

Research Project

Evolutionary and energetic landscapes of enzyme catalyzed oxidative sulfur transfers

Third-party funded project

Project title Evolutionary and energetic landscapes of enzyme catalyzed oxidative sulfur transfers

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Sulfur containing metabolites are ubiquitous and important factors in all life forms. Deciphering their physiological functions, their chemical reactivity and their biosynthetic origins has proven a productive avenue to identify causes and remedies of human disease, to understand microbial contributions and reactions to climate change, and to recognize fundamental patterns of molecular evolutions. The discovery and description of sulfur-related biochemistry also provides important impulses for biotechnological innovation. In this very active field we plan to pursue the following key aims: 1) Mechanistic characterization of enzymes that mediate oxidative carbon-sulfur transfers. 2) Prospecting the landscape of EGT biosynthesis. 3) Description of a novel class of sulfur metabolites. 4) Characterisation of the catalytic mechanism of the formylglycine generating enzyme.

Keywords natural products; ergothioneine; catalysis; metalloenzyme; formylglycine; oxygen activation; enzymology; copper enzymes; iron enzymes; protein evolution

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