

Post-modifications of recombinant elastin-like polypeptides towards bioactive self-assembled (nano)materials

Elisabeth Garanger^a

^a *Laboratoire de Chimie des Polymères Organiques (LCPO), UMR 5629 - University of Bordeaux, CNRS, Bordeaux INP - ENSMAC, 16 avenue Pey Berland, F-33600, Pessac, France*

* elisabeth.garanger@u-bordeaux.fr

Mots-clés : polymères bio-inspirés, polypeptides d'élastine, post-modifications chimiosélectives, auto-assemblage,

Résumé :

Elastin-like polypeptides (ELPs) are thermo-responsive biopolymers whose primary sequence is derived from a natural extracellular matrix protein (elastin). [1] Genetically-engineered and produced recombinantly in heterologous hosts (typically *Escherichia coli* bacteria to ensure reasonable production yields), they are perfectly monodisperse macromolecules. Although powerful to yield ELPs with exact primary structures and lengths, protein engineering techniques present however some limitations, in particular limited chemical diversity due to few possible post-translational modifications in *E. coli* bacteria. My research activities are therefore dedicated to exploring a *dual biotechnological and chemical approach*, combining **recombinant biosynthesis of ELPs in *E. coli*** with **orthogonal chemical bioconjugation methods** to enlarge the diversity of relevant ELP-based macromolecules and self-assemblies thereof for **biomimetic, biological** and/or **biomedical applications**.

My presentation will provide an overview of these works and detail a few selected examples in these different fields.

Référence :

[1] : D.W. Urry ; M.M. Long ; B.A. Cox ; T. Ohnishi ; L.W. Mitchell and M. Jacobs, *Biochim. Biophys. Acta*, 1974, **371**, 597–602.