PhD student in development of molecular tools

Published: 2023-06-01

Uppsala University is a comprehensive research-intensive university with a strong international standing. Our ultimate goal is to conduct education and research of the highest quality and relevance to make a long-term difference in society. Our most important assets are all the individuals whose curiosity and dedication make Uppsala University one of Sweden's most exciting workplaces. Uppsala University has over 54,000 students, more than 7,500 employees and a turnover of around SEK 8 billion.

The Department of Immunology, Genetics and Pathology at Uppsala University has a broad research profile with strong research groups focused on cancer, autoimmune and genetic diseases. A fundamental idea at the department is to stimulate translational research and thereby closer interactions between medical research and health care. Research is presently conducted in the following areas: medical and clinical genetics, clinical immunology, pathology, neuro biology, neuro-oncology, vascular biology, radiation science and molecular tools. Department activities are also integrated with the units for Oncology, Clinical Genetics, Clinical Immunology, Clinical Pathology, and Hospital Physics at Akademiska sjukhuset, Uppsala. The department has teaching assignments in several education programmes, including Master Programmes, at the Faculty of Medicine, and at the Disciplinary Domain of Science and Technology. The department has a yearly turnover of around SEK 500 million, out of which more than half is made up of external funding. The staff amounts to approximately 345 employees, out of which 100 are PhD-students, and there are in total more than 700 affiliated people. Feel free to read more about the department's activities here: www.igp.uu.se

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Duties
The PhD project will involve several approaches to improve opportunities for molecular analyses in medical research and ultimately in clinical routine, including the following:

In view of progress in molecular analyses with increasing through-put and decreasing costs it becomes imperative to establish more convenient, inexpensive means to obtain patient samples. A technique to collect dried blood samples will be established and characterized with respect to what analyses are possible with such samples.

There is also a need for further improved high-throughput molecular analyses, and the project will involve work with a technique where DNA or RNA sequences of interest may be captured in circular DNA strands for highly specific, multiplex analyses.

Despite important progress using proximity assays for protein analyses there remains a need to further enhance sensitivity for weakly expressed proteins, both in clinical settings and at the point of care and this will also be an aspect of the planned PhD project.

The PhD student shall perform independent laboratory work, planning, executing and evaluating experiments. Other tasks include writing research reports for publication in peer review journals and to present the research at relevant international conferences.

For more information about the research group, [https://www.igp.uu.se/forskning/molekylara-verktyg-funktionsgenomik/ulf_landegren/](https://www.igp.uu.se/forskning/molekylara-verktyg-funktionsgenomik/ulf_landegren/)

Requirements
To meet the entry requirements for doctoral studies, you must:

- hold a degree in molecular biology, biotechnology, biomedicine or related discipline.
- have completed at least 240 credits in higher education, with at least 60 credits at Master’s level including an independent project worth at least 15 credits, or
- have acquired substantially equivalent knowledge in some other way.
- Language requirements: fluency in both spoken and written Swedish and English.

**Additional qualifications**
Previous experience of method development of molecular tools for detection of nucleic acids and proteins aimed at diagnostic or research purposes.

It is of value if the candidate has experience with the following molecular techniques: in situ proximity ligation assay (PLA), solid phase PLA, proximity extension assay (PEA), design of and experience with padlock probe-based assays, rolling circle amplification (RCA), reverse transcription, PCR, qPCR, ELISA, gel electrophoresis (proteins and nucleic acids), fluorescence microscopy, and cell culturing.

Experience in creating digital scientific illustrations using Adobe Photoshop, Illustrator, Blender or equivalent and programming experience in Python are also helpful for the PhD position.

Desirable personal skills: proficiency in experiment planning in a structured manner and executing those plans independently. Being able to summarize and critically analyze experimental data and effectively communicate the results with colleagues and peers. Ability to troubleshoot and identify the root cause of problems and consequently generate new potential solutions. A capability to collaborate with colleagues is also important.

Rules governing PhD students are set out in the Higher Education Ordinance chapter 5, §§ 1-7 and in Uppsala University's rules and guidelines.

**About the employment**
The employment is a temporary position according to the Higher Education Ordinance chapter 5 § 7. Scope of employment 100 %. Starting date as agreed. Placement: Uppsala.
For further information about the position, please contact: Ulf Landegren +46708 962604 ulf.landegren@igp.uu.se or Masood Kamali-Moghaddam, 0707454366, masood.kamali@igp.uu.se

Please submit your application by 12 of June 2023, UFV-PA 2023/1998

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Submit your application through Uppsala University's recruitment system.

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<th>Department of Immunology, Genetics and Pathology</th>
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