

Two postdoctoral researcher positions in ERC-funded project *BacNanoMachine* at Humboldt-Universität zu Berlin

Background/objectives:

The Humboldt-Universität zu Berlin is one of eleven German universities that have been awarded the 'University of Excellence' status since 2012. Located at the Institute of Biology, our research group investigates fundamental molecular mechanisms in bacterial cell biology.

The model system of our research is a remarkably complex, self-assembling nanomachine: the bacterial flagellum of *Salmonella enterica*. Flagella mediate motility of *Salmonella* and are by far the most prominent extracellular structure known in bacteria. We use a combination of genetic engineering, biochemistry and quantitative fluorescent microscopy techniques to understand the genetic regulation, self-assembly and protein export mechanisms of this fascinating nanomachine [1-4].

In the ERC-funded project *BacNanoMachine* („Reconstructing the coordinated self-assembly of a bacterial nanomachine”), we investigate the underlying principles that allow bacteria to control and coordinate the self-assembly processes of multi-component nanomachines.

Towards this goal, the selected candidate(s) will employ quantitative single-cell gene expression analyses, re-engineering of the genetic network and biophysical modeling in order to develop a biophysical model of flagella self-assembly.

Requirements:

- Doctoral degree (PhD) in microbiology, molecular biology, bioinformatics or related fields
- Experience in microbiology, microscopy, bioinformatics and/or bacterial genetics will be considered as an advantage
- Knowledge of a scripting language and Python is a plus
- Candidates should have published in peer-review journals and a strong interest in bacterial cell biology
- Excellent English communication skills (written and spoken)

Position:

The two positions (100%, TV-L E13) are available from October 1st, 2020 and funded for 36 months with the possibility of extension after evaluation. The Humboldt-Universität zu Berlin is an equal opportunity employer and welcomes the application of qualified female scientists. Equally qualified applicants with disabilities will be given preference. Applicants with migration background are particularly welcomed.

Application:

Qualified applicants should send their curriculum vitae, including a letter of motivation, a statement of research interests and the names of previous supervisors/referees, in a **single PDF** document until **July 31st, 2020** to marc.erhardt@hu-berlin.de (reference number **DR/101/20**).

Please visit our website www.hu-berlin.de/stellenangebote, which gives you access to the legally binding German version.

[1] Horstmann, J. A. et al. Methylation of *Salmonella* Typhimurium flagella promotes bacterial adhesion and host cell invasion. *Nature Communications* **11**, 2013 (2020) [doi].

[2] Spöring, I. et al. Hook length of the bacterial flagellum is optimized for maximal stability of the flagellar bundle. *PLoS Biol* **16**, e2006989 (2018) [doi].

[3] Renault, T. T. et al. Bacterial flagella grow through an injection-diffusion mechanism. *Elife* **6**, e23136 (2017) [doi].

[4] Fabiani, F. D. et al. A flagellum-specific chaperone facilitates assembly of the core type III export apparatus of the bacterial flagellum. *PLoS Biol* **15**, e2002267 (2017) [doi].

Prof. Dr. Marc Erhardt
Humboldt-Universität zu Berlin
Institut für Biologie - Bakterienphysiologie
Philippstr. 13, 10115 Berlin
Web: www.baktphys.hu-berlin.de
Twitter: [@Salmo_Lab](https://twitter.com/Salmo_Lab)



European Research Council
Established by the European Commission