

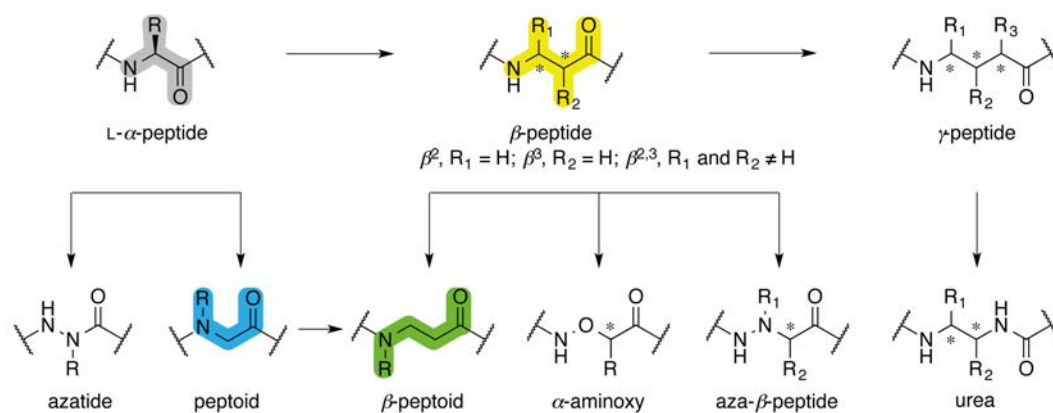
MSc Projects

Novel types of Peptidomimetic Foldamers

(Prof. Christian Adam Olsen, Center for Biopharmaceuticals, ILF)

Foldamers are oligomeric organic compounds that mimic or complement the three-dimensional structures (folding) of biopolymers. Such compounds have potential as pharmaceuticals due to their non-biodegradable nature, compared to the parent biopolymers, such as peptides, proteins, oligonucleotides, or polysaccharides.

In the Olsen group, we have had a keen interest in peptidomimetic oligomers for a number of years,^[1] and recently achieved the first high-resolution structures of a novel type of foldamers called β -peptoids.^[2] These results provide a very strong foundation for further exploration of these structures with the aim of developing functional materials, multivalent display scaffolds, or well-defined compounds for disruption of protein–protein interactions for biomedical applications. Thus, projects in the laboratory within this area will involve design, synthesis, and evaluation of entirely unprecedented oligomeric structures with potential in drug discovery programs. The M.Sc. student will, among other techniques, be performing solution- and solid-phase synthesis as well as NMR- and CD-spectroscopy.



The figure shows examples of peptidomimetic backbone architectures compared to the canonical α -peptides.



[1] J. S. Laursen, J. Engel-Andreasen, C. A. Olsen. β -Peptoid Foldamers at Last. *Acc. Chem. Res.* **2015**, *48*, in press (doi: [10.1021/acs.accounts.5b00257](https://doi.org/10.1021/acs.accounts.5b00257)).

[2] J. S. Laursen, P. Harris, P. Fristrup, C. A. Olsen. Triangular Prism-Shaped beta-Peptoid Helices as Unique Biomimetic Scaffolds. *Nat. Commun.* **2015**, *6*, 7013 (doi: [10.1038/ncomms8013](https://doi.org/10.1038/ncomms8013)).