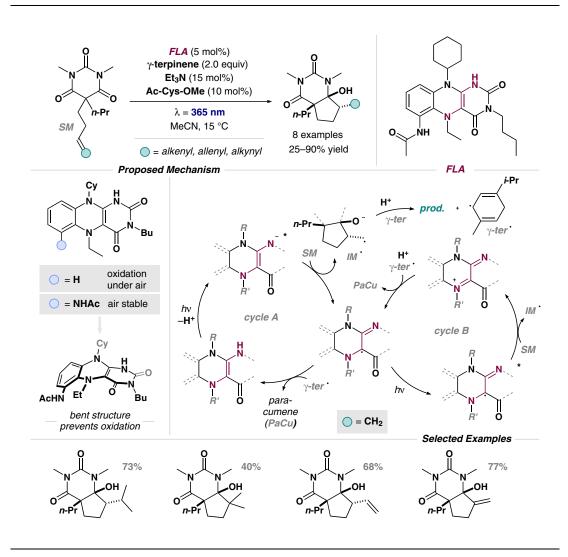
R. FOJA, A. WALTER, C. JANDL, E. THYRHAUG, J. HAUER, G. STORCH^{*} (TECHNICAL UNIVERSITY OF MUNICH, GARCHING, GERMANY) Reduced Molecular Flavins as Single-Electron Reductants after Photoexcitation *J. Am. Chem. Soc.* **2022**, 144, 4721–4726, DOI: 10.1021/jacs.1c13285.

Modified Flavins Permit Catalytic Reductive Cyclization



Significance: Storch and co-workers report a novel class of reduced air-stable flavin photocatalysts that, upon photoexcitation, permit the catalytic reductive cyclization of barbituric acid derivates and, therefore, replace the rare-earth reductant Sml₂ previously used to achieve this transformation. By using a catalytic system consisting of the flavin photocatalyst, triethylamine, and cysteine as a hydrogen-atom donor, along with γ-terpinene as a superstoichiometric reductant, the bicyclic products could be obtained in poor to excellent yields.

Comment: Whereas reductive transformations are well known for DNA photolyase enzymes, molecular flavins have not been used previously to achieve this reactivity. By introducing an additional substituent in the 6-position, the authors found the corresponding flavins to be air-stable in their reduced form, opening up a plethora of possibilities for catalytic reductive transformations. We look forward to the synthetic potential of this novel concept being revealed, especially in the context of asymmetric catalysis.

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