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Post-doctoral fellowship (labex SynOrg)

Title: Enzymatically driven bioorthogonality : expand the biochemical toolbox

Bioorthogonal reactions have found significant applications within the last decade in diverse research fields including materials science, biotechnology, chemical biology, or drug discovery. Tremendous efforts have been made to increase the number of chemoselective ligations, a class of reactions that enables site-selective modification of (bio)molecules under physiological conditions. In this respect, the tetrazine ligation or the azide-alkyne cycloaddition (CuAAC) have proven to be particularly effective bioorthogonal tools. However, little attention has been paid toward the development of mutually orthogonal reactions despite their importance for the preparation of heteromultifunctional cross-linking reagents. In this context, we wish to design an innovative heteromultifunctional linker whose reactivity would be triggered *in situ* by a biochemical process.

The goal of this project, led in collaboration with the University of Orleans (Prof. Tatibouët), and the Universität Kiel (Pr. T K. Lindhaorst) will be twofold:

- a) To determine the chemical compatibility and orthogonality of the biochemical system with other labelling agents such as the copper azide-alkyne cycloaddition, the thiol-iodoalkanes alkylation, or the newly "in-house" developed Kondrat'eva ligation (c.f. *J. Org. Chem.*, **2014**, 79 (21), pp 10353–10366).
- b) Then coupling this hetero multifunctional linker to profluorescent coumarins to develop innovative fluorescent probes for the specific detection of FimH lectin.

Profile: Candidates should have a strong background in organic synthesis and be highly motivated and interested in working at the interface of Chemistry and Biology. Knowledge and skills in photophysical characterization will be appreciated.

Candidates who are interested are invited to send a CV, cover letter and references to Pierre-Yves Renard, Cyrille Sabot, and Alexandre Haefelé.

Duration of the postdoctoral: 18 months

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