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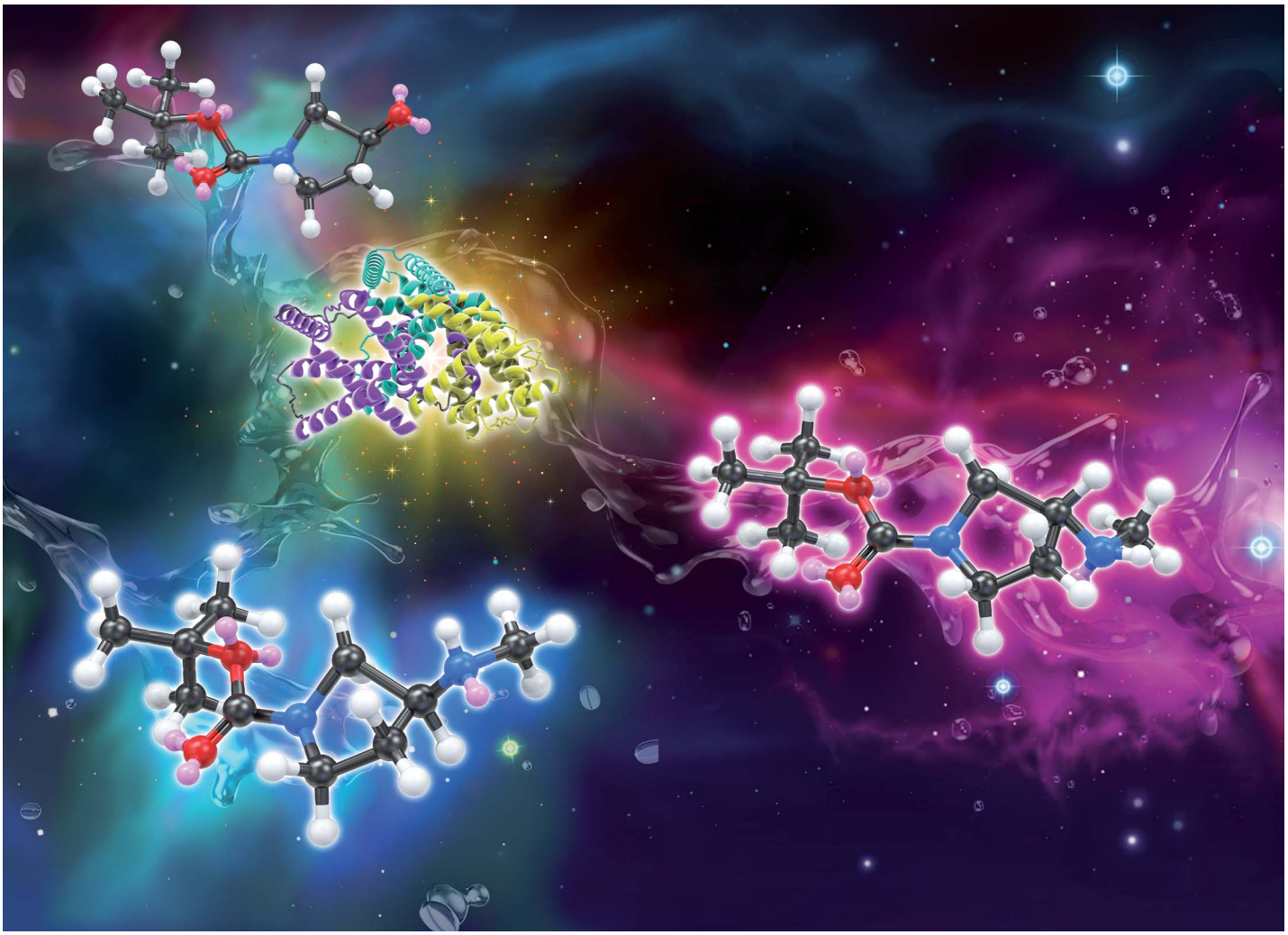

Showcasing research from Professor Chengsen Cui's laboratory, Tianjin Institute of Industrial Biotechnology, Chinese Academy of Sciences, China.

Structure-guided semi-rational design of an imine reductase for enantio-complementary synthesis of pyrrolidinamine

We aimed to obtain engineered imine reductases (IREDs) of IRED M5 through structure-guided semi-rational design. The results showed that two residues, W234 and F260, played crucial roles in enhancing and reversing stereoselectivity, respectively. Additionally, the study produced two enantio-complementary variants: S241L/F260N (with R-selectivity up to 99%) and I149D/W234I (with S-selectivity up to 99%). Furthermore, the study demonstrated the application of these biocatalysts in a short synthesis of key intermediates for potential drug molecules, using a cost-effective and readily available pro-chiral N-Boc-piperidone.

As featured in:

See Shu-Shan Gao, Chengsen Cui *et al.*, *Chem. Sci.*, 2023, **14**, 4265.

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