UCLouvain
Louvain Institute of Biomolecular
Science and Technology (LIBST)

LIBST

Urgent
Postdoctoral position:

Molecular organization and dynamics of the transposition complex of the Tn3-family transposon Tn4430

A postdoc position is available right now in the groups of David Alsteens and Bernard Hallet at the Louvain Institute of Biomolecular Science and Technology (LIBST-UCLouvain, Belgium) to work on a collaborative project on the molecular **organization and dynamics of the transposition complex of the bacterial transposon Tn*4430*** using state-of-the-art **biochemistry** and **atomic force microscopy** (AFM).

Scope:
The Tn*3*-family of bacterial transposons are notorious for their contribution to the emergence and dissemination of antibiotic resistances among pathogens, which continuously challenges the development antimicrobial therapies. In spite of this, the molecular mechanism of transposition that is used by these elements to move and propagate within bacterial genomes has remained elusive for more than 4 decades. Our recent work on the Tn*3*-family transposon Tn*4430* has opened new avenues toward the understanding of this mechanism. For the first time, we have been able to set up sensitive biochemical assays recapitulating key transposition steps in a cell-free system. By comparing the activity of the wild type transposase (TnpA) with that of deregulated mutants, this work identified different protein-DNA complexes corresponding to to different intermediates in the reaction (Nicolas et al., 2017, PNAS, 114 : E669-78, doi: 10.1073/pnas.1611701114). The aim of this project is to further characterize the assembly and conformational dynamics of these complexes using state-of-the-art biochemistry and most advanced AFM technology. This project is also complementary to an ongoing work aiming at solving the atomic structure of the transposase and its DNA complexes by single-particle cryo-electron microscopy (SP Cryo-EM).

Application:
Position is available to both foreign nationals and Belgian citizens under 'international mobility' status, meaning that they may not have resided in Belgium for more than 12 months over the past 3 years preceding the appointment.
Duration is 12-18 months starting on the date of appointment, ideally before 01/03/2019

Candidates must have a PhD with a strong background in biochemistry and molecular biology. Expertise in the field of DNA recombination, DNA transposition, protein-DNA interaction and nucleoprotein complex biochemistry is a valuable asset. Additional experience in AFM and AFM-based force spectroscopy will be much appreciated. Priority will be given to candidates with a proven track record (with one or more publication as a first author) who will express their motivation in developing their autonomy and their interest for new challenges.

Interested applicants should send a cover letter (briefly describing research experience, interests, and career goal), a curriculum vitae (with list of publications), and the names of three references (With address, phone number and E mail) to Bernard HALLET (Bernard.hallet@uclouvain.be).

LOUVAIN-LA-NEUVE | BRUXELLES | MONS | TOURNAI | CHARLEROI | NAMUR
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