PhD student in Bioinformatics (A)

Ref. No. SU FV-2918-21

at the Department of Biochemistry and Biophysics. (Closing date: 21 September 2021)
Prolonged application time - new closing date: 21 October 2021.

SciLifeLab (SciLifeLab) is a national center for molecular biosciences with focus on health and environmental research. The center combines frontline technical expertise with advanced knowledge of translational medicine and molecular bioscience. SciLifeLab is a national resource hosted by Karolinska Institutet, KTH Royal Institute of Technology, Stockholm University and Uppsala University. The center also collaborates with several other universities.

Project description
Your studies in Bioinformatics will be in the project: "Title: Network-based protein function prediction".

The goal of the project is to develop computational algorithms and methods that use high-throughput biological data to build comprehensive networks of how genes and their products interact with each other. We use systems biology approaches to build the FunCoup database of global association networks of functional coupling (http://FunCoup.sbc.su.se/). Networks can be used for statistical enrichment analysis of interactions between a query gene list and known pathways, which is much more sensitive than traditional gene overlap analysis. The project therefore also includes development and application of network-based pathway analysis methods.

Methods include regression models, Bayesian integration, various statistical analyses, and in-house developed modeling techniques. In FunCoup, heterogeneous publicly available high-throughput data sources are combined to predict functional coupling between proteins in order to build global networks that model pathways and interaction cascades. The project aims to expand FunCoup to also use physical regulatory evidence such as ChIP-Seq to infer regulatory links, and enzymatic activities to infer directed links. It further involves improved modelling and scoring of functional associations to make the networks more stable between releases. Structuring the networks into modules will be done to assign functions to network neighborhoods. The project involves programming, data analysis, benchmarking, and application of the developed methods to genes of particular interest in order to discover new protein functions.

The successful candidate must be highly motivated and have an M.Sc. in bioinformatics or related field, and knowledge of molecular biology. Alternatively, an M.Sc. in molecular biology or related field and at least 1 year of documented practical experience in bioinformatics research and programming. Demonstrable familiarity with sequence and molecular data analysis techniques is essential. Computer programming with Java, Python, R, (Perl, C++), UNIX skills, and knowledge of biological database systems are necessary merits.

Qualification requirements
In order to meet the general entry requirements, the applicant must have completed a second-cycle degree, completed courses equivalent to at least 240 higher education credits, of which 60 credits must be in the second cycle, or have otherwise acquired equivalent knowledge in Sweden or elsewhere.

In order to meet the specific entry requirements, for acceptance in the Biochemistry, especially Bioinformatics, program the applicant must have passed courses within the first and second cycles of at least 90 credits in either, a) Chemistry/Molecular Biology/Biotechnology, or b) Computer Science/Mathematics/Physics and at the second cycle level, 60 credits in Life Science, Computer Science Mathematics, Physics or Bioinformatics including a 30 credit Degree Project (thesis).

The qualification requirements must be met by the deadline for applications.

Selection
The selection among the eligible candidates will be based on their capacity to successfully complete the program. Important criteria when assessing this capacity are: documented knowledge and skill in the field of the thesis project, written and oral proficiency in English, the capacity for analytical thinking, the ability to collaborate, as well as creativity, initiative, and independence. The assessment will be based on previous experience and grades, the quality of the degree project, references, relevant experience, interviews and the candidate’s written motivation for seeking the position.

Admission Regulations for Doctoral Studies at Stockholm University are available at: www.su.se/rules and regulations.

Terms of employment
Only a person who will be or has already been admitted to a third-cycle programme may be appointed to a doctoral studentship.
The term of the initial contract may not exceed one year. The employment may be extended for a maximum of two years at a time. However, the total period of employment may not exceed the equivalent of four years of full-time study.

Doctoral students should primarily devote themselves to their own education, but may engage in teaching, research, and administration corresponding to a maximum of 20% of a full-time position.

Please note that admission decisions cannot be appealed.

Stockholm University strives to be a workplace free from discrimination and with equal opportunities for all.

**Contact**

For more information, please contact the project leader, Professor Erik Sonnhammer, erik.sonnhammer@dbb.su.se.

General information about the PhD programs can be given by the Director of Doctoral Studies, Pia Ådelroth, pia.adelroth@dbb.su.se, or the Head of the Department, Martin Högbom, martin.hogbom@dbb.su.se.

**Union representatives**

Ingrid Lander (Saco-S), telephone: +46 708 16 26 64, saco@saco.su.se, Alejandra Pizarro Carrasco (Fackförbundet ST/Lärarförbundet), telephone: +46 8 16 34 89, alejandra@st.su.se, seko@seko.su.se (SEKO), and PhD student representative, doktorandombud@sus.su.se.

**Application**

Apply for the PhD student position at Stockholm University's recruitment system by clicking the “Apply” button. It is the responsibility of the applicant to ensure that the application is complete in accordance with the instructions in the job advertisement, and that it is submitted before the deadline.

Please include the following information with your application:

- Your contact details and personal data
- Your highest degree
- Your language skills
- Contact details for 2–3 references

and, in addition, please include the following documents:

- Cover letter
- CV – degrees and other completed courses, work experience and a list of degree projects/theses
- Research proposal (no more than 3 pages) describing:
  - why you are interested in the field/project described in the advertisement
  - why and how you wish to complete the project
  - what makes you suitable for the project in question
- Degree certificates and grades confirming that you meet the general and specific entry requirements (no more than 6 files)
- Letters of recommendation (no more than 6 files)
- Degree projects/theses (no more than 6 files).

The instructions for applicants are available at: How to apply for a position.

**You are welcome to apply!**

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**Closing date:** 21/10/2021

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