# Artificial metalloenzymes for enantioselective catalysis : the phenomenon of protein accelerated catalysis


**Author(s)** Collot, Jerome; Humbert, Nicolas; Skander, Myriem; Klein, Gerard; Ward, Thomas R.
**Author(s) at UniBasel** Ward, Thomas R. ;
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We report on the phenomenon of protein-accelerated catalysis in the field of artificial metalloenzymes based on the non-covalent incorporation of biotinylated rhodium–diphosphine complexes in (strept)avidin as host proteins. By incrementally varying the [Rh(COD)(Biot-1)]+ vs. (strept)avidin ratio, we show that the enantiomeric excess of the produced acetamidoalanine decreases slowly. This suggests that the catalyst inside (strept)avidin is more active than the catalyst outside the host protein. Both avidin and streptavidin display protein-accelerated catalysis as the protein embedded catalyst display 12.0- and 3.0-fold acceleration over the background reaction with a catalyst devoid of protein. Thus, these artificial metalloenzymes display an increase both in activity and in selectivity for the reduction of acetamidoacrylic acid.
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