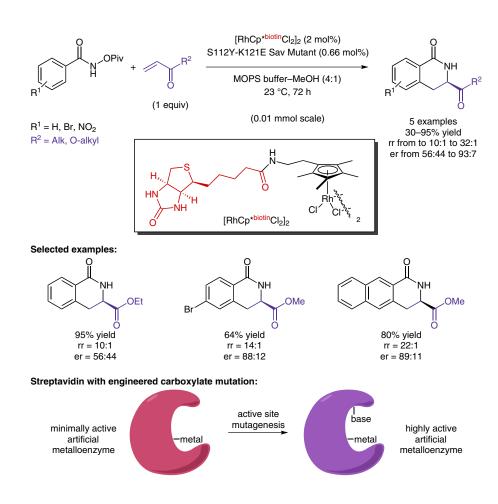
T. K. HYSTER, L. KNÖRR, T. R. WARD,\* T. ROVIS\* (COLORADO STATE UNIVERSITY, FORT COLLINS, USA AND UNIVERSITY OF BASEL, SWITZERLAND)

Biotinylated Rh(III) Complexes in Engineered Streptavidin for Accelerated Asymmetric C-H Activation Science 2012, 338, 500-503.

## Artificial Rh(III)-Metalloenzyme-Catalyzed **Asymmetric C-H Activation**



**Significance:** A highly active, artificial rhodium(III) metalloenzyme that catalyzes an asymmetric synthesis of dihydroisoquinolones through C-H activation is reported. A biotinylated rhodium(III) complex is successfully incorporated into streptavidin. With active-site mutagenesis, the engineered enzyme displayed up to 100-fold reaction rate increase compared to the activity of the unbound rhodium complex.

Comment: As Cp is the only permanently bound ligand on rhodium in the catalytic cycle, it has been difficult to render this reaction enantioselective until recently. This report provides an alternative solution for this problem. Based on the concerted metalation-deprotonation mechanism, the authors used docking modeling and introduced a netic isotope effect experiments, the importance of this mutation in accelerating the catalysis is

 $\textbf{SYNFACTS Contributors:}\ Mark\ Lautens,\ Lei\ Zhang$ Synfacts 2013, 9(1), 0065 Published online: 17.12.2012 DOI: 10.1055/s-0032-1317748; Reg-No.: L15012SF

Category

**Metal-Catalyzed Asymmetric** Synthesis and Stereoselective Reactions

## **Key words**

rhodium

streptavidin

biotin

artificial metalloenzymes

benzamides

dihydroisoquinolines

asymmetric C-H activation

basic carboxylate moiety in the active site. With kidemonstrated.