

**POST-DOCTORAL POSITION  
INSTITUT PASTEUR, PARIS, FRANCE**

**A three years post-doctoral position is available in the laboratory of the Molecular Genetics at the Institut Pasteur (Paris) to work in an ambitious multi-disciplinary project focused on the elucidation of the role of the sigmaS factor in bacterial fitness and adaptation to the environment**

**General information**

The GSR group, in the “ Molecular Genetics unit” (head Anthony Pugsley) of the Institut Pasteur, offers a three-years post-doctoral position financed by the ANR (The French national research granting agency). The position is expected to start at the latest in April 2012.

The main focus of our group is the study of an adaptive pathway in bacteria, the general stress response (GSR), that provides to the cell protection against various types of stress and starvation conditions. This response relies on the expression of a large regulon controlled by a sigma factor, sigmaS (RpoS), that associates with the RNA polymerase core enzyme (E) to initiate transcription at specific promoters. Our research project addresses different aspects regarding the molecular mechanisms of action of sigmaS in the fitness and adaptation to the environment of pathogenic bacteria such as *Salmonella*.

**Project description**

The post-doc to be recruited will work more specifically on a challenging aspect of this project, the structural and biophysical characterization of the interaction between sigmaS and Crl, a non-conventional regulatory protein that regulates gene expression by increasing the performance of sigmaS (1). Unlike classical regulators of transcription, Crl binds sigmaS instead of DNA and enhances its association rate to E, thereby facilitating RNAP holoenzyme E-sigmaS formation (2-3). Modulation of sigmaS activity by Crl is thus a unique mechanism, where Crl likely promotes a conformational change in sigmaS to favor its binding to E. We will focus on the mechanism of action of Crl at the molecular level, by a variety of structural and biophysical approaches. Relevant collaborations are in place.

Other aspects of the project include the characterization at the biochemical levels of small proteins tightly controlled by sigmaS and their putative binding partners.

**Application details for post-doctoral fellows**

Candidates should be highly motivated by protein biochemistry/biophysics and be willing to take on a scientific and technical challenge. A strong background and practical experience in techniques of protein biochemistry, biophysics (molecular and atomic-scale characterization) and molecular biology is highly desirable. Experience in structural bio-informatics will be appreciated. The candidate should have less than two years experience after his/her Ph.D.

Applicants should send a cover letter with a brief statement of research experience, technical expertise and interests, a CV, a list of publications and contact details of three referees to Françoise Norel ([francoise.norel@pasteur.fr](mailto:francoise.norel@pasteur.fr))

(1) Robbe-Saule *et al.* 2006. J. Bacteriol. 188 : 3983-3994. (2) England *et al.* 2008. J. Biol. Chem. 283:33455-64. (3) Monteil *et al.* 2010. J. Bacteriol. 192: 6401-6410.