



Organic Chemistry

Golo Storch

Molecular Flavin Catalysis

Our major research focus is the design of **flavin catalysts for selective organic transformations**. Flavoenzymes mediate a plethora of reactions, which we want to achieve with molecular analogs in the organic laboratory. Additionally, we apply flavins in synthetically useful non-natural transformations. Our goal is to replace precious metals and toxic reagents with mild stereo- and site-selective flavin catalysis.

Photochemical excitation of the flavin's isoalloxazine core turns the catalysts into strong oxidants or reductants depending on the redox state. We build upon this property and design improved flavins for specific reactions such as CH-abstraction and one-electron reduction.

A second key flavin reactivity is the *activation of molecular oxygen* from the air. This results in reactive flavin hydroperoxide intermediates, which we aim to use for selective oxygenation reactions. Here, flavin catalysis serves as a replacement for traditional strong and unselective oxidants such as *m*CPBA.

