



Three-year post-doctoral position within the “SAGAG” team at IBS to work on the heparan sulfate biosynthesis machinery

Background

Heparan Sulfate (HS) are highly complex polysaccharides, ubiquitously present on cell surfaces. They interact with a large array of proteins (growth factors, cytokines, chemokines, signaling receptors, enzymes, adhesion molecules, pathogens...), thereby controlling most major biological processes (cell proliferation, migration, chemoattraction, angiogenesis, immune responses, viral infection or matrix assembly). Whereas it has been well established that these interactions occur through defined saccharide epitopes present within the polysaccharide chain, the mechanism by which these binding sequences are specifically assembled remains enigmatic.

Objective

The objective of the present proposal is to decipher how the concerted action of the HS biosynthetic enzymes can encode oligosaccharide motifs containing the necessary information to bind to- and regulate the activity of- different protein ligands of the polysaccharide. In that context, the post holder will investigate how HS biosynthesis enzymes associate to each other to form different and specific functional "molecular nanomachines" committed to HS motif assembly. For that purpose, He/She will:

- Produce and purify the enzymes involved in HS biosynthesis and identify their interactions.
- Develop and use assays to follow the enzyme/enzyme complex catalytic activities.
- Characterize the HS sequences synthesized by these different complexes.
- Participate in a collaborative network (Dr. Y. Bourne - AFMB, Marseille; Dr. G. Schoehn – IBS, Grenoble) to solve the structures of the enzymes/enzyme complex complexes.
- Write scientific publications to international journals and present results at national and international meetings.

Candidate profile

We welcome applications from highly motivated candidates, from all countries, having completed a PhD in biochemistry/structural biology or a related field. The position requires (1) strong working knowledge in molecular biology, cell culture for protein expression and protein purification, (2) excellent practical research experience in molecular interaction studies, (3) creativity and ability to develop new techniques or apply, optimize and validate existing methodologies, (4) aptitude to successfully work independently and within a team environment. Prior experience with NMR, X-ray or Cryo-EM based methods would be desirable. The successful applicant will have ample opportunity to develop additional skills in post. Mastering scientific English, both written and spoken, is essential; knowledge of French is not required.

Application

If you meet these requirements and wish to contribute to this project, please send your application to Hugues Lortat-Jacob (Hugues.Lortat-Jacob@ibs.fr). The Application shall comprise the following documents, assembled into a single PDF file: a cover letter of interest detailing your motivation for applying, along with the names and contact information of at least two scientists to whom letter of recommendation can be sought, a curriculum vitae with a full publication list and a brief report (maximum 2 pages) on your previous research including a description of your background and expertise.

Review of completed applications will begin January 2019, and continue until the position is filled.

The host institute

The IBS is a French academic research unit, affiliated with the University Grenoble-Alpes, the CNRS and the CEA. It currently employs 280 people, including many students and post-doctoral researchers originating from different countries. It possesses high-performance internationally competitive facilities in molecular and cellular biology, biochemistry, biophysics and structural biology. The Institute is a founding member of the Partnership for Structural Biology together with prestigious pan-European institutes: the European synchrotron X-ray source, the European center for neutron scattering, the Grenoble Outstation of the EMBL, located nearby and providing a strong international environment.

Grenoble is a pleasant city situated in the French Alps and is one of the most renowned scientific area in France for biological studies.