



## **CDS RESEARCH CENTER DYNAMIC SYSTEMS SYSTEMS ENGINEERING**

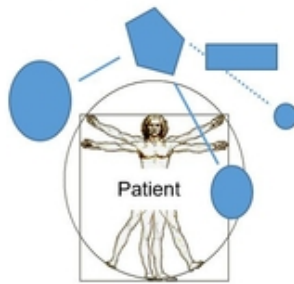
### **Active Substances**

The area of Active Substances is dedicated to personalised therapy strategies for various diseases and the decoding fundamental cellular processes. The main focus here is on computer-assisted modelling and prediction of molecular and cellular reactions, which are used in therapy planning. Furthermore, new active substances are to be developed as drugs for personalised therapies.

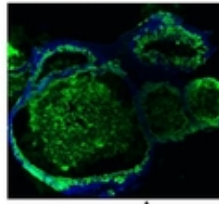
For a better understanding of the complexity of biological systems, it is future-oriented to closely combine experimental methods in biomedical research with systems theoretical approaches from the engineering sciences. The overriding goal of the cooperation of the CDS between scientists from different disciplines is to gain **new insights into complex pathophysiological and biomedical relevant regulatory processes in the course of disease.**

In particular, **chronic inflammatory diseases and cancer** are of importance here, as they are by far the most frequent causes of death in Saxony-Anhalt and thus represent major challenges for health research. Within the framework of innovative preclinical inflammation research in the DFG-funded Research Training Group 2408 "Maladaptive processes across physiological barriers in chronic diseases" also innovative methods in biomolecular simulation are being used which enable the characterisation of therapeutic target structures and the identification of active substances. In this way, a direct transfer of knowledge from basic research into clinical and industrial applications is made possible, which holds great potential for future opportunities in precision medicine.

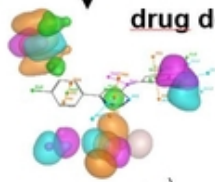
### Target structures



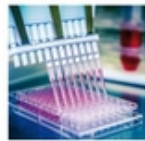
### Preclinical studies



### Modeling & drug design



### Analysis



### Synthesis



Example for a thematic demonstration „Biomedical systems“  
*Target structures-Drug design-Preclinical studies*

### Research

- ▶ Energy Conversion
- ▶ Chemical Production
- ▶ Active Substances
- ▶ Key Technologies