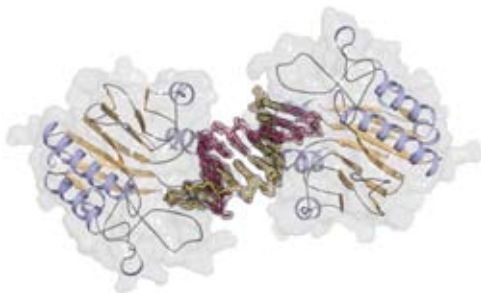


KEYWORDS

- » Structural Biology
- » Biocatalysis
- » Enzymes as Drug Targets
- » X-ray Crystallography



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PROTEIN CRYSTALLOGRAPHY AND STRUCTURAL BIOCHEMISTRY

Research is focused on the relationship between structure and function of proteins by biochemical and biophysical methods, mainly protein crystallography. The core facilities include gene technology for the construction of expression systems, protein expression, purification and crystallization as well as X-ray structure determination. Currently mainly enzymes, in particular hydrolytic metalloenzymes and glycotransferases are studied, but also other proteins which are of interest with respect to catalytic reactivity or medical and biotechnological relevance. Besides the structure determination of the native protein, the characterization of the reaction mechanism and protein function on a molecular basis are of primary interest.

Recent projects focus on pharmacologically relevant proteins in the field of extracellular and intracellular signalling via nucleotides, i. e. extracellular nucleotidases and cellular phosphodiesterases. These proteins are part of signal transduction chains which control important cellular functions and are thus potential or validated drug targets. Together with pharmaceutical companies or academic groups the research group studies the binding mode of small chemical molecules to the crystallized proteins in order to rationally develop novel drugs. Another topic of basic research are domain movements in enzymes and the role of these motions for catalytic activity. Here the domain movement of a 5'-nucleotidase is studied by X-ray diffraction and spectroscopic techniques in solution.

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