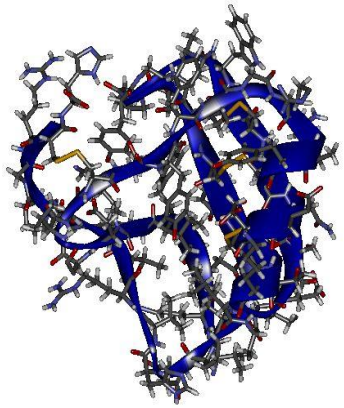
Chemical Biology For Drug Research
Pharmaceutical Chemistry
AK Prof. Ivan Huc

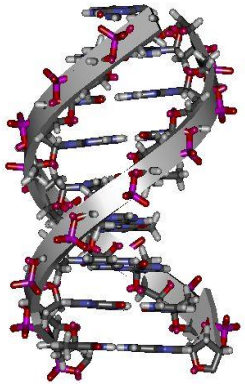
Link to web page

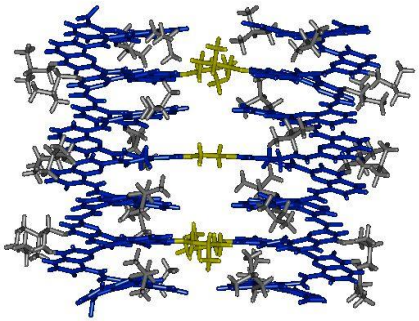
LMU LUDWIG-MAXIMILIANS-UNIVERSITÄT MÜNCHEN

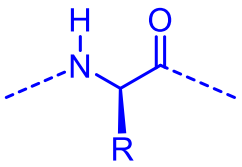
Summary: Our group explores the design, synthesis, and functions of non-natural molecules in the size range of small proteins and nucleic acids. Specifically, we investigate the control of molecular shape through folding in large synthetic objects. Aside from classical drugs, proteins and nucleic acids are increasingly used for therapeutic intervention: their large size gives access beyond the reach of small molecules. We expect that large synthetic folded molecules, 'foldamers', will open up new capabilities in this area.

Structures shown at the same scale:

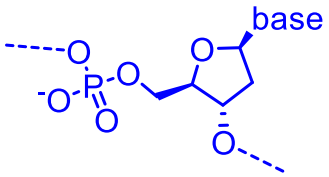




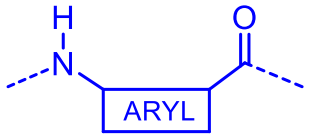




proteins



DNA



synthetic foldamers

Main techniques:

- Chemical synthesis
- Molecular modeling and design
- Biochemistry, recombinant protein expression and purification
- Biophysics, investigation of interactions with target molecules
- Structure elucidation
- X-ray crystallography

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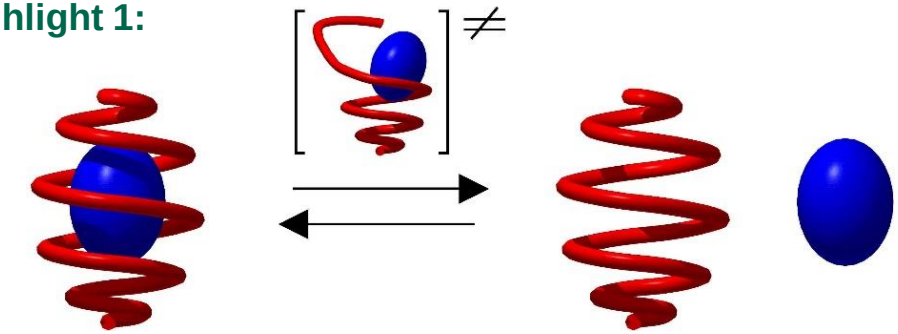
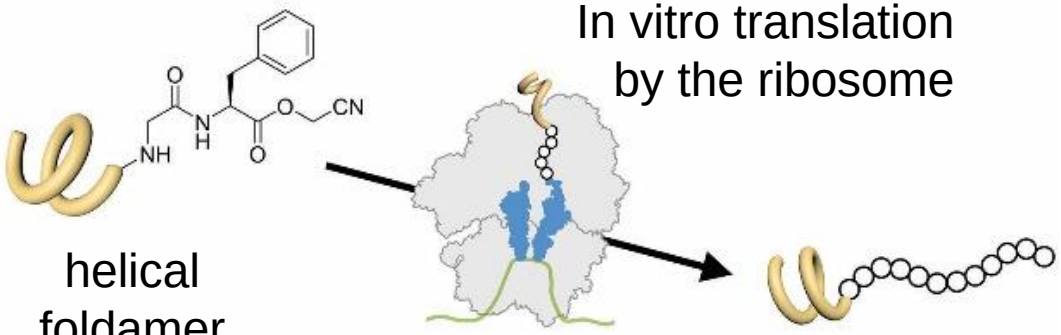
Highlight 1:



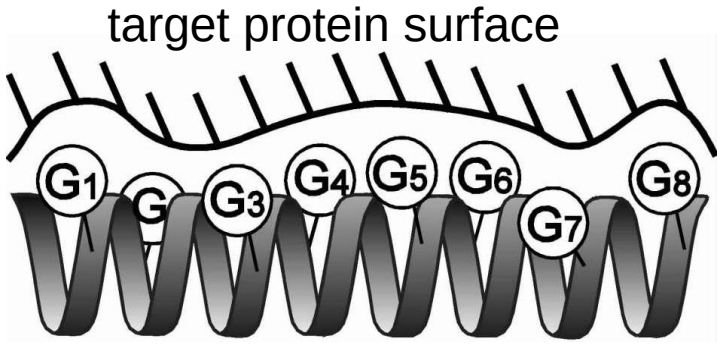
Recognition and sensing within foldamer helices

Highlight 2:



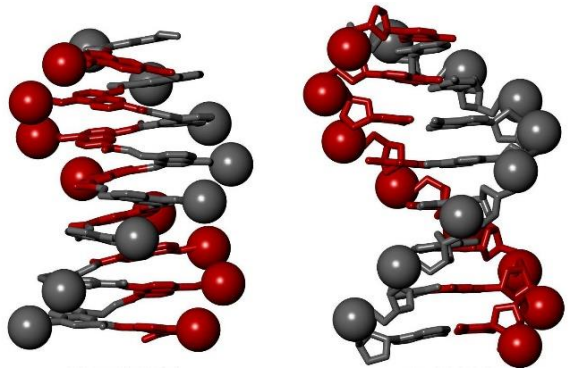
Display selection of foldamer-peptide inhibitors of enzymes involved in epigenetic regulation

Highlight 3:



Inhibition of protein-protein and protein-nucleic acid interactions

Highlight 4:



Mimicry of DNA surface and inhibition of DNA-binding proteins