



POSTDOCTORAL POSITION IN OUT OF EQUILIBRIUM LIVING POLYMERIZATION OF PEPTIDES

A 18 months postdoctoral position is available at the Rennes Institute of Chemical Sciences. The project, funded by the French National Research Agency (ANR), relies on a collaboration between V. Marchi, P. Even-Hernandez with expertise on the synthesis and surface chemistry of nanoparticles for bio-imaging,¹ L. Jullien, T. Le Saux from the group «Physical and Biological Chemistry of Living Matter» at Ecole Normale Supérieure (Paris) with expertise in chemical thermo-kinetics and imaging in microdevices,^{2,3} N. Giuseppone, E. Moulin from the group SAMS of the Charles Sadron Institute (Strasbourg) with expertise in synthetic chemistry, peptide synthesis, and dynamic combinatorial chemistry,⁴ and R. Plasson from UMR 408 Avignon Université-INRA (Avignon) with expertise in theoretical and numerical tools for dynamical chemical systems,⁵ and peptide chemistry.⁶

The overall goal of the project is to introduce and validate a selection/survival protocol for property-directed evolution in a chemical monomers/polymers system. More specifically, we will select and produce peptide-conjugated nanoparticles by means of a survival assay that selects peptides for their abilities of binding at the nanoparticle surfaces and for their propensity to generate bright luminescent conjugates. The candidate will produce peptides and investigate their interaction with nanoparticles under equilibrium or out-of-equilibrium conditions upon using various analytical techniques.

Starting date is flexible from October 2021. Net salary: 2600 €/month.

Candidates should hold a PhD in synthesis and investigation of peptides with expertise in analytical chemistry.

To apply, please send a detailed resume including list of publications, the names of at least two referees and a brief motivation letter to the scientific coordinators of the project, Dr. Valérie Marchi (valerie.marchi@univ-rennes1.fr) and Prof. Ludovic Jullien (Ludovic.Jullien@ens.psl.eu).

References

1. ; 2. ; 3. ; 4. ; 5. ; 6. .

¹ M. Fernandez, A. Urvoas, P. Even-Hernandez, A. Burel, C. Mériadec, F. Artzner, T. Bouceba, P. Minard, E. Dujardin, V. Marchi, Hybrid gold nanoparticle-quantum dot self-assembled nanostructures driven by complementary artificial proteins, *Nanoscale*, **2020**, *12*, 4612.

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³ M. Emond, T. Le Saux, J.-F. Allemand, P. Pelulessy, R. Plasson, L. Jullien, Energy propagation throughout a protometabolism leading to the local emergence of singular stationary concentration profiles, *Chem. Eur. J.*, **2012**, *18*, 14375.

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⁵ R. Plasson, H. Bersini, A. Commeyras, Recycling Frank: Spontaneous emergence of homochirality in noncatalytic systems, *Proc. Natl. Acad. Sci.*, **2004**, *101*, 16733.

⁶ G. Danger, R. Plasson, R. Pascal, Pathways for the formation and evolution of peptides in prebiotic environments, *Chem. Soc. Rev.*, **2012**, *41*, 5416.