Epigenetic Drug Discovery – Development of Histone Deacetylase Inhibitors and Multi-Target-Ligands

JProf. Dr. Finn K. Hansen

The research of the Hansen group is focused on the development of novel histone deacetylase inhibitors (HDACi) for the epigenetic cancer therapy. Histone deacetylases (HDACs) are accepted, clinically validated cancer targets whose inhibition has the potential to invert aberrant epigenetic changes associated with cancer. To discover effective HDACi with a better safety profile, the development of isoform- or class-selective HDACi has been proposed. The main targets of the research are HDAC1-3 and HDAC6 which are considered key HDACs for cancer treatment. The group performs iterative cycles of structure-based design, synthesis and biological evaluation to discover optimized HDACi.

A second approach in this direction is based on the rational design and synthesis of multi-target-ligands. The approach “one drug multiple targets” is gaining major consideration in drug discovery and has been termed polypharmacology. The relatively simple pharmacophore of HDACi tolerates a variety of cap groups and this region can be engineered to include a second pharmacophore. The group of JProf. Hansen is currently working on the development of several hybrid molecules that simultaneously inhibit HDACs and a suitable synergistic target.

Other projects deal with the discovery of antiparasomidal HDACi, membranolytic anticancer foldamers and α-helix mimetics to modulate protein-protein-interactions.

Keywords

- Epigenetics
- Histone deacetylase inhibitors
- Multi-target-ligands
- Polypharmacology
- Peptidomimetic foldamers

Contact
JProf. Dr. Finn K. Hansen
Juniorprofessur für Pharmazeutische/Medizinische Chemie
UNIVERSITÄT LEIPZIG
Fakultät für Biowissenschaften, Pharmazie und Psychologie
Institut für Pharmazie
Brüderstr. 34
04103 Leipzig
fon +49 341 97-36801
fax +49 341 97-36899
finn.hansen@uni-leipzig.de
https://pharmazie.biphaps.uni-leipzig.de/pharmazeutische-medizinische-chemie

