

Background

Psychrophilin E is a cyclic tripeptide extracted from the marine-derived fungus *Aspergillus Versicolor* ZLN-60 with promising antiproliferative properties. While a successful total synthesis of Psychrophilin E has previously been reported, our route would allow for scalable alternatives to natural isolation and opens a gateway for novel analogs of this compound with a potential for increased biological activity. A key step of this is the indole n-acylation of N-Acetyl-L-Tryptophan Methyl Ester with Boc Anthranilic acid, which we are optimizing via a mechanistic study of the n-acylation of C3 substituted indoles with benzoic acids.



Significance

Economical

- Minimize the cost needed to extract Psychrophilin F
- Work to identify the most economically feasible method of procuring the material

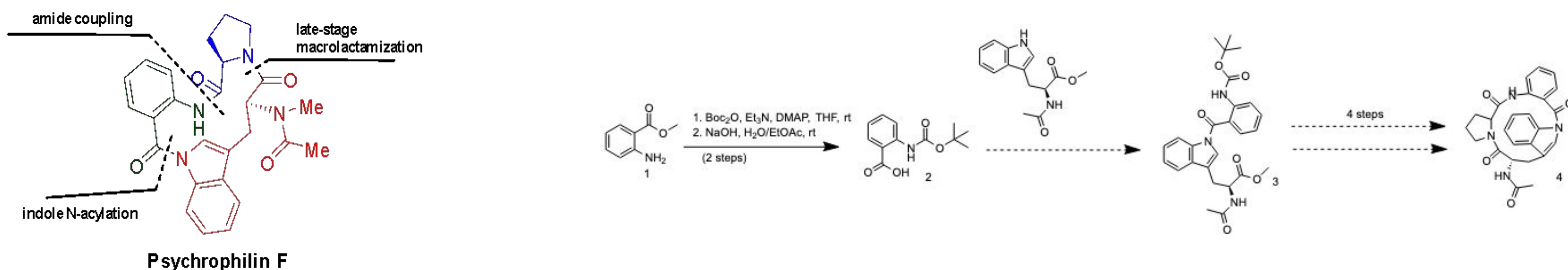
Environmental

- Reduce the resources and damage down to ecological systems to obtain it
- Synthetically creating it would only require a small sample of the natural product

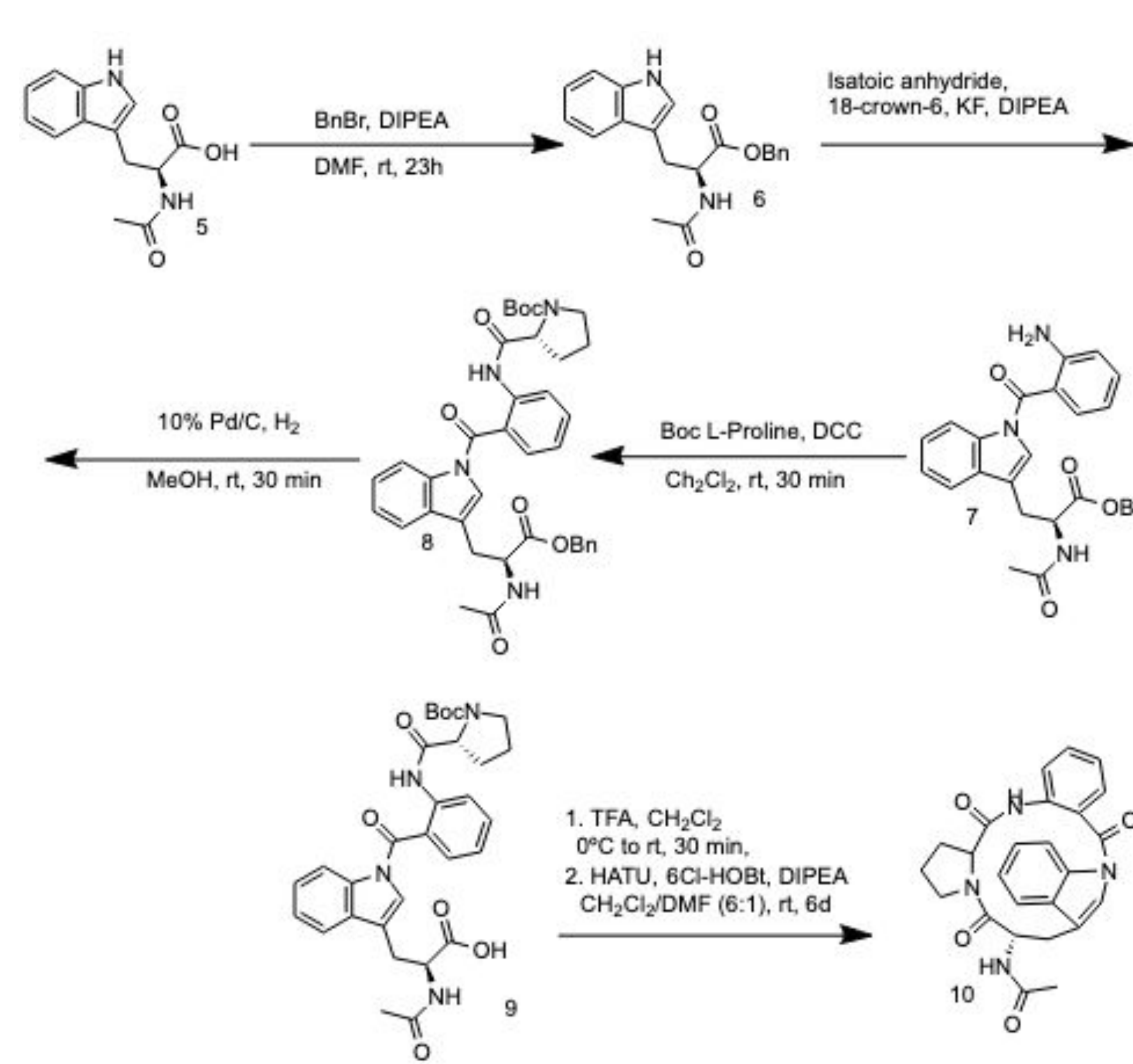
Medicinal

- Presents the possibility of a new cytotoxic compound, with possible benefits in anticancer therapeutics
- Useful in pharmaceutical environments for the treatment of disorders such as Rheumatoid Arthritis and Cancer.

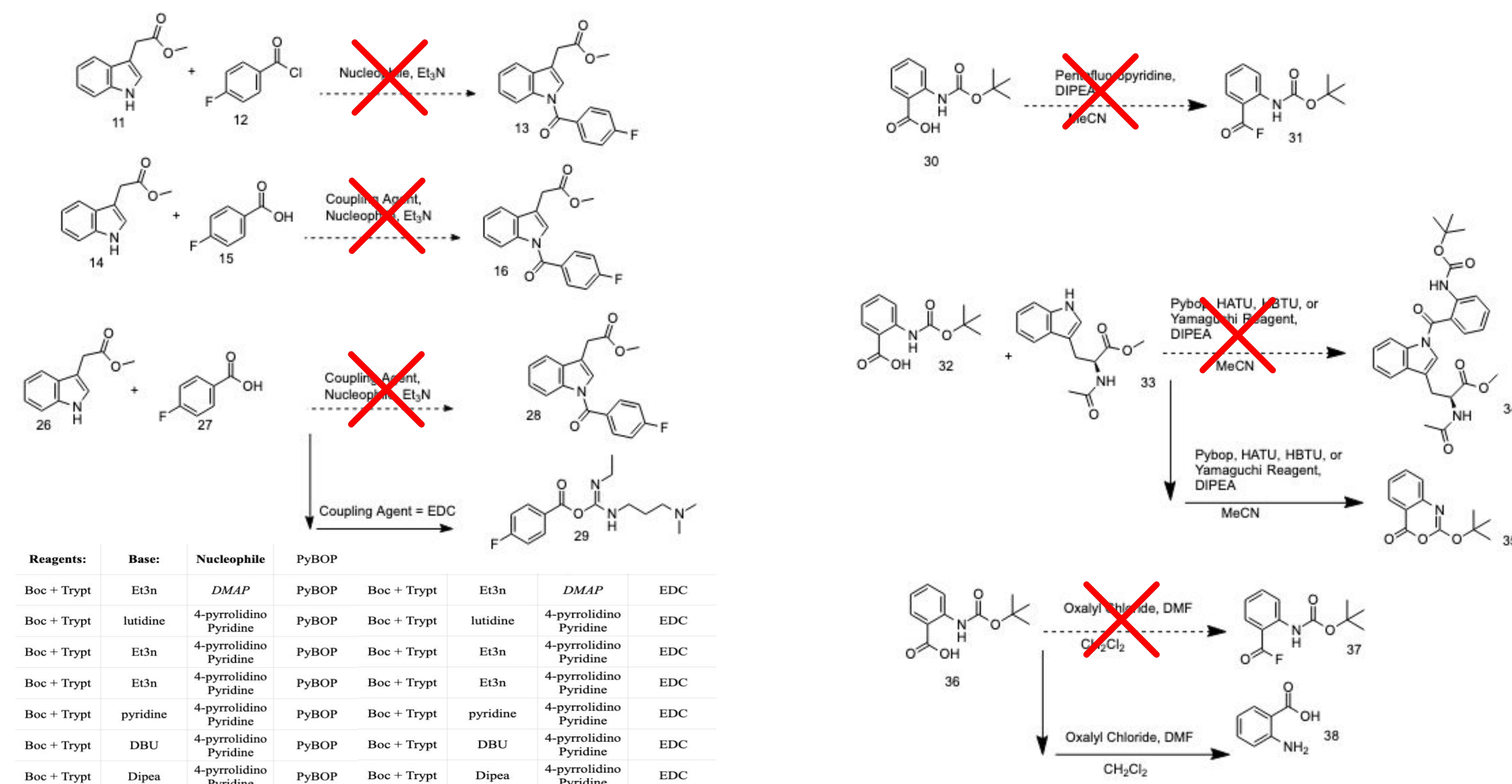
Scalable Total Synthesis Route



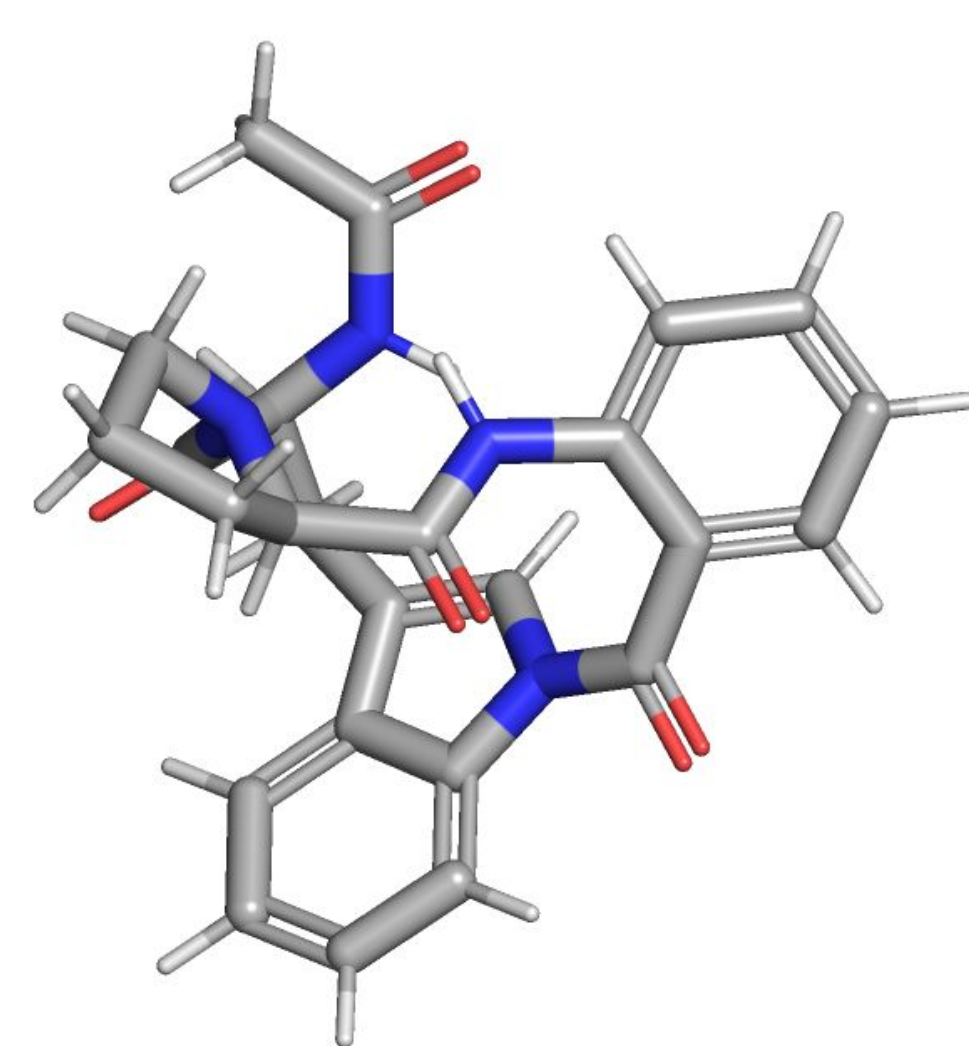
Past Synthesis



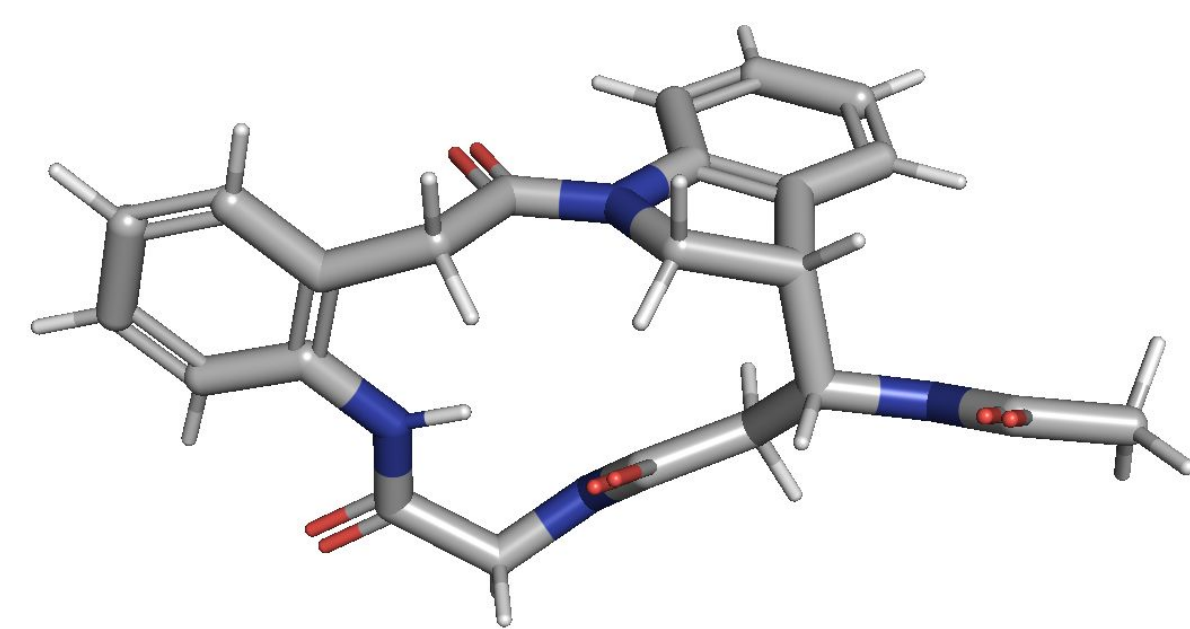
Methodology



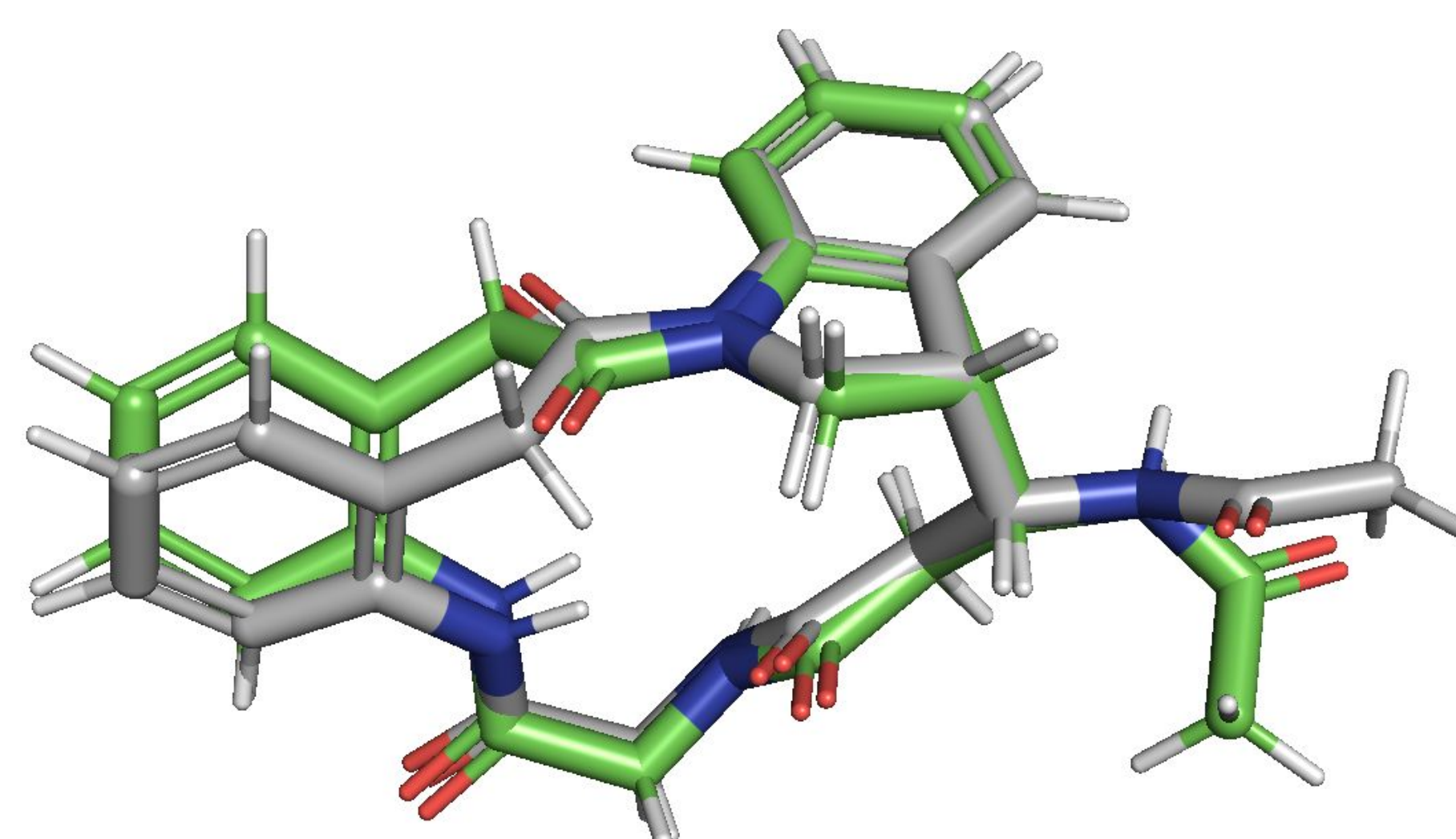
Computer Modeling



Psychrophilin E

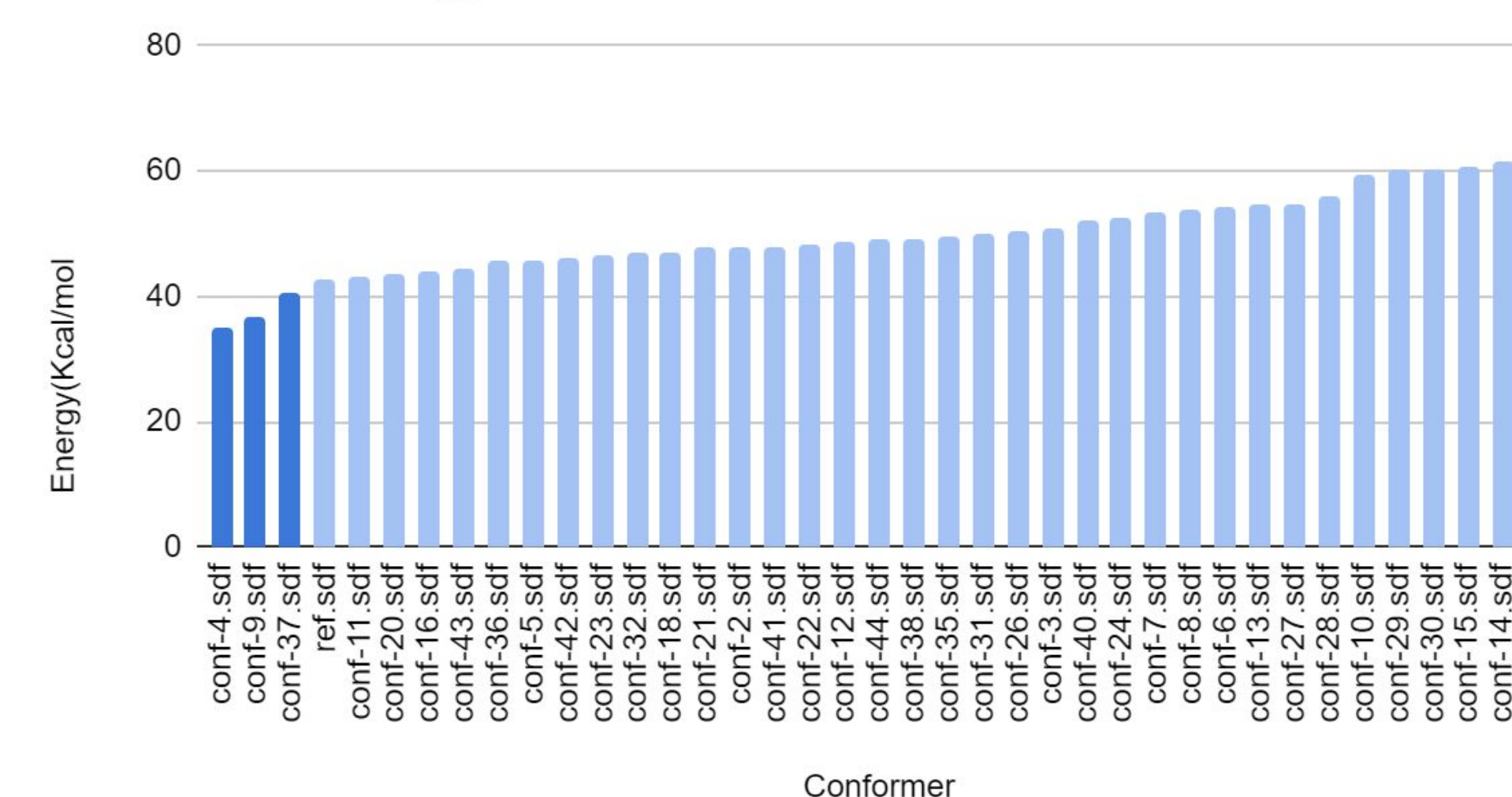


Glycine Analog



RMSD value of lowest energy conformer of Glycine Analogue is $1.712617437 \times 10^{-10}m$

Conformer Energy Values



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nanalysis

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