University of Zurich[UZH]

Department of Chemistry

DEVELOPMENT OF SMALL ORGANIC MOLECULES AS BROMODOMAIN LIGANDS FOR CANCER TREATMENT

Master Thesis (Masterarbeit) or Internships (Praktikum) Open	
Subject Areas	Organic Chemistry, Medicinal Chemistry, Drug Design
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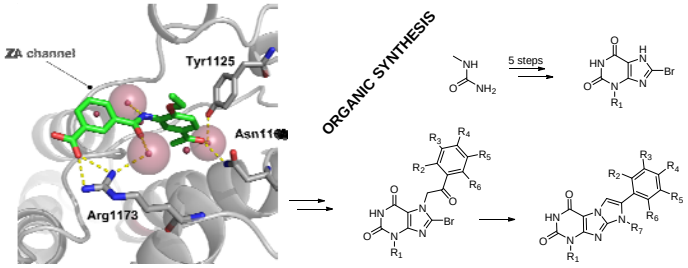
Bromodomains are classified as readers of epigenetic targets and are considered an emerging topic in the field of drug discovery due, in a large extent, to their involvement in the regulation of multiple genes. Up to date though, very little is known about the potential biological applicability of small organic molecules binding to these proteins.



In close collaboration with the group of Prof. Caflisch (BIOC-UZH), relatively small organic molecules (called "hits") able to bind to a certain bromodomain have been identified by computer-based methods.

This work starts with a rigorous retrosynthetic analysis of the "hit" molecules, followed by an in depth evaluation of the binding site of the protein in 3D in order to design derivatives that will improve the potency, solubility and cell permeability of the initial "hits". Different derivatives will then be synthesized and characterized through a variety of biophysical tools.

The main focus of the project will be the chemical synthesis of the designed derivatives. Depending on time limits and interest of the student, derivatives will also be tested *in vitro* and in human cancer cell lines.