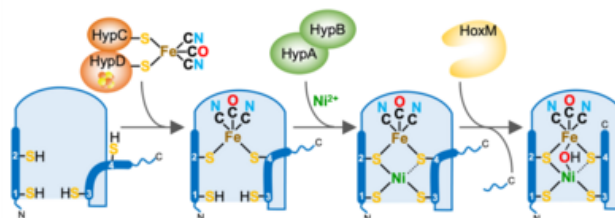


Stepwise assembly of the catalytic core of [NiFe]-hydrogenase

Start Time: Wednesday, February 1, 2023

End Time:



Stepwise assembly of the catalytic core of [NiFe]-hydrogenase

An international team involving the UniSysCat groups of [Oliver Lenz](#), [Christian Limberg](#), [Peter Hildebrandt](#) and [Ingo Zebger](#), UniSysCat SAB member [Serena DeBeer](#), and researchers from JASRI (Hyōgo, Japan) and DESY (Hamburg, Germany) deciphered the multistep incorporation process of the catalytic $\text{NiFe}(\text{CN})_2(\text{CO})$ cofactor into [NiFe]-hydrogenase by isolating previously uncharacterized protein intermediates trapped in different stages of the maturation process. These were analyzed using biochemical and a plethora of spectroscopic techniques.

Hydrogenases hold a promising future for hydrogen-based technologies and as a blueprint for chemically synthesized catalysts. The results of the study provide detailed insights into the assembly process of the intricate catalytic core of [NiFe]-hydrogenase. Moreover, the isolated intermediates serve as an ideal platform to study (semi-)artificial [NiFe]-hydrogenases equipped with synthetic iron complexes and Ni substitutes, potentially generating "chemzymes" with alternative catalytic functions.

This study has been published in *Nature Chemical Biology*: G. Caserta, S. Hartmann et al. Stepwise assembly of the active site of [NiFe]-hydrogenase. *Nat. Chem. Biol.* (2023). <https://www.nature.com/articles/s41589-022-01226-w>

