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Engineered enzymes for the synthesis of key intermediates in valuable drug targets

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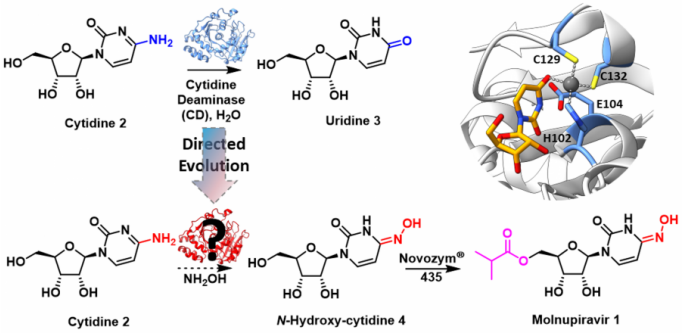
PURPOSE OF THE ABSTRACT
The Covid-19 pandemic has highlighted the need for cost-effective and environmentally friendly drug manufacturing processes. Biocatalysis can provide low-cost routes to access important chiral drug intermediates and reduce synthetic steps. Enzyme candidates can be quickly screened and engineered for the target molecule using biocatalytic retrosynthetic analysis and database searching. Our group has developed concise biocatalytic processes towards Covid-19 and HIV antiviral intermediates and targets.

FIGURES



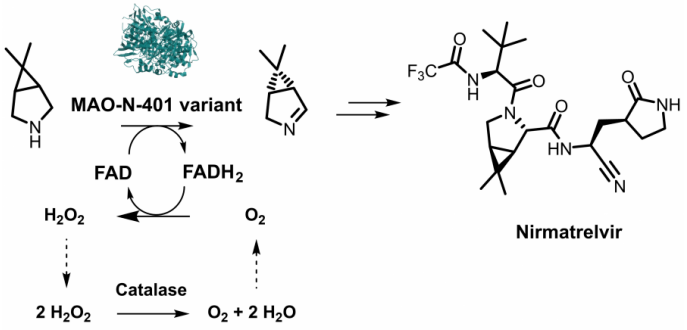


FIGURE 1

An Engineered Cytidine Deaminase for Biocatalytic Production of a Key Intermediate of the Covid-19 Antiviral Molnupiravir

FIGURE 2

Chemoenzymatic Multicomponent synthesis of Nirmatrelvir

Development of a synthetic route to Nirmatrelvir, featuring a highly enantio selective biocatalytic de-symmetrization and diastereoselective multicomponent reaction as key steps. The route avoids use of transitions metals and peptide coupling reagents and

KEYWORDS

Biocatalysis | Protein Engineering | Chemoenzymatic Synthesis | Cytidine Deaminase

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