

# Institute of Organic Chemistry

## Structure - Synthesis - Spectroscopy

Synthesis: Stereochemistry – Organocatalysis

Sustainable usage of the “Chiral Pool”

Medicinal Chemistry – bio-active compounds

Photodynamic therapy, anti-cancer drugs

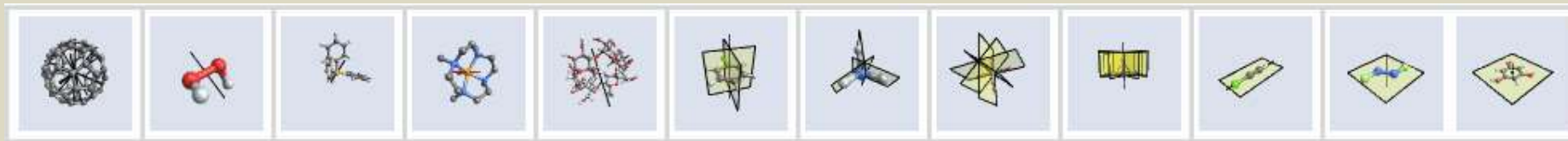
Biomolecules: photosynthesis, cell signaling, protein interactions

NMR research center (RERI-uasb):

700 + 500 + 300 MHz, solids (500 MHz)

Established in 2011 with the Univ. of South Bohemia in Budweis CZ

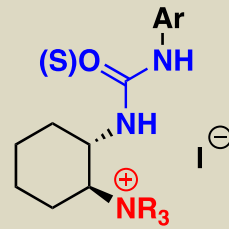
- Fundamental research and method development
- Service for all faculty departments in Linz and Budweis
- Contract research



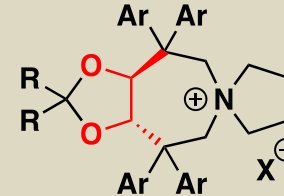
# Waser Group

## RESEARCH INTERESTS

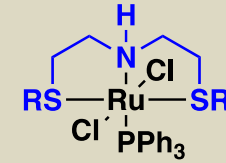
### Catalyst Design



Bifunctional Catalysis

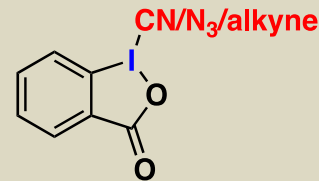


Tartaric Acid-Based Catalysts

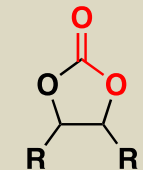


Hydrogenation  
Dehydrogenation

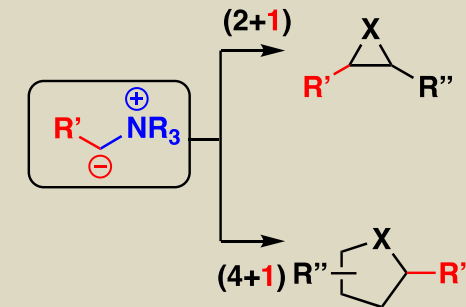
### Method Development



Hypervalent Iodine  
Reagents

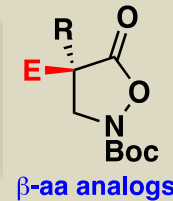


CO<sub>2</sub>-fixation

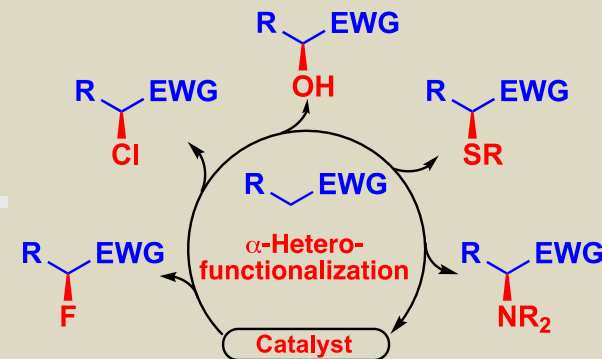


Ammonium Ylide-Cyclizations

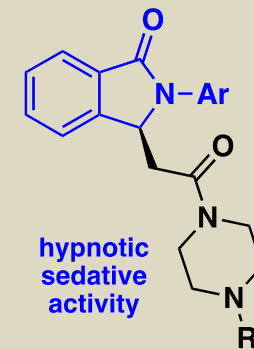
### Target-Oriented Syntheses



$\beta$ -aa analogs



$\alpha$ -Hetero-  
functionalization  
Catalyst



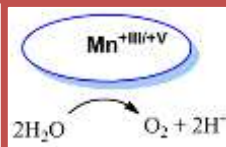
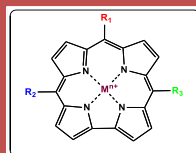
hypnotic  
sedative  
activity

# Schoefberger Group



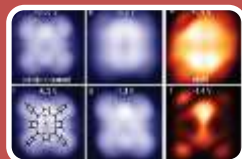
Functionalized Porphyrins and  
Corroles for the Development of  
Anticancer Strategies:

Telomerase Inhibition → Apoptosis



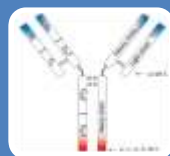
Corrole Complexes for Catalysis:

CO<sub>2</sub> fixation and ORR/OER



Synthesis of cognitive molecules and materials:

Self-organizing metal tetrapyrroles for  
Surface-Supported Catalysis and  
Biomedical Applications



Nanomedicine:

Cancer Immunotherapy and  
Bioconjugate Chemistry:  
Toll-Like Receptor 7 Agonist Therapy with  
Functionalized Imidazoquinolines



# Müller Group

Expression of recombinant stable isotope labelled proteins for interaction studies by NMR

- Calcium Channel proteins (STIM/Orai)**

STIM1, Orai

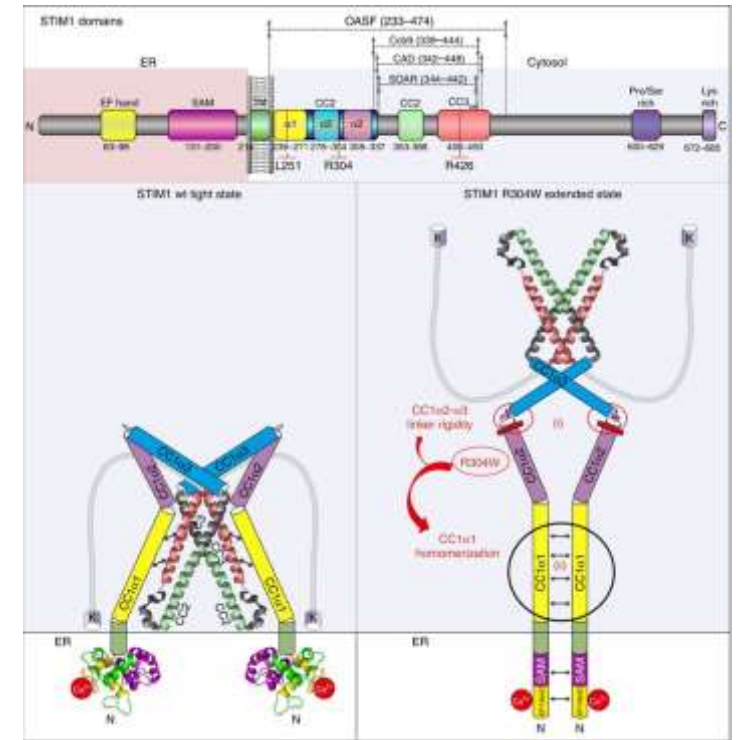
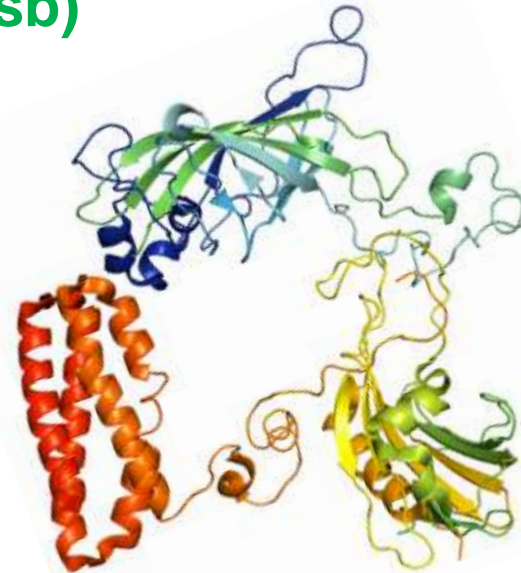
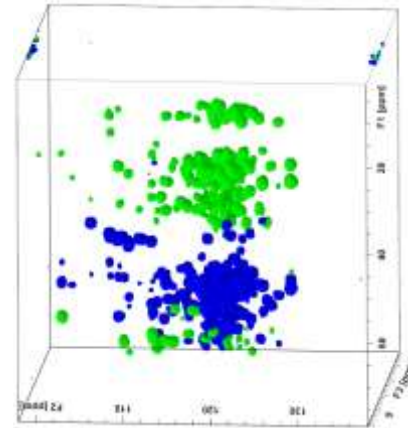


- Extrinsic Photosynthetic Proteins (Psb)**

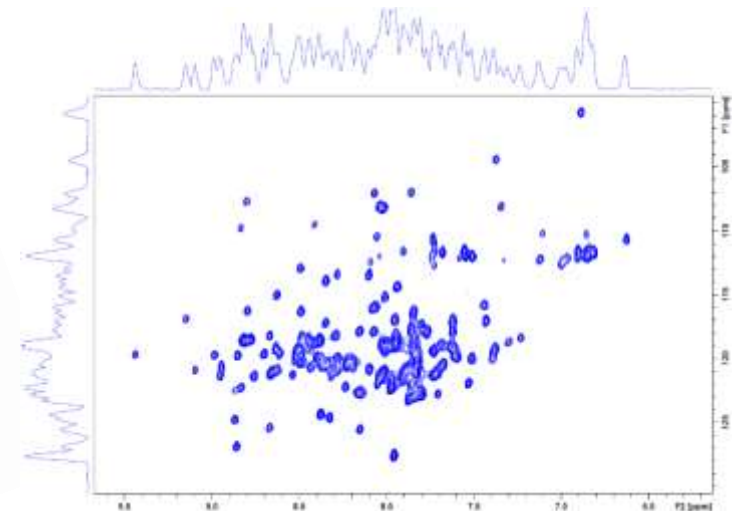
CP43, PsbO, PsbP, PsbQ

- Borrelia Proteins (Lyme disease)**

Decorin-binding protein A



Nature Communications, volume 9, Article number: 825 (2018)



# Welcome to the first Austro-Czech Research Center



**NMR–Center**  
Austria – Czech Republic