Paths of analysis*

Analysis 9

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

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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: 81.78

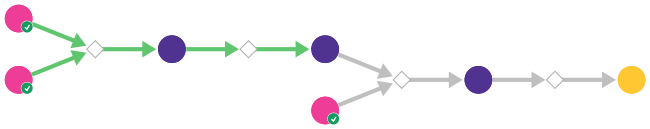
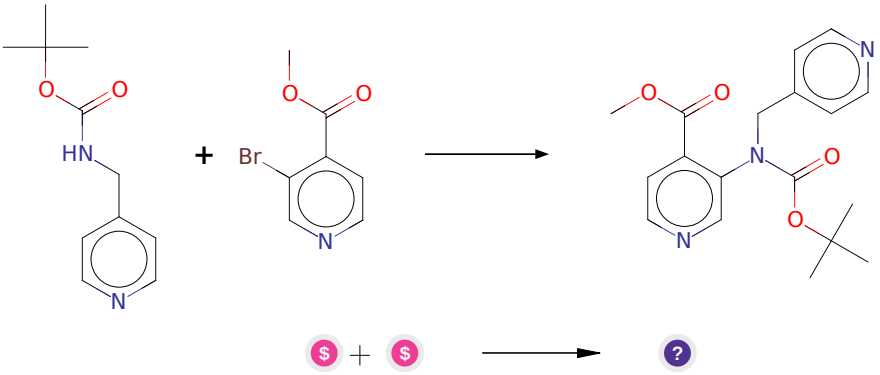


Figure 1: Outline of path 1

2.1.1 Arylation of carbamates with aryl bromides



Substrates:

1. N-Boc-4-aminomethylpyridine - *available at Sigma-Aldrich*
2. Methyl 3-bromoisonicotinate - *available at Sigma-Aldrich*

Products:

1. COC(=O)c1ccncc1N(Cc1ccncc1)C(=O)OC(C)(C)C

Typical conditions: Base.[Pd].catalyst.dioxane.heat or CuI.diamine.base.DMF.heat

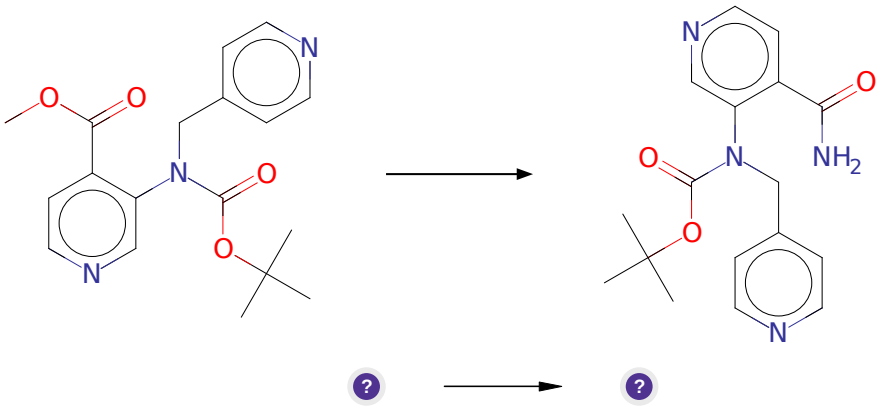
Protections: none

Yield: good

Reference: *10.1016/j.tetlet.2014.03.016* and *10.1021/ja012610k* and *10.1021/ol016208m* and *10.1021/ol502322c*

Retrosynthesis ID: 10012542

2.1.2 Aminolysis of esters to primary amides



Substrates:

1. COC(=O)c1ccncc1N(Cc1ccncc1)C(=O)OC(C)(C)C

Products:

1. CC(C)(C)OC(=O)N(Cc1ccncc1)c1cnccc1C(N)=O

Typical conditions: NH3.MeOH.50C or NH3.H2O or NH3.THF.H2O

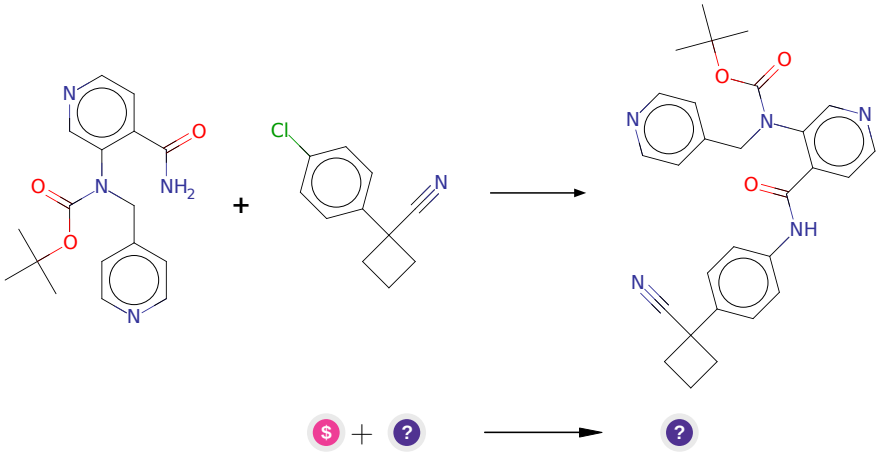
Protections: none

Yield: moderate

Reference: *10.1021/jacs.6b02276* and WO2016114668 p.36 and *10.1016/j.bmc.2008.10.057* and *10.1016/j.bmc.2014.01.030*

Retrosynthesis ID: 31015629

2.1.3 Arylation of amides with aryl chlorides



Substrates:

1. 1-(4-Chlorophenyl)-1-cyclobutanecarbonitrile - *available at Sigma-Aldrich*
2. CC(C)(C)OC(=O)N(Cc1ccncc1)c1cnccc1C(N)=O

Products:

1. CC(C)(C)OC(=O)N(Cc1ccncc1)c1cnccc1C(=O)Nc1ccc(C2(C#N)CCC2)cc1

Typical conditions: Base.[Pd].catalyst.dioxane.heat or CuI.diamine.base.DMF.heat

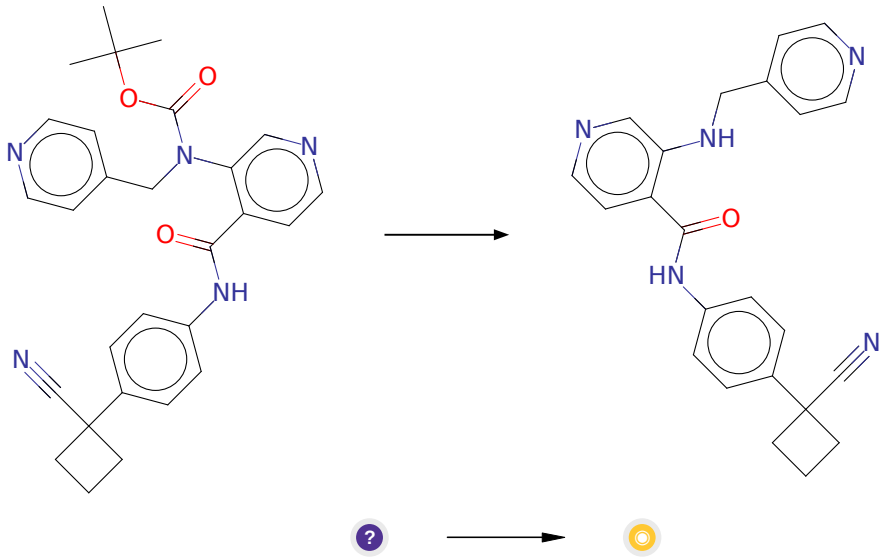
Protections: none

Yield: good

Reference: *10.1021/ja0717414* and *10.1016/j.tet.2009.04.096* and *10.1002/chem.201302453* and *10.1080/00397911.2016.1195844*

Retrosynthesis ID: 10012552

2.1.4 Boc removal



Substrates:

1. CC(C)(C)OC(=O)N(Cc1ccncc1)c1cnccc1C(=O)Nc1ccc(C2(C#N)CCC2)cc1

Products:

1. N#CC1(c2ccc(NC(=O)c3ccncc3NCc3ccncc3)cc2)CCC1

Typical conditions: TFA.DCM

Protections: none

Yield: good

Reference: *10.1016/j.bmc.2015.11.006* and *10.1021/jo047752m* and *10.1016/j.tetlet.2007.09.003*

Retrosynthesis ID: 10025811