Paths of analysis*

C50

Synthia

March 3, 2022

1 Analysis parameters

Analysis type: Automatic Retrosynthesis

Rules: none selected

Filters: FGI, FGI with protections

Max. paths returned: 5

Max. iterations: 300

Commercial:

1. Max. molecular weight - 1000 g/mol
2. Max. price - 1000 $/g

Published:

1. Max. molecular weight - 1000 g/mol
2. Popularity - 10

My Stockroom:

1. Max. molecular weight - 1000 g/mol

Reaction scoring formula: TUNNEL_COEF*FGI_COEF*STEP*20+1000000*(CONFLICT+NON_SELECTIVITY+FILTERS+PROTECT)

Chemical scoring formula: SMALLER^ 3,SMALLER^ 1.5

Min. search width: 400

Max. reactions per product: 60

Strategies: none selected

*The results stated herein were generated using the proprietary platform owned and maintained by Grzybowski Scientific Inventions, Inc., a subsidiary of Merck KGaA, Darmstadt Germany. The results are provided on an as is basis, and shall be used solely in connection with the rights afforded in the license agreement and for no other purpose.

FGI Coeff: 0

JSON Parameters: {}

2 Paths

1 path found. *Paths are sorted by score. Reactions are sorted in appearance order for each path.*

2.1 Path 1

Score: 163.87

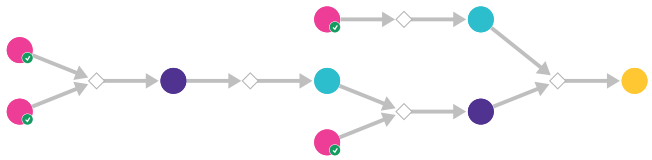
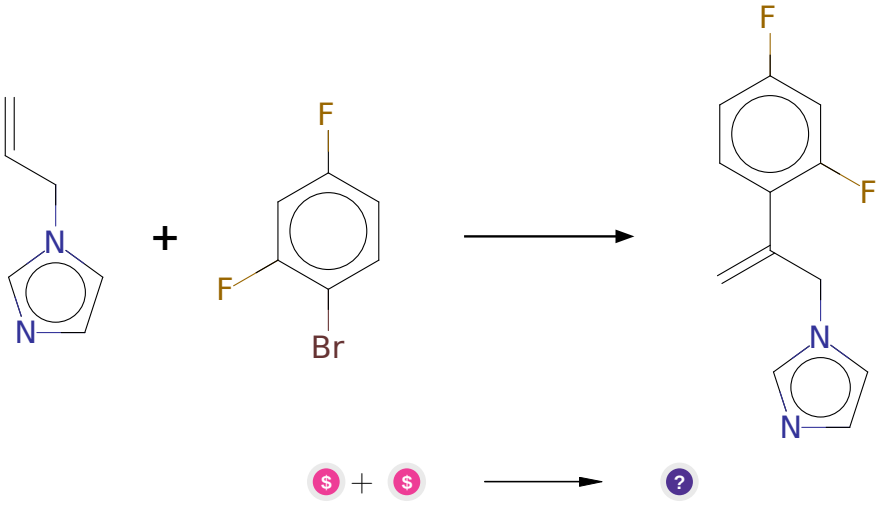


Figure 1: Outline of path 1

2.1.1 Heck Reaction



Substrates:

1. 1-(prop-2-en-1-yl)-1H-imidazole - *available at Sigma-Aldrich*
2. 1-Bromo-2,4-difluorobenzene - *available at Sigma-Aldrich*

Products:

1. C=C(Cn1ccnc1)c1ccc(F)cc1F

Typical conditions: Pd (cat). Ligand e.g. TXPTS. Base. Temp

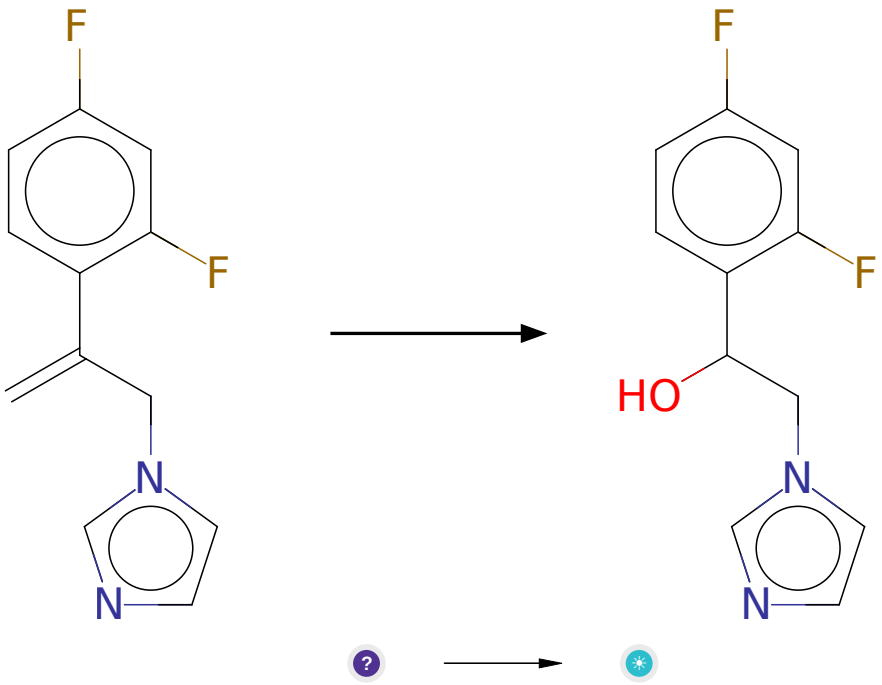
Protections: none

Yield: moderate

Reference: *10.1039/C3CC45911J* or *10.1021/ar00049a001* or *10.1002/anie.201201806* or *10.1002/9780470716076*

Retrosynthesis ID: 9266

2.1.2 Ozonolysis followed by reduction



Substrates:

1. C=C(Cn1ccnc1)c1ccc(F)cc1F

Products:

1. 1-(2,4-difluorophenyl)-2-(1h-imidazol-1-yl)ethan-1-ol

Typical conditions: O3.MeOH.CH2Cl2.NaBH4.low temperature

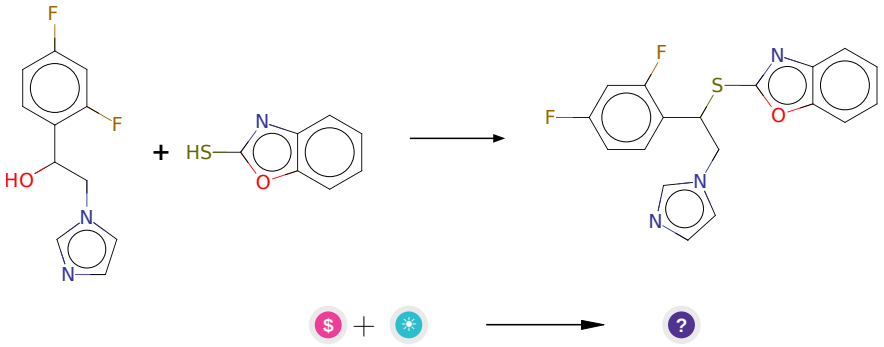
Protections: none

Yield: good

Reference: *10.1021/ja043506g*(SI,page S2) and *10.1016/j.jfluchem.2011.05.031* and *10.1021/ja304872j* and *10.1021/jo026004z*

Retrosynthesis ID: 28553

2.1.3 Mitsunobu reaction



Substrates:

1. 2-Benzoxazolethiol - *available at Sigma-Aldrich*
2. 1-(2,4-difluorophenyl)-2-(1h-imidazol-1-yl)ethan-1-ol

Products:

1. Fc1ccc(C(Cn2ccnc2)Sc2nc3ccccc3o2)c(F)c1

Typical conditions: DEAD.or.DCAD.or.DIAD.PPh3

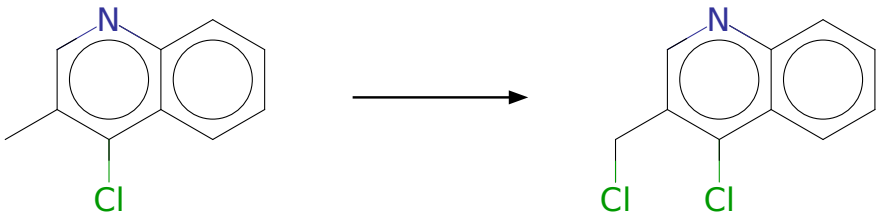
Protections: none

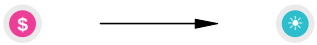
Yield: good

Reference: *10.1021/jo0345751* AND *10.1021/ol0618757*

Retrosynthesis ID: 7564

2.1.4 Chlorination of benzylic position





Substrates:

1. 4-Chloro-3-methylquinoline - *available at Sigma-Aldrich*

Products:

1. 4-chloro-3-chloromethyl-quinoline

Typical conditions: SOCl2.AIBN or NCS/SiCl4 or [BnNMe3]ICl4.AIBN

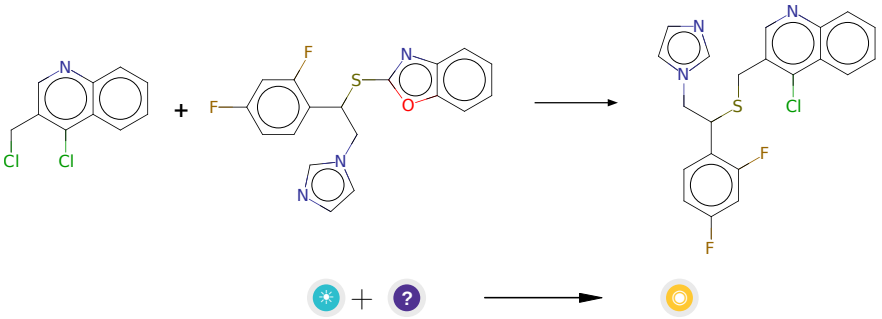
Protections: none

Yield: good

Reference: *10.1039/B803741H* and *10.1016/S0040-4039(00)82191-7* and *10.1016/j.tetlet.2011.05.135*

Retrosynthesis ID: 10001786

2.1.5 Synthesis of unsymmetrical sulfides from 2-sulfidobenzoxazoles



Substrates:

1. 4-chloro-3-chloromethyl-quinoline
2. Fc1ccc(C(Cn2ccnc2)Sc2nc3ccccc3o2)c(F)c1

Products:

1. Fc1ccc(C(Cn2ccnc2)SCc2cnc3ccccc3c2Cl)c(F)c1

Typical conditions: NaOH.EtOH.65-70C

Protections: none

Yield: moderate

Reference: DOI: *10.1021/jo00169a058*

Retrosynthesis ID: 294977