



2021-07-01 Dnr:  
V2021/2101

# LUNDS UNIVERSITET

Medicinska fakulteten  
*Institutionen för experimentell medicinsk  
vetenskap*

Lund University is one of Europe's leading universities. Here, history and tradition lay the ground for the study and research environments of tomorrow. We offer education and research within engineering, science, law, social sciences, economics and management, humanities, theology, fine art, music and theatre. Through interaction with business and the community we ensure that knowledge and innovations benefit society. The University has 47 000 students and 7 200 staff from all over the world, based mainly in Lund, Malmö and Helsingborg. We work with 680 partner universities in more than 50 countries.

Lund University invites applications for the following position:

## **Post-doctoral scholarship in bioinformatics**

**Placement:** Department of Experimental Medical Science

**Ref No:** V2021/2101

**Duration:** The scholarship can be drawn for a total of two years, with each contract being of six months duration.

**Starting time:** October 1<sup>st</sup> 2021, or by agreement

**Last day for applying:**

September 1<sup>st</sup> 2021

## **Description**

In the Atkinson lab our aim is to make fundamental discoveries about the evolution of protein function and structure. We work mainly with bioinformatic methods, developing our own tools and taking advantage of the huge amounts of available genome and predicted proteome sequences. One of our main research directions concerns toxin-antitoxin (TA) systems of bacteria and bacteriophages. Our studies of toxSAS TA enzymes that dramatically inhibit bacterial growth through producing poisonous nucleotides, or modifying tRNA have recently been published in *PNAS* [1] and *Molecular Cell* [2], respectively, and our recent discovery of a hyperpromiscuous antitoxin domain that we have named Panacea is currently in revision [3]. As a mechanism of defence against bacteriophages, TAs have significance for developing new biotechnological tools, as well as understanding and eventually overcoming natural barriers to phage therapy for treating antibiotic resistant infections. Our work on toxin-antitoxins, and their evolution, structure, function and biotechnological applications was recently supported by a generous grant from the Knut and Alice Wallenberg foundation (see <https://kaw.wallenberg.org/grundforskning-djupt-inne-i-bakteriernas-arvsmassa>, for a summary in Swedish).

The post-doctoral scholarship will be an opportunity for scientific development in protein bioinformatics and skill acquisition in coding and web development. Building on the success of our gene-neighbourhood analysis Python tool FlaGs ([www.webflags.se](http://www.webflags.se)) [4], you will be participating in the development of bioinformatic methods for the discovery of new exciting

biology. The bioinformatic predictions will be tested experimentally in our group and through our collaborative network.

## References

1. Jimmy, S. et al. Proc Natl Acad Sci U S A 117, 10500-10510 (2020).
2. Kurata, T. et al. bioRxiv, 2021.2004.2030.441581 (2021), and in press, Molecular Cell
3. Kurata, T. et al. bioRxiv, 2021.2005.2007.442387 (2021).
4. Saha, C. K., Sanches Pires, R., Brolin, H., Delannoy, M. & Atkinson, G. C. Bioinformatics 37, 1312-1314 (2021).

## Qualifications

Expertise: Required

- Coding skills (preferably in Python)
- Background understanding of, and strong interest in molecular biology and evolution

Expertise: Experience in any of the following is desirable but not essential:

- Web tool development
- Machine learning methods
- Phylogenetic sequence analysis
- Handling of large data sets of genomes and proteomes

Eligible candidates must have obtained their PhD within the last three years, and must not have held positions at Lund University within the last two years.

## The application should contain:

- Cover letter explaining your motivation for applying for the scholarship
- Curriculum vitae with contact details of two referees
- PhD Diploma

## Information:

Dr. Gemma C. Atkinson  
gemma.atkinson@med.lu.se

## Appointment procedure:

Applications with CV is to be sent to Gemma C. Atkinson via e-mail:  
gemma.atkinson@med.lu.se

Ref. No V2021/2101 shall be indicated on the application.

**Information regarding post doc scholarships at Lund University**

- The scholarship amounts are paid quarterly.
- The scholarship follows the regulations laid down by the University Vice-Chancellor (LS 2010/68, A13).
- The scholarship is intended for the holder's own education/professional development and does not constitute remuneration for work or other service that has been carried out or will be carried out on behalf of the University.
- The scholarship does not give any entitlement to sickness benefit, parental allowance, holiday pay or pension.
- The host faculty/department and the scholarship holder shall draw up in writing an agreed plan for the studies/development.
- The Scholarship holder is to be informed about the length of the stay, assured social conditions, and continual review of the scholarship holder's development.
- The Scholarship holder is to be informed about insurance covering the scholarship holder and the need to check his/her own insurance requirements.
- The scholarship holder is to be treated equally to students/researchers in the same situation but with different sources of funding.
- The scholarship holder is to be assured and to contribute to a good working environment.
- The Scholarship holder is to be informed about the risk of possible retrospective taxation in Sweden in cases where the scholarships are administered and paid out by LU and the scholarship holder gains employment at LU shortly after the period of the scholarship.
- There may be a risk of the scholarship holder being taxed in his/her home country; the scholarship holder should investigate this before the period of the scholarship.