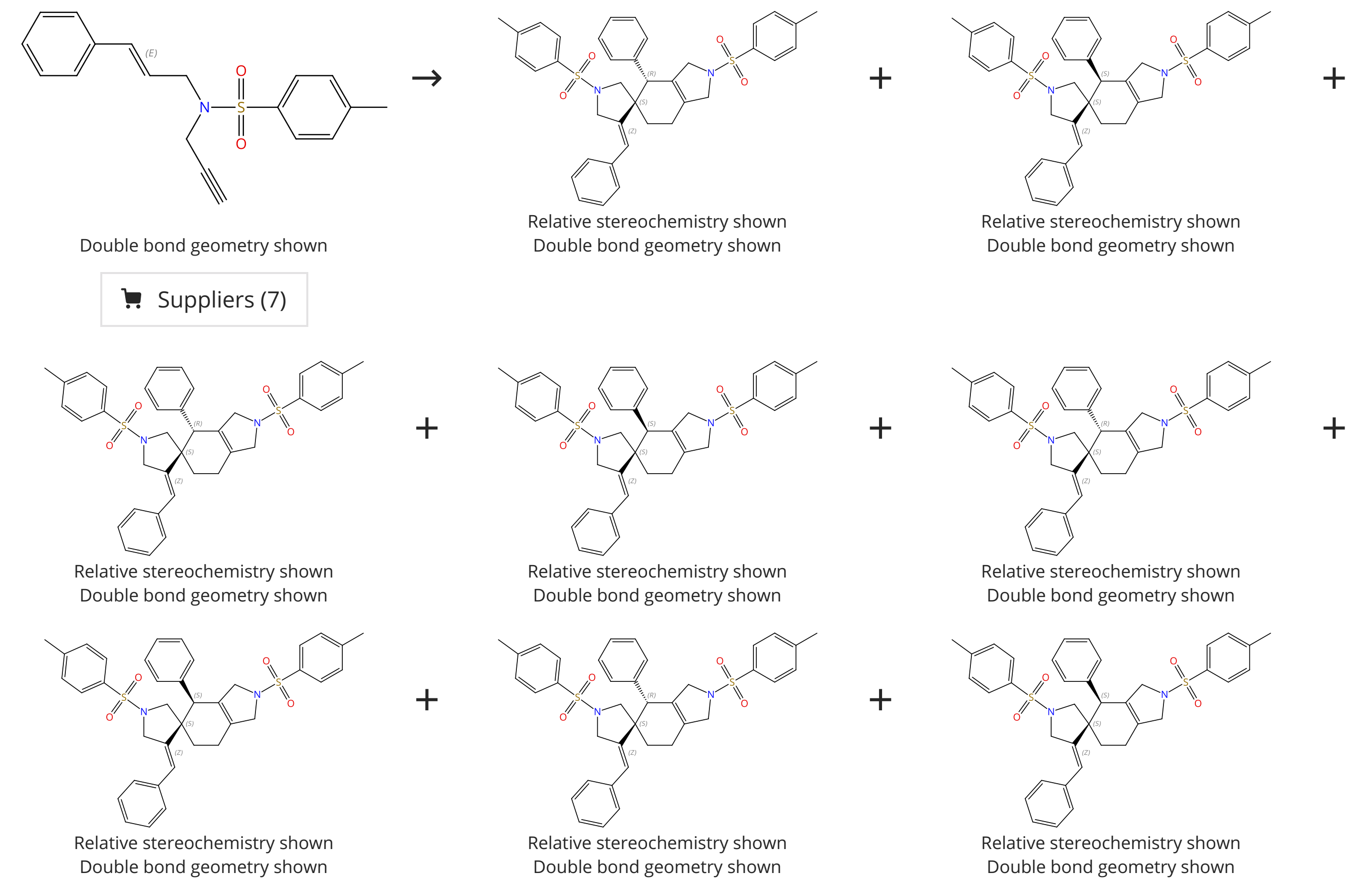
General method of obtaining deuterium-labeled heterocyclic compounds using neutral D_2O with heterogeneous Pd/C

By: Esaki, Hiroyoshi; et al

Tetrahedron (2006), 62(47), 10954-10961.

Scheme 460 (1 Reaction)

Steps: **1**



31-614-CAS-31446601

Steps: **1**

1.1 **Reagents:** Butyllithium, Water-d_2

1.2 **Catalysts:** Benzoic acid-*d*, Palladium(1+), tris[μ-(methanethiolato)]tris(triphenylphosphine)tri-, *triangulo*, stereoisomer, (*OC*-6-11)-hexafluoroantimonate(1-) (1:1)
Solvents: Toluene; 16 h, 100 °C

Inter/Intramolecular Cascade of 1,6-Enynes Catalyzed by All-Metal Aromatic Tripalladium Complexes and Carboxylic Acids

By: Serafino, Andrea; et al

Journal of Organic Chemistry (2021), 86(21), 15433-15452.