化学科講演会

企画：理学部化学科

Aromatic oligoamide foldamer-based protein surface recognition

講師： Dr. Lucile Fischer

Chemistry and Biology of Membranes and Nanoobjects (CBMN, CNRS, Univ. Bordeaux),

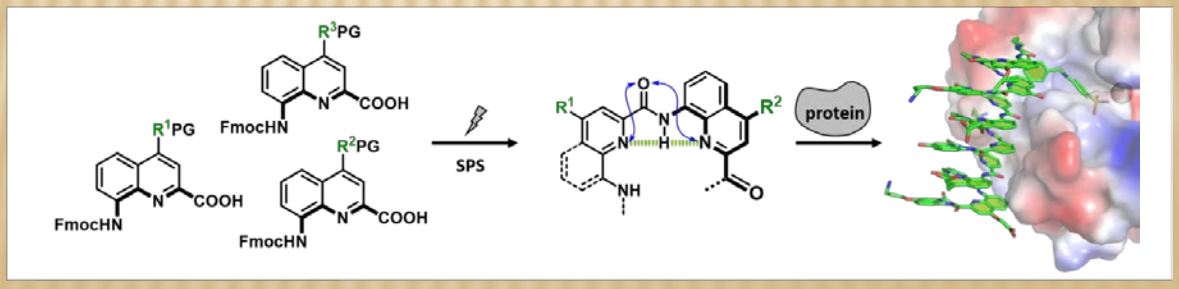
日時： 2019年12月12日（木） 10：30～12：00

場所： 理学部3号館会議室（理3-209）

Inspired by naturally folding biomolecules, foldamers[1] emerge as a new class of folded synthetic oligomers that may be decorated with proteinogenic side chains to interact with proteins and eventually serve as modulators of protein-protein interactions (PPIs)[2].

Our group is interested in aromatic oligoamide foldamers and in particular those constituted of quinoline scaffold based δ amino-acids homologues monomers that adopt helical folding and can be functionalized with proteinogenic side-chains. New methodologies including microwave assisted SPS have been developed to produce various oligoamide quinoline-based foldamers. With their medium size compatible with the large surface areas involved in PPIs, their stability and their well-defined structures, these foldamers are good candidates to recognize protein surfaces.

As first steps towards the design of protein surface ligands based on these scaffolds, we have explored an anchoring approach that consists in confining a foldamer at the surface of a protein to investigate foldamer-protein interactions even in case of weak binding. Following this strategy, we have identified several aromatic foldamers interacting with protein surfaces. These interactions have been characterized by different techniques[3] such as circular dichroism, X-ray crystallography or solution NMR whose analysis constitute the basis of modeling studies towards the rational design of selective host foldamer ligands.



[1] Guichard, G.; Huc, I.; *Chem. Commun*. **2011**, *47*, 5933-5941. [2] Van Dun, S. et al. *J. Am. Chem. Soc.* **2017**, *139*, 13960-13968. [3] Buratto, J. et al. *Angew. Chem. Int. Ed.* **2014**, *53*, 883-887; Jewginski, M. et al. *J. Am. Chem. Soc.* **2017**, *139*, 2928-2931; Jewginski, M. et al. *ChemBioChem*, **2016**, *17*, 727-736.