



Assistant Professor Mélanie Hall  
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#### CV

Mélanie Hall, born in Brest, France, studied chemistry at the French Engineering School of Chemistry in Rennes, France (École Nationale Supérieure de Chimie de Rennes, ENSCR) and at the Lund Institute of Technology (LTH) at Lund University, Sweden. She received her PhD in chemistry from the University of Graz, Austria, under Prof. Kurt Faber (2007). After a postdoctoral research stay with Prof. Andreas Bommaris at the Georgia Institute of Technology in Atlanta, USA, she returned to Graz (2010), where she obtained her habilitation (*venia docendi* in organic chemistry) from the Institute of Chemistry in 2016. She is currently assistant professor for sustainable bioorganic synthetic chemistry. Her research is dedicated to the field of biocatalysis, with particular focus on asymmetric synthesis and enzymatic synthetic technologies.

May 4-5, 2022  
DCCI, Aula Magna  
14.00-17.00  
A-type course

#### ***Biocatalysis for Organic Synthesis***

#### Abstract

The development of biocatalysis, a field dedicated to the use of enzymes as catalysts for organic synthesis, has contributed over the past decades to the greening of some important industrial processes. Enzymes are attractive tools to operate under environmentally friendly reaction conditions and provide advantages in terms of chemo-, regio- and stereoselectivity. The Nobel Prize of chemistry 2018 attributed (in part) to Frances Arnold for her work on the engineering of enzymes reminds us that innovations in this area are contributing to improving the well-being of society.

This course will provide a condensed overview of the field of biocatalysis. After an introduction to enzymes as natural catalysts and reviewing some important historical milestones and industrial processes, the course will focus on the various types of chemistry for which enzymes provide efficient complementary approaches to traditional (catalytic) chemistry, especially in the field of redox chemistry and new bond formation. Practical considerations targeting the development of enzymes for synthesis will also be discussed, including aspects from microbiology and molecular biology, and reaction and protein engineering.

At the end of this course, students will be able to comprehend the relevance of this field in the context of sustainability, from the composition of laundry detergents to the synthesis of pharmaceuticals.