

eMolecules

SYNPLE

eXplore & Synple Virtual Space Cookbook

Overview and Reaction information

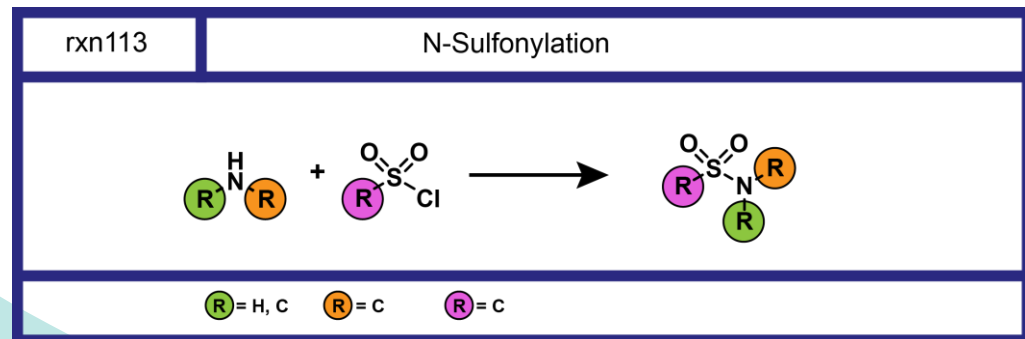
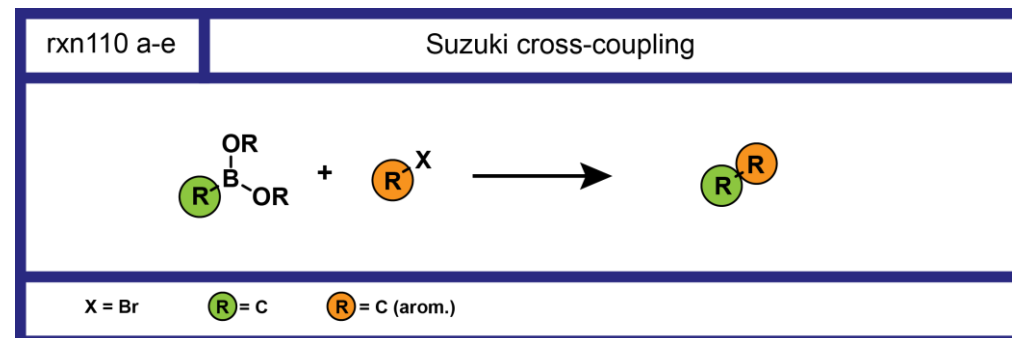
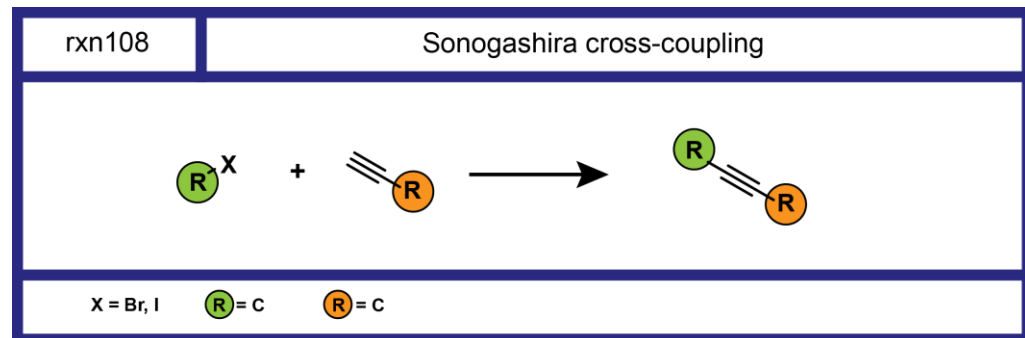
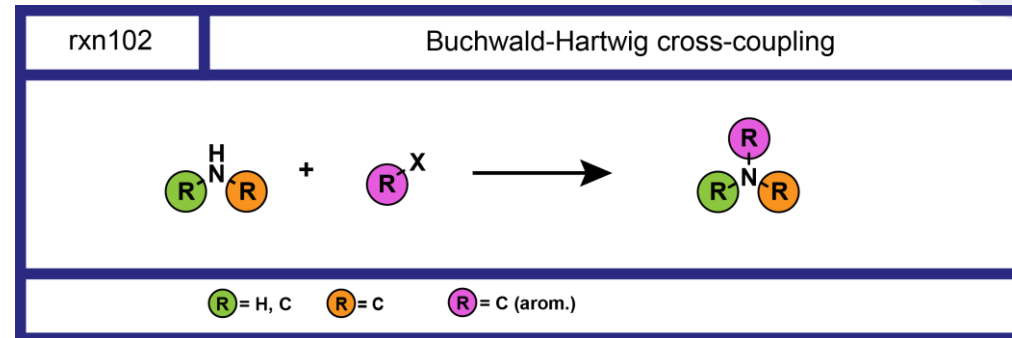
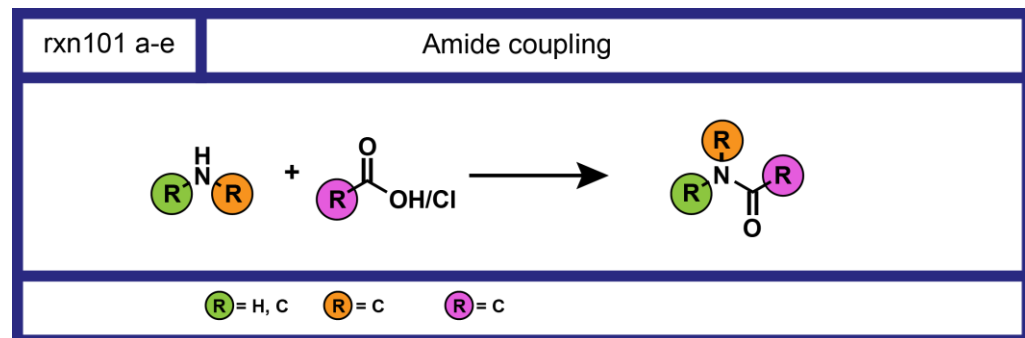
Contact:

info@synplechem.com

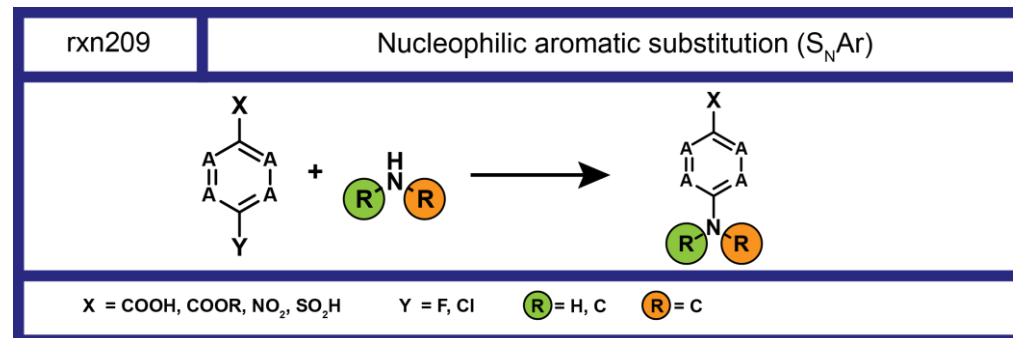
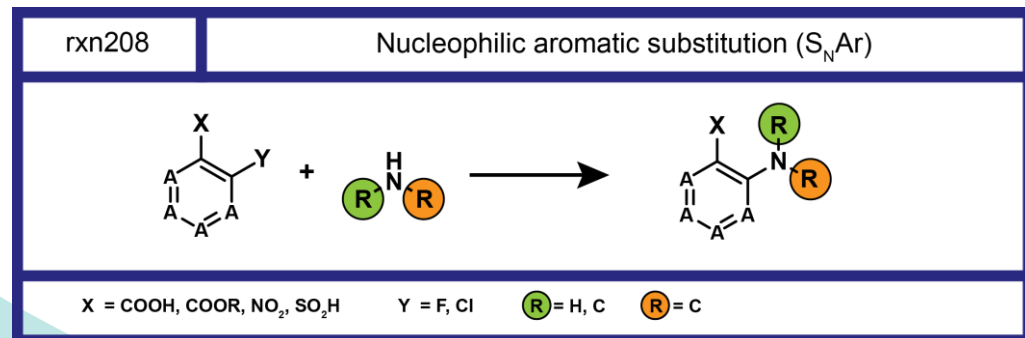
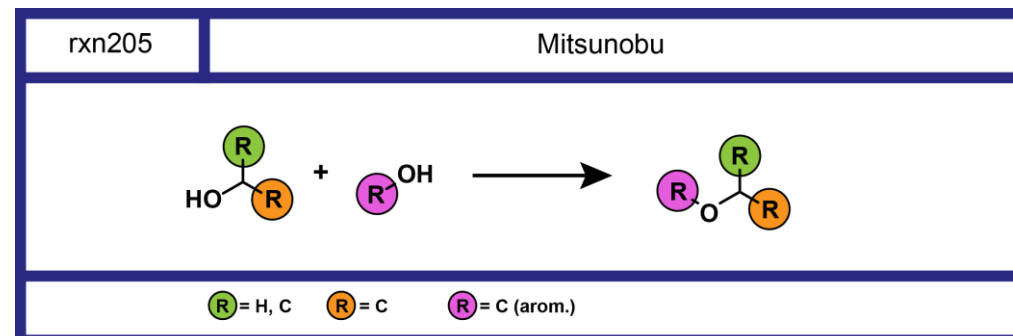
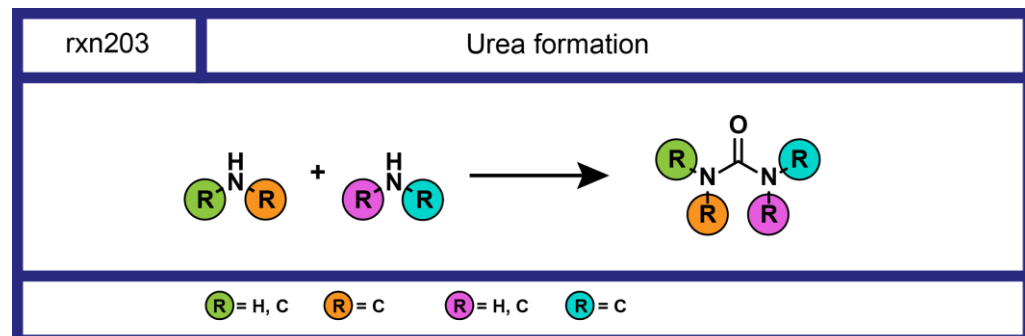
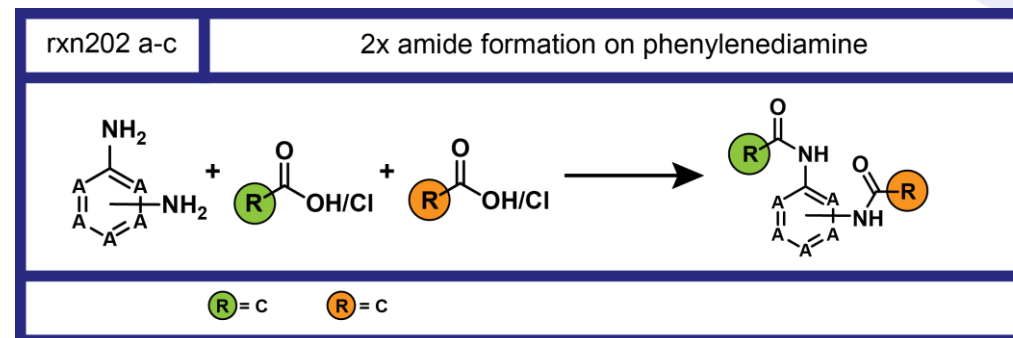
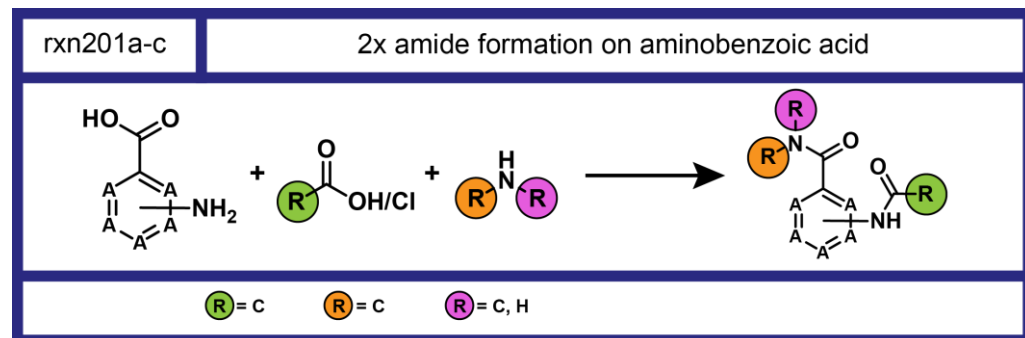
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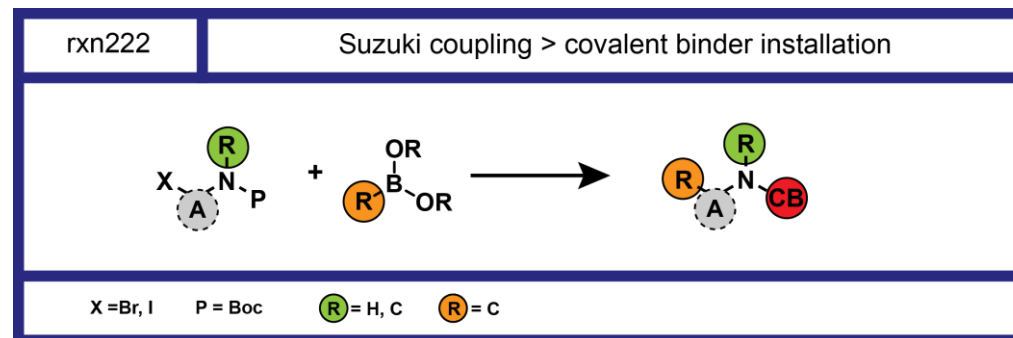
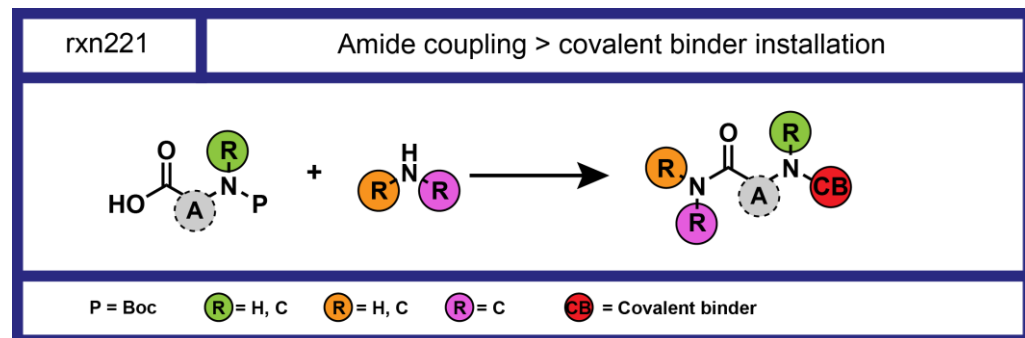
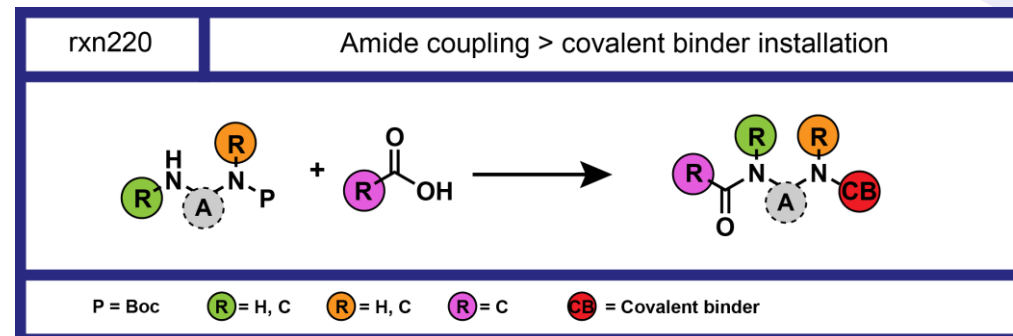
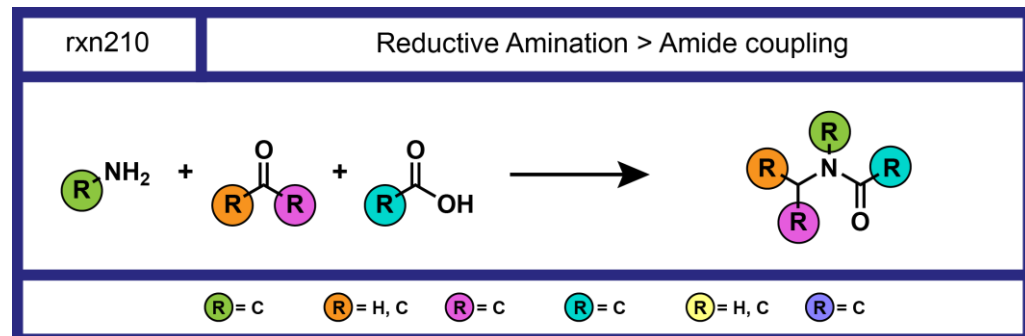
eXplore Reaction Templates | 1xx



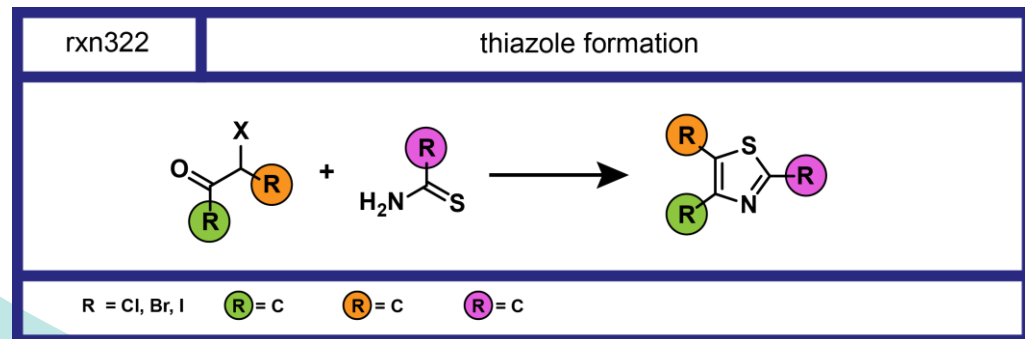
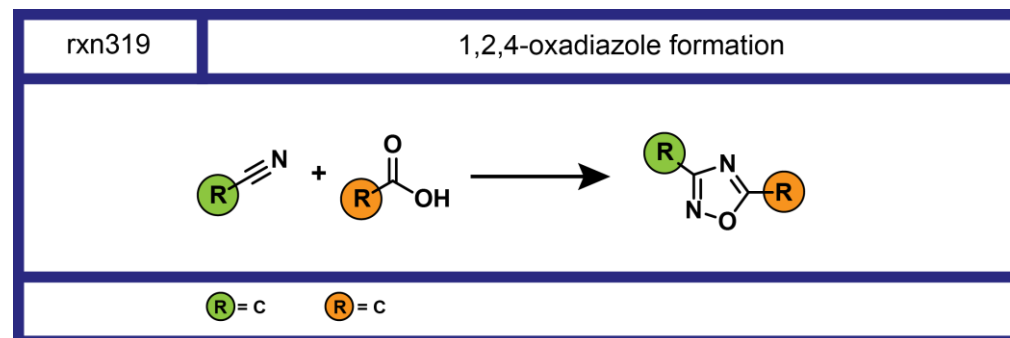
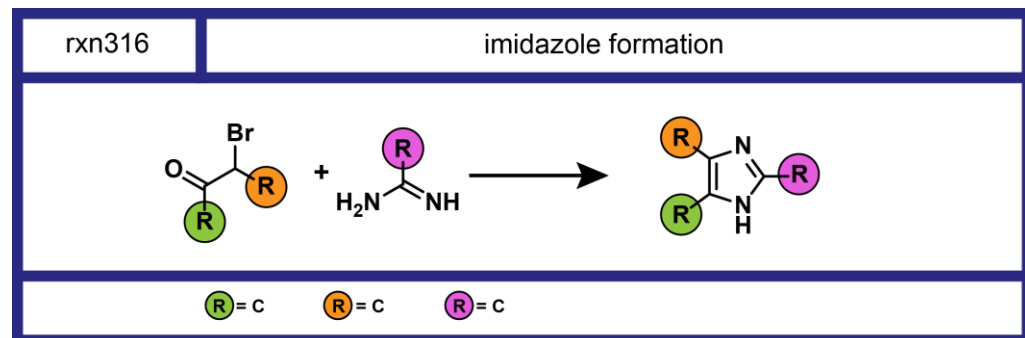
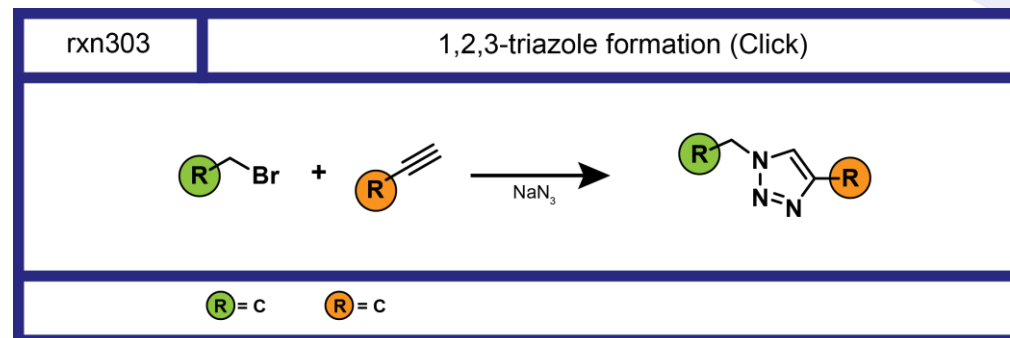
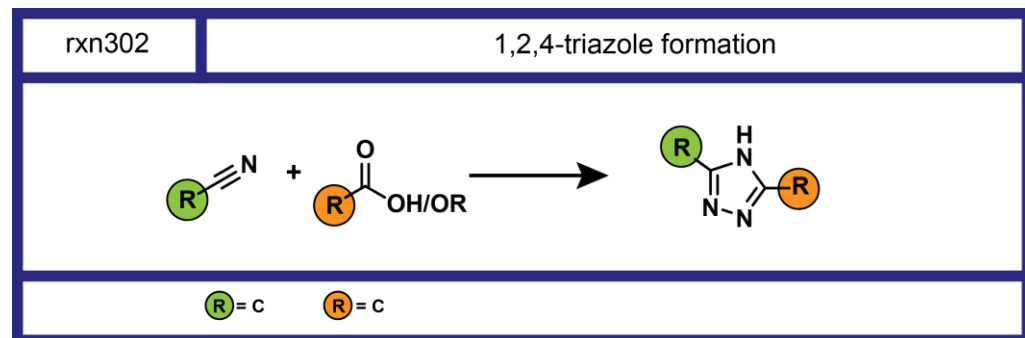
eXplore Reaction Templates | 2xx



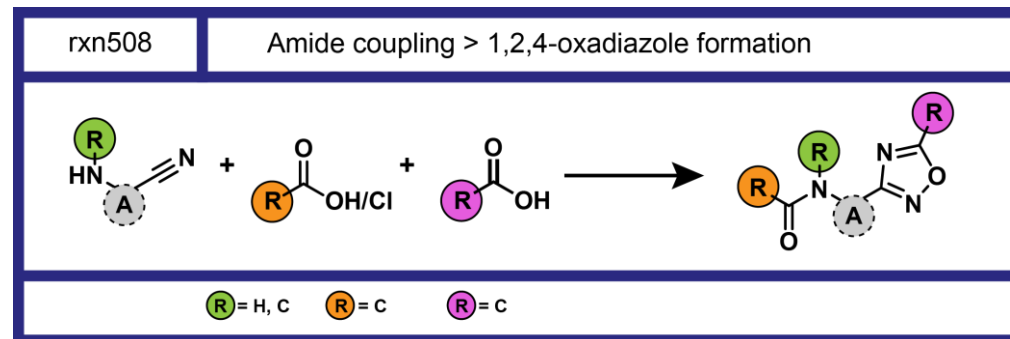
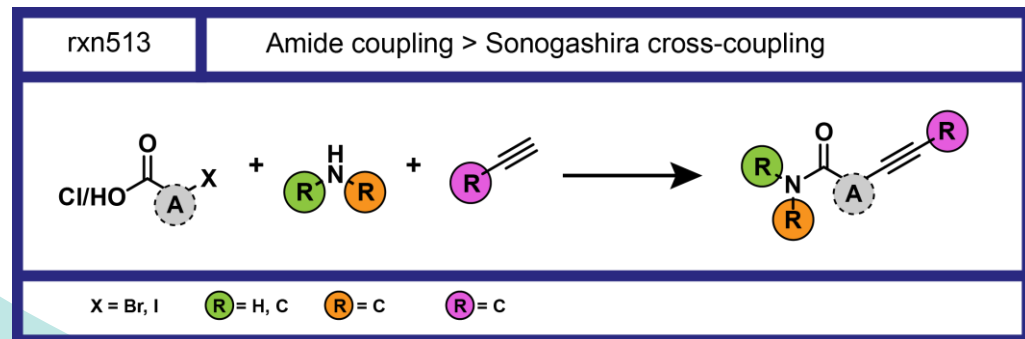
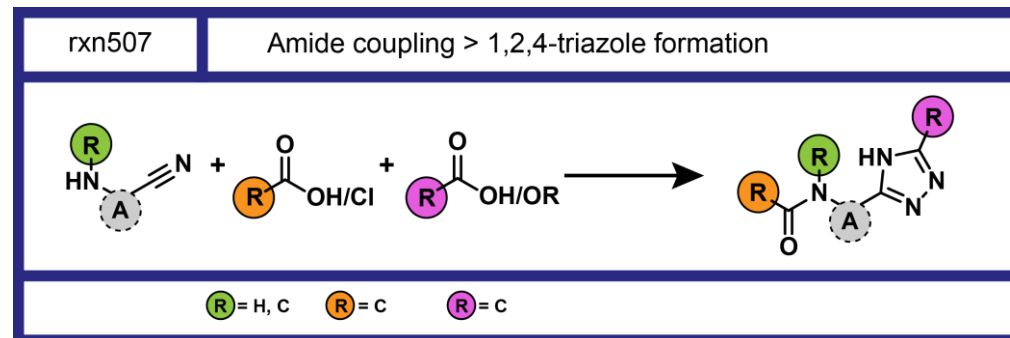
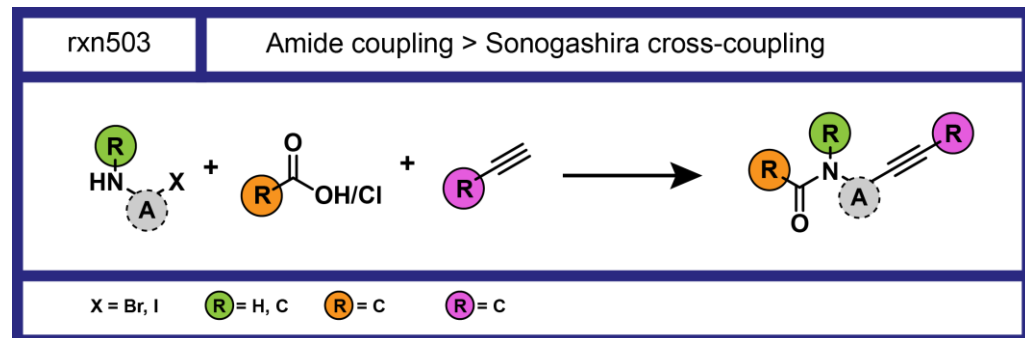
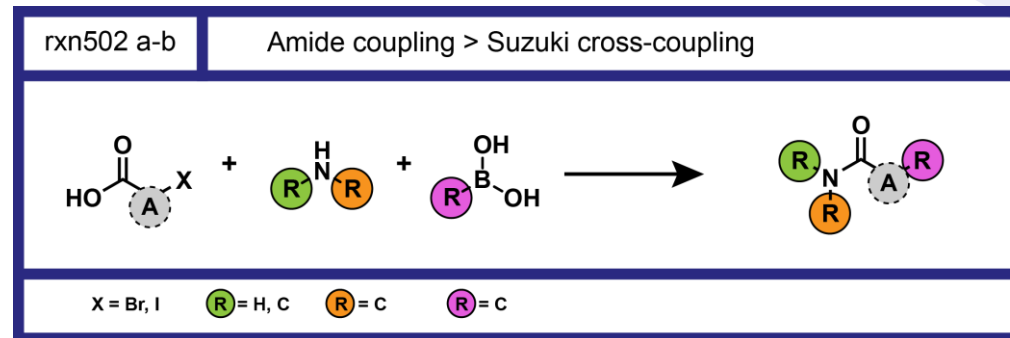
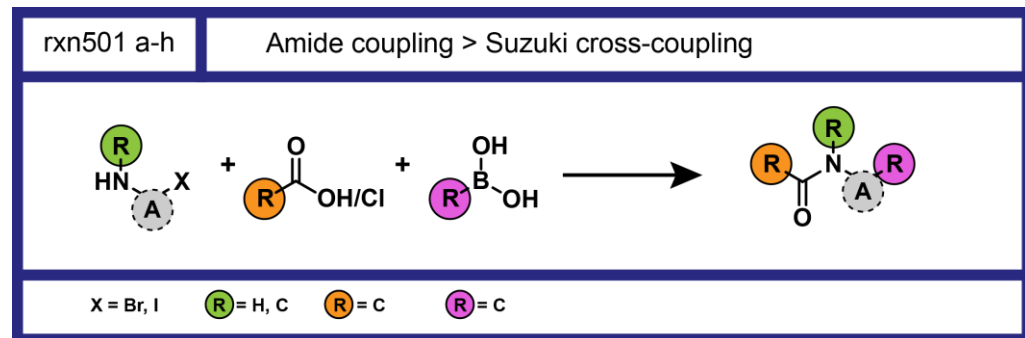
eXplore Reaction Templates | 2xx



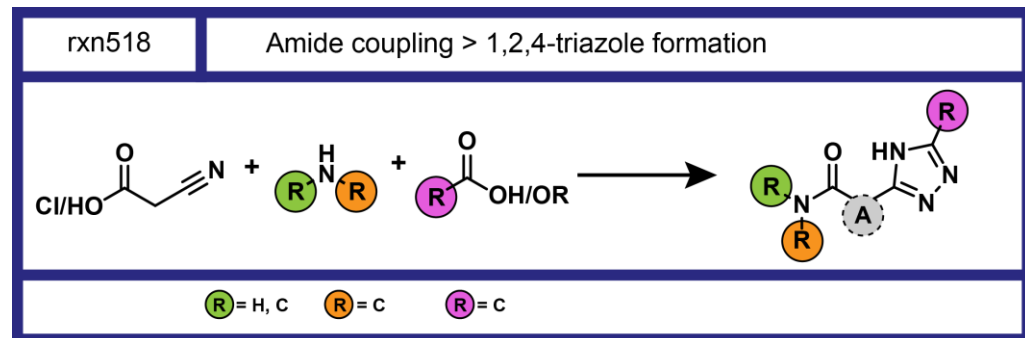
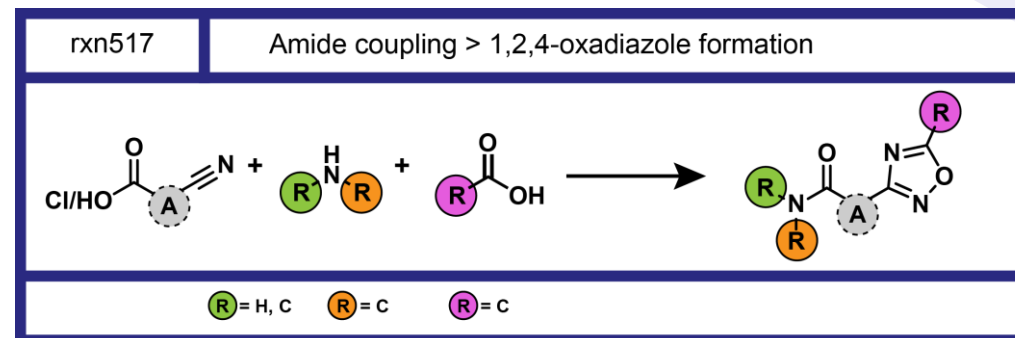
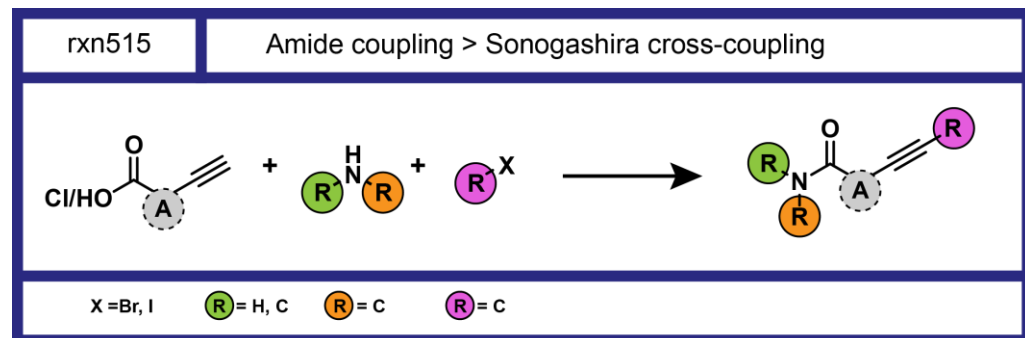
eXplore Reaction Templates | 3xx



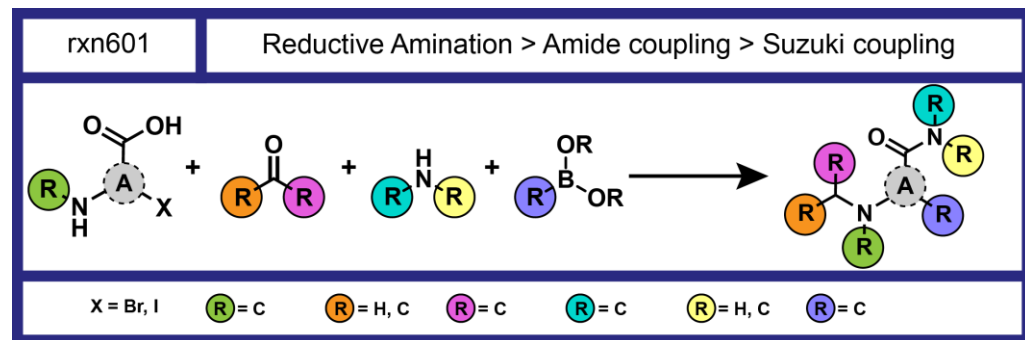
eXplore Reaction Templates | 5xx



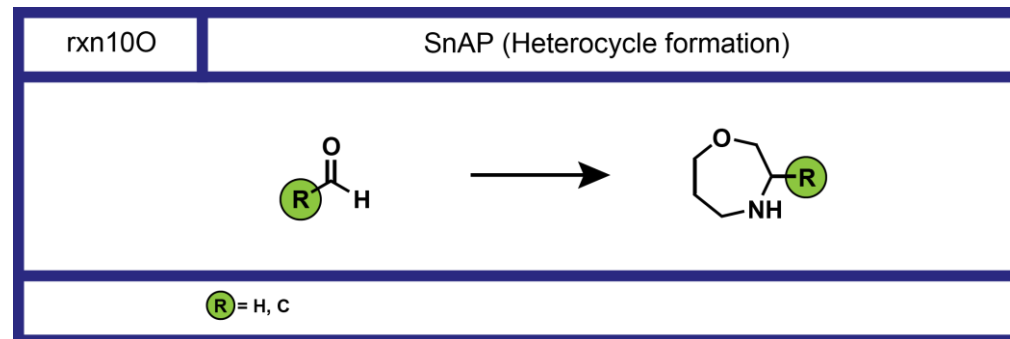
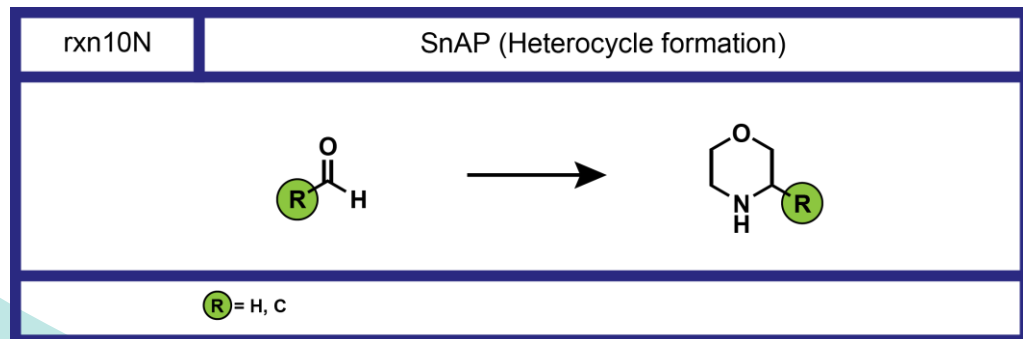
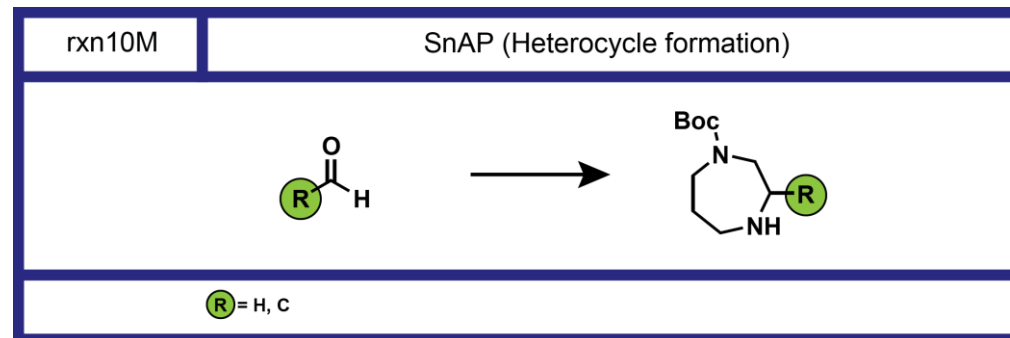
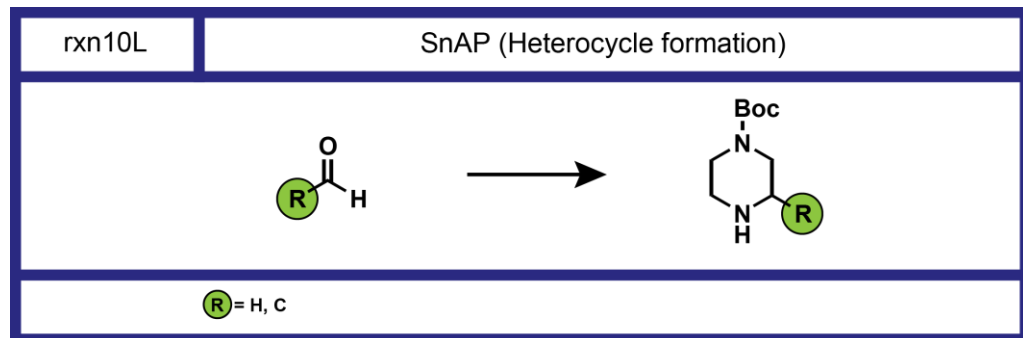
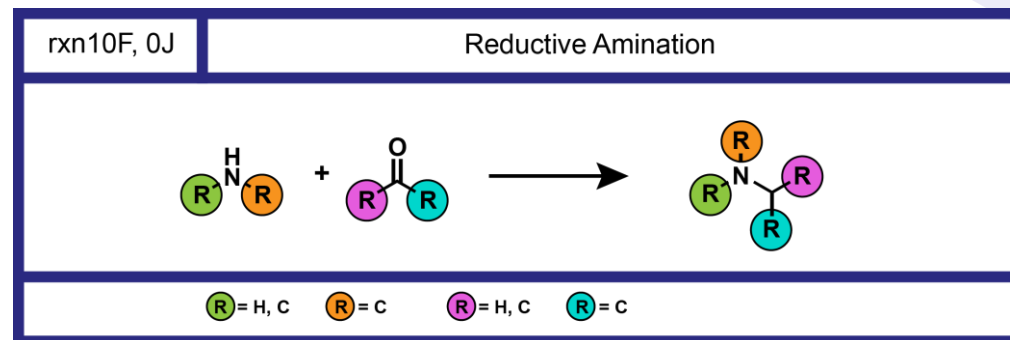
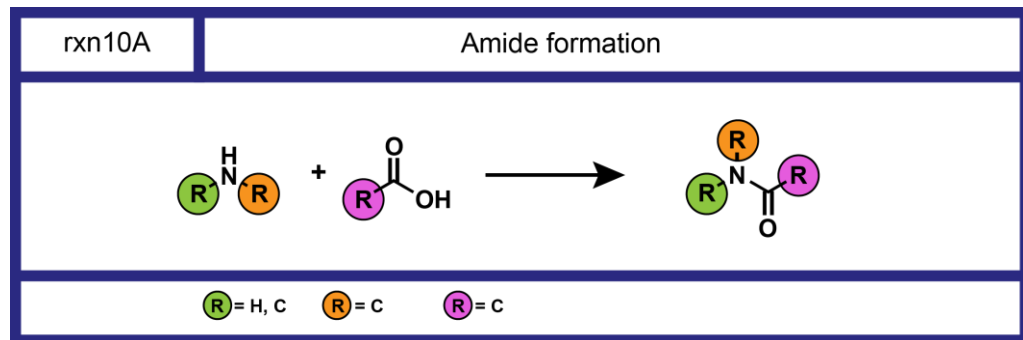
eXplore Reaction Templates | 5xx



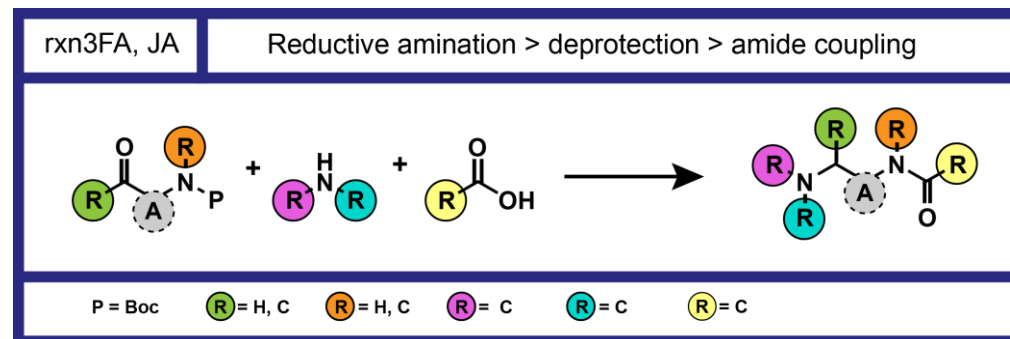
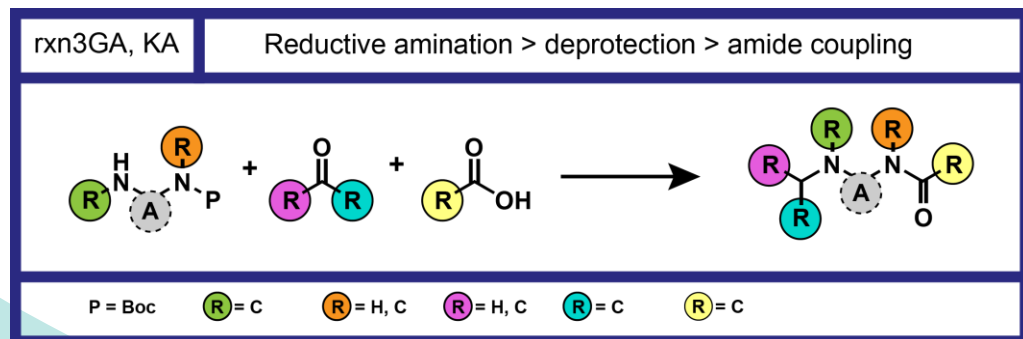
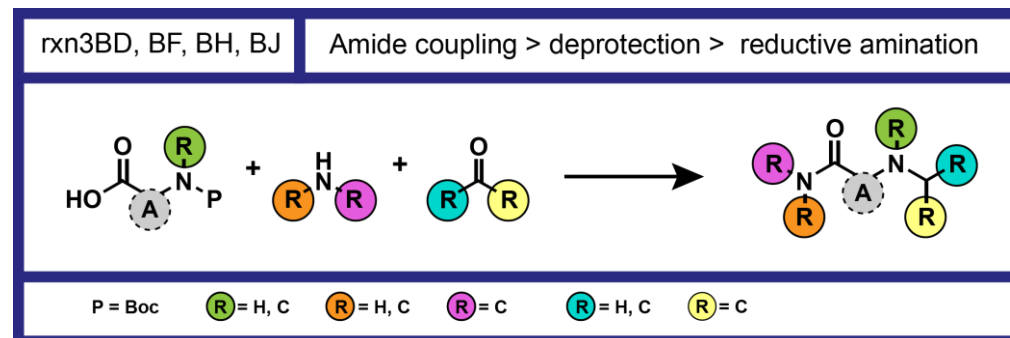
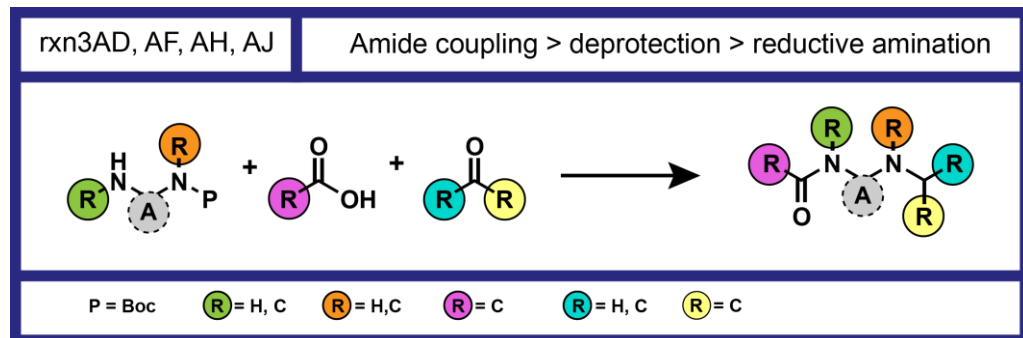
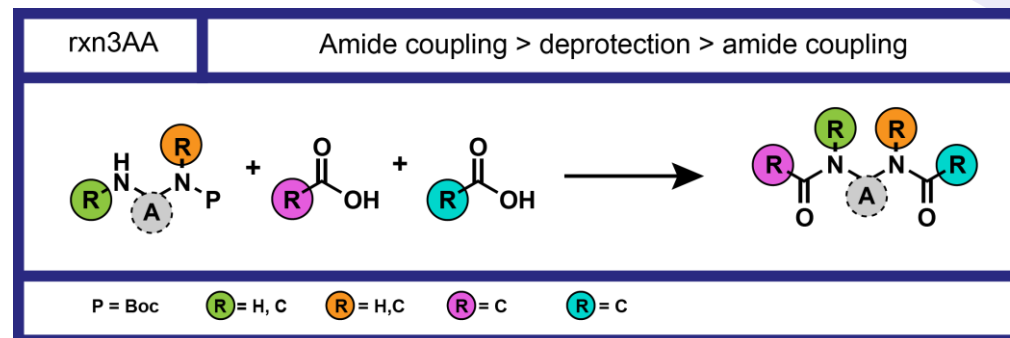
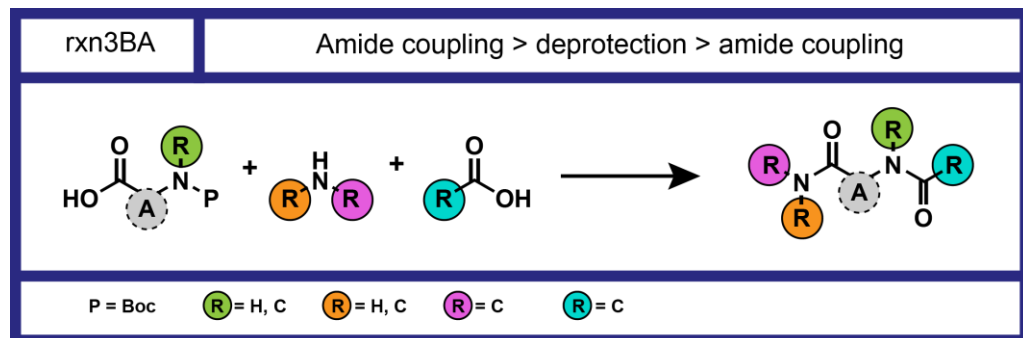
eXplore Reaction Templates | 6xx



Synple Reaction Templates | 1-step



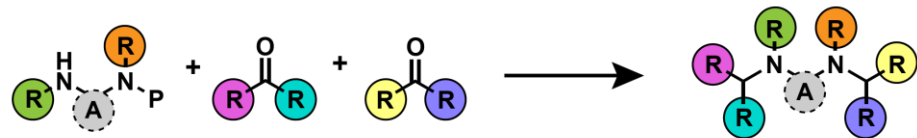
Synple Reaction Templates | 3-step



Synple Reaction Templates | 3-step

rxn3GD, GF, GH, GJ,
KD, KF, KH, KJ

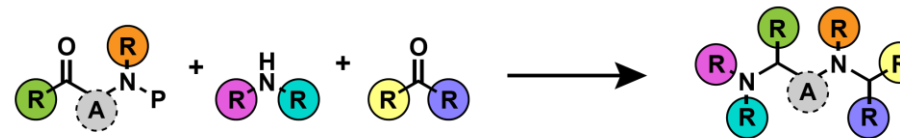
Reductive amination > deprotection > reductive amination



P = Boc R = C R = H, C R = H, C R = C R = H, C R = C

rxn3FD, FF, FH, FJ,
JD, JF, JH, JJ

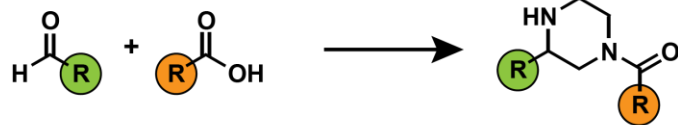
Reductive amination > deprotection > reductive amination



P = Boc R = H, C R = H, C R = C R = C R = H, C R = C

rxn3LA

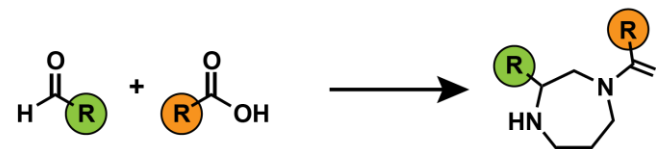
SnAP (Heterocycle formation) > deprotection > amide formation



P = Boc R = C R = C

rxn3MA

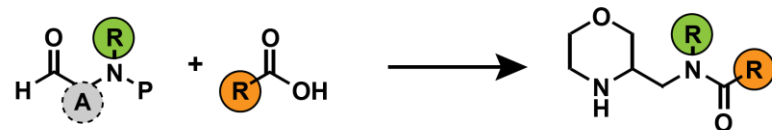
SnAP (Heterocycle formation) > deprotection > amide formation



P = Boc R = C R = C

rxn3NA

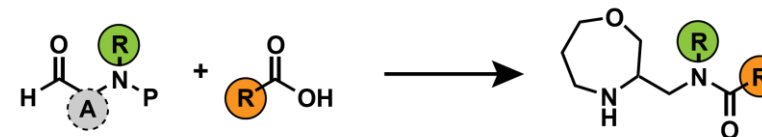
SnAP (Heterocycle formation) > deprotection > amide formation



P = Boc R = H, C R = C

rxn3OA

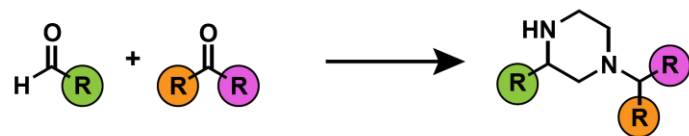
SnAP (Heterocycle formation) > deprotection > amide formation



P = Boc R = H, C R = C

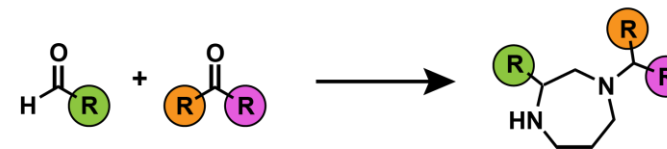
Synple Reaction Templates | 3-step

rxn3LF, LJ SnAP (Heterocycle formation) > deprotection > reductive amination



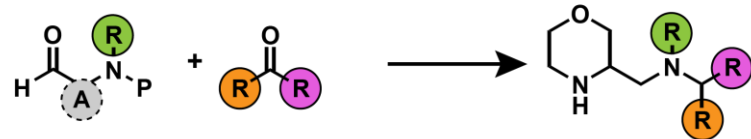
P = Boc R = C R' = H, C R'' = C

rxn3MF, MJ SnAP (Heterocycle formation) > deprotection > reductive amination



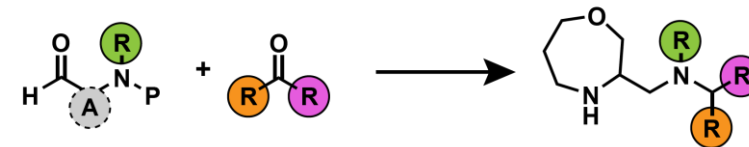
P = Boc R = C R' = H, C R'' = C

rxn3ND, NF, NH, NJ SnAP (Heterocycle form.) > deprotection > red. amination



P = Boc R = H, C R' = H, C R'' = C

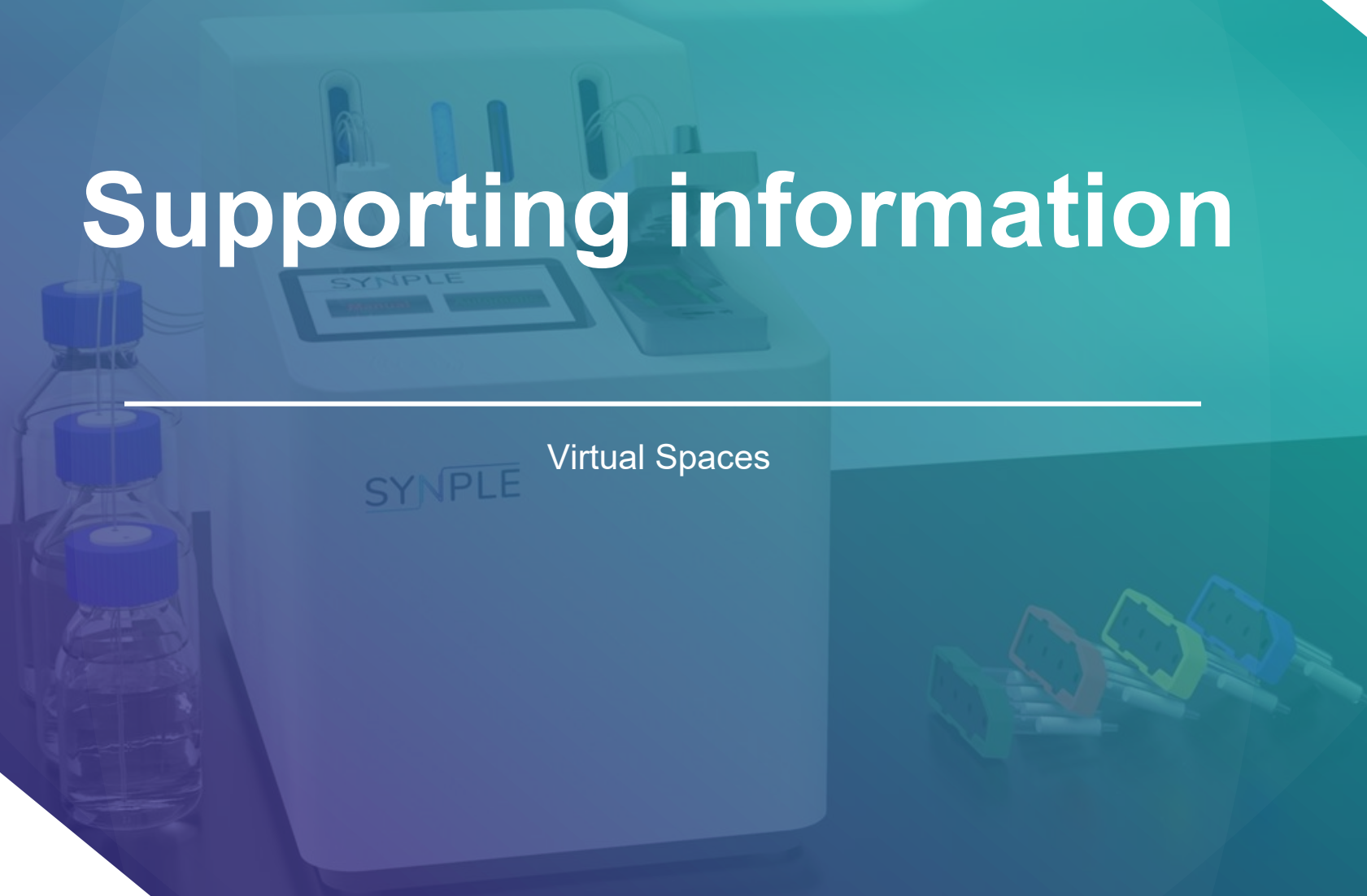
rxn3OD, OF, OH, OJ SnAP (Heterocycle form.) > deprotection > red. amination



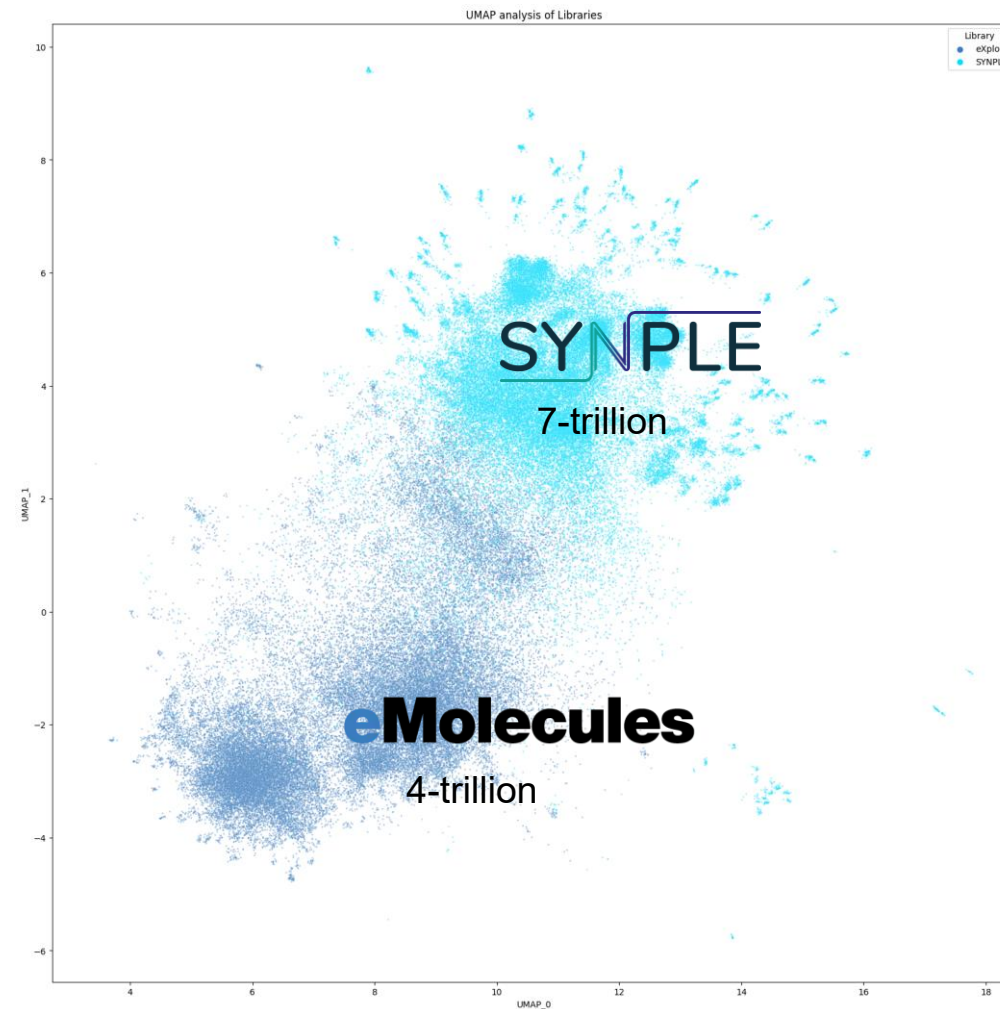
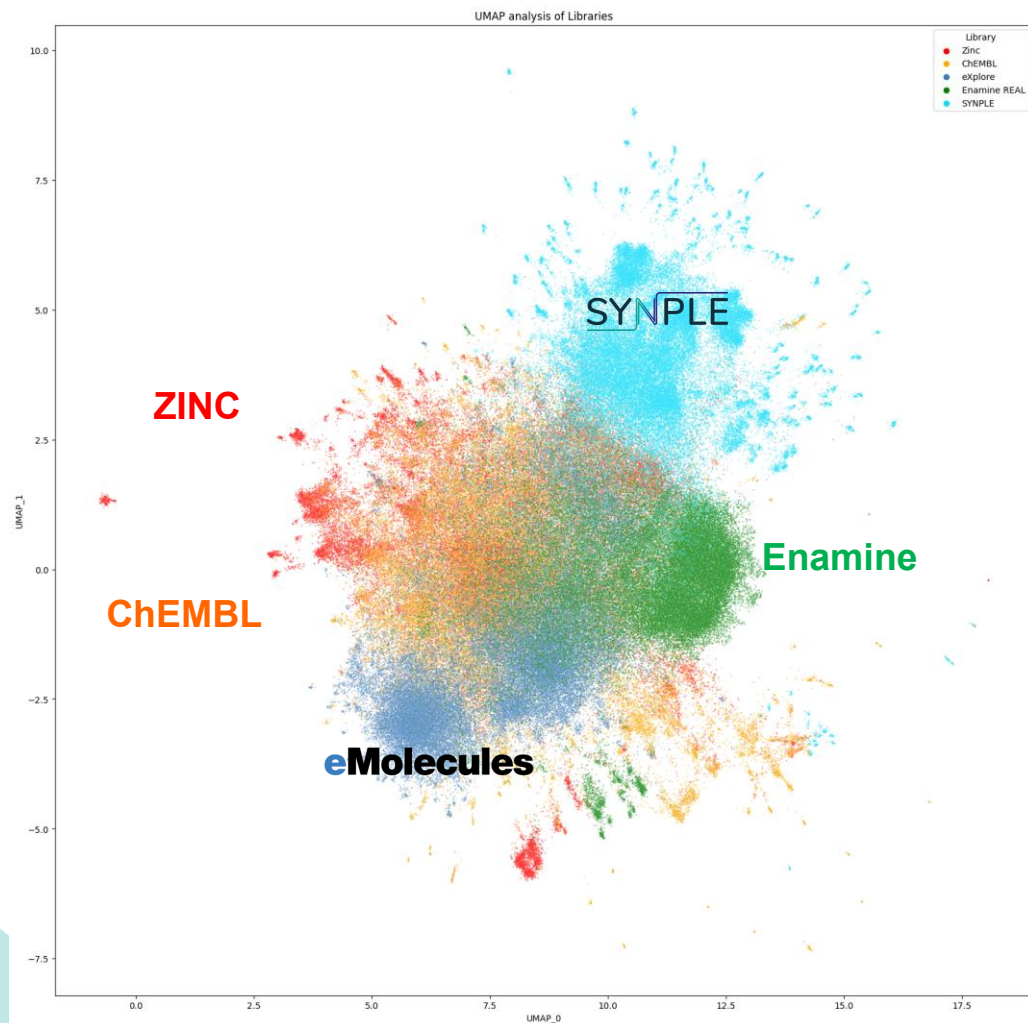
P = Boc R = H, C R' = H, C R'' = C

Supporting information

Virtual Spaces



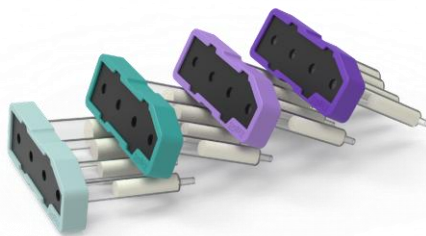
eXplore + Synple = Biggest and most diverse commercially available chemical space



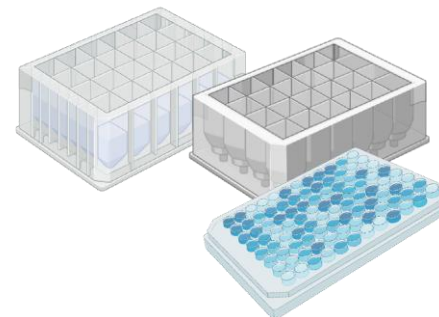
Synthesis capabilities | in-house on-demand synthesis



Synple 2
(with developed methods)



Cartridges
(filled with reagents)



Synple 96 well kits
(filled with reagents)



Liquid Handler
(with developed methods)

SYNPLE

Affordable small automation platform

- 1 Reaction at a time
 - Scale up to 100 mg
 - Fully automated
 - 20 instruments in house
- 300 synthetic steps per week

SYNPLE

High throughput easy to use automation

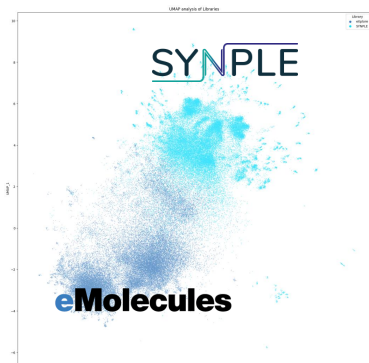
- 96+ Reactions at a time
 - Scale up to 10 mg
 - Fully automated
 - One platform operating in house
- 1'300 synthetic steps per week

Opentrons

Purification equipment: Automated HPLC, Flash column instruments

Analytical equipment: LCMS | NMR, High-Res. Mass (partner facility)

eMolecules Synple | Value Proposition



1

Synple / eXplore virtual library

- Standard virtual spaces
= free of charge
- Bespoke, proprietary virtual library creation
= for a fee

eMolecules

SYNPLE

2

Virtual Screening

- Partner platform:
 - BioSolveIT
 - OpenEye
 - Alipheron
 - Fujitsu
- In-house:
 - Enumerated samples
 - BBs and SMIRKS

Customer / Partner

3

Screening Hits

- Request a quote:
 - Price per molecule
 - Select molecules for synthesis
 - FTE projects possible
- In-house synthesis:
 - Option to request BB lists
 - Reactions cartridges & kits available

Customer / Partner

4

Rapid Synthesis

- Synple library:
 - Automated synthesis
 - 2-4 weeks
 - Minimal project management for customer
 - 1-10 mgs
 - Larger quantities on request
 - LCMS included, additional analysis on request

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SYNPLE

5

Compound Management

- Specs & Frontier Scientific
 - Europe & US
 - Supply / Handling / reformatting
 - Storage
 - Analytical services
 -

eMolecules

FRONTIER
SCIENTIFIC

eMolecules

specs

Virtual spaces | Access options

eMolecules

SYNPLE

Enumerated samples:

- Diversity library 5B
- explore – 1-step 3B



BioSolveIT

BiosolveIT - Infinisee:

- .space file on request form synple
- Search all trillions of molecules (2D similarity search)

Alipheron



Alipheron - DataWarrior

- Search all trillions of molecules (2D similarity search)
- Free for limited amount of daily searches

OpenEye
SCIENTIFIC

OpenEye – Orion®

- Direct screening of targets on preloaded libraries (Synple and many more)

QIMERA

Fujitsu Qimera

- Full 3D-search of ultra-large trillion-sized space

HYPERLAB
by HITS

Schrödinger

Deep MedChem



Hyperlab (Hits.ai)

- Generative design constrained to synthesizable library compounds

Schrödinger

- Synple / eXplore library integrated in Schrödinger suite

CHEESE (Deepmedchem)

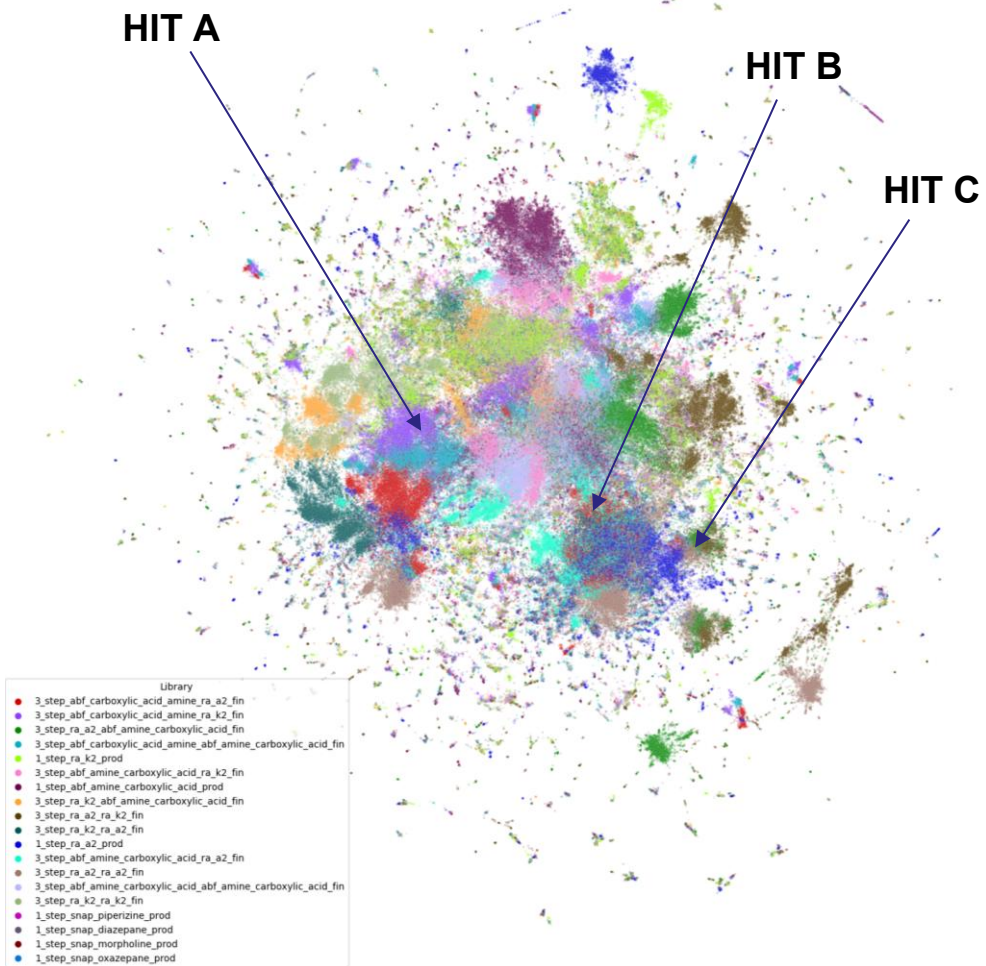
- Search 4 billion enumerated Synple compounds
- Search entire trillion sized library with CHEESE Synthon search
- Directly accessible search platform without any account

EIY (Enumerate it yourself):

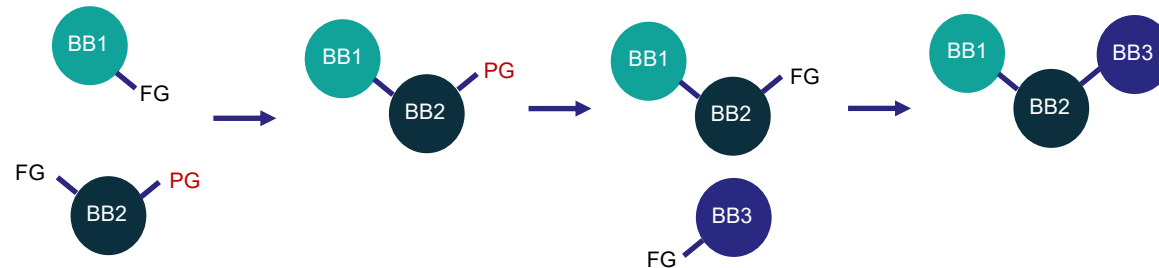
- Building block files and SMARTS from Synple
- Synthon files
- Full flexibility for your own screening platform

eMolecules

Hit Synthesis – Pricing examples



3 Step Synthesis



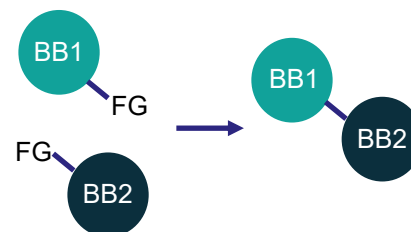
A

BB1	25 \$
BB2	23 \$
BB3	9 \$
Synthesis from	441 \$
Purification / Analysis	151 \$
Total from	649 \$

B

BB1 – incl. in synth.	-
BB2	59 \$
BB3	11 \$
Synthesis from	692 \$
Purification / Analysis	151 \$
Total from	913 \$

1 Step Synthesis

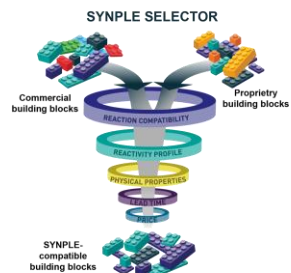


C

BB1	21 \$
BB2	6 \$
Synthesis from	73 \$
Purification / Analysis	151 \$
Total from	251 \$

- Every compound includes LCMS analysis and is shipped dry (1-10 mg) in standard vials or QR barcoded tubes.
- Optional charges for other services (1H, 13C, HSQC, HMBC, High-Res. Mass, Formatting, Aliquoting, higher purity, bigger scale).
- For compounds failing synthesis no service costs are charged, only the building blocks. In case success rate for requested set is below 85% building block are reimbursed in part

Differentiation of Synple 4.0 library & chemical space in detail



Largest on-demand chemical space

- building blocks from most global vendors.
- machine learning based on Synple machines only enumerates **synthesizable molecules**.
- **>100 trillion** library members and growing with more reactions enabled.
- Available for search at all common platforms (BiosolveIT, Deepmedchem, Schrödinger,...)
- Price guidelines and phys-chem properties available in dataset to apply filters

Unique & diverse chemical space

- by including proprietary building blocks into **custom library**.
- up to **3-step** automated reaction.
- ~49 different transformation in eXplore and 8 Synple enabled ones

Automated Synthesis

- **On-demand synthesis from Synple automation hubs in Switzerland**
- **85% success rate** because of machine learning based library
- Affordable compounds through high degree of automation and standardisation
- **2-4 weeks** delivery time: instant synthesis start after building block arrival – no project queue

