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UNIVERSITET

PhD student in Molecular Pharmaceutics

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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 Pharmacy offers an interdisciplinary environment at the center of the pharmaceutical arena. With frontline research, first-rate education and extensive collaborations we constitute an important driving force in the development of our academic field. In this inspiring environment our rich diversity of research groups, several of international prominence, develop and conduct work of great scientific importance. Among our core competences are in vitro ADME models, enabling formulations, advanced in vivo methods, computational modelling and simulations, as well as patient and societal aspects, from optimizing the use of drugs in individuals to societal pharmaceutical policies. Together, we form a unique cluster of academic competences within pharmaceutical science, playing a key role in shaping the future of pharmacy in both Sweden and globally.

Our scientific focus areas in selection: Molecular Pharmaceutics • Drug Delivery • Pharmaceutical Nanotechnology • Pharmacokinetics • Pharmacodynamics • Pharmacometrics • Clinical Pharmacy • Pharmacoeconomics • Pharmacoepidemiology • Pharmacotherapy • Social Pharmacy. More information at [Department of Pharmacy](#).

The research group: The PhD student will be linked to the Drug Delivery Research Program comprised of the research group Molecular Pharmaceutics, headed by

Professor Christel Bergstrom as well as the research group Drug Delivery, headed by Professor Per Artursson. The Drug Delivery Research program provides an international research environment with more than 40 researchers, post-docs and graduate students equally divided between research and an innovative pharmaceutical profiling platform (UDOPP) that contributes to national and international drug discovery and development programs. This creates an exciting environment that offers expert knowledge across disciplines and a state-of-the art infrastructure. The group takes a multidisciplinary approach and combines bioinformatics and artificial intelligence with cell- and molecular biology, biopharmaceutics, pharmaceuticals to find new ways to predict and define rate-limiting barriers to the absorption and organ distribution of drugs. We anticipate that our research will provide insights into new mechanisms for drug absorption, disposition and delivery, which will support development of new therapeutic strategies for efficient oral drug delivery. More information at at [Drug Delivery](#).

The position will be funded by the European Union under the GENEGUT Research and Innovation Action. The main goal of GENEGUT is to develop a first-in-class oral RNA-based therapy for ileal Crohn's disease (CD), which selectively targets inflammation locally in the intestinal tissue, while avoiding systemic side effects. Delivery of RNA to the target cells in the intestine will be enabled by a combination approach where novel biomaterials will complex the RNA within nanoparticles (NPs). A novel capsule technology will ensure site-specific release of the encapsulated NPs at the diseased ileum. The RNA-nanotherapeutics (siRNA and mRNA) will modulate gene expression locally in the ileum by targeting the clinically validated (JAK/STAT) pathway and two exploratory targets. Proof-of-efficacy will be demonstrated in a 3D organoid and multi-cellular model of ileal CD using primary human cells and also in vivo by GENEGUT partners. GENEGUT is a multidisciplinary consortium of 9 partners from 8 European countries and includes renowned researchers, expert clinical scientists, larger pharma companies and a patient organisation (EFCCA). For more information about the 'GENEGUT' consortium, see the official webpage [Genegut](#).

The project: The PhD student will work within the project "Oral delivery of RNA therapeutics". The overall goal of the PhD project is to develop more clinically relevant intestinal models based on 3D organoid cultures and to use them to evaluate the efficacy of the RNA therapeutics. The efficacy of the selected nano-formulations will also be demonstrated under an inflammatory environment relevant to patients with CD. The models will be profiled using transcriptomics, proteomics

and functional studies. To evaluate the gene modulation efficacy at the cellular level, the uptake mechanisms of RNA-based nanoparticles will be assessed in the intestinal models as well as their intracellular localization and endosomal escape into the cytosol using a range of advanced fluorescence microscopy techniques.

Focus areas of the PhD studies are: 3D organoid cultures • siRNA • mRNA • nano-formulations • cellular uptake mechanisms • intracellular pharmacokinetics • fluorescence microscopy • quantitative proteomics.

[Read more about our benefits and what it is like to work at Uppsala University](#)

Duties

The main duties of doctoral students are to devote themselves time to their research studies, which includes participating in research projects and third cycle courses. Work-related administrative duties are a part of the work. Teaching can be a part of the position (max 20 %). The position will be extended with the time devoted to teaching to allow four years of full time graduate studies. Information about education at the postgraduate level, admission requirements and admission decisions can be found at [Research Training Programmes in Medicine and Pharmacy](#).

The PhD candidate is expected to

- conduct research focused on the development of in vitro intestinal models and their application to evaluate the efficacy of the RNA therapeutics
- develop own initiative, creativity and rational judgement in applying appropriate approaches to research activities
- ensure good day-to-day progress of work in development and analysis, and maintaining good records
- write up results for publication and attend suitable conferences
- attend local and GENEGUT network meetings in Sweden and abroad

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

Requirements

An MSc degree in a relevant field such as Cell and Molecular Biology, Molecular

Biotechnology Engineering or Pharmaceutical Sciences is required. The ideal candidate is exceptionally enthusiastic, creative, and driven with a passion for interdisciplinary science and translational research. In addition, the candidate is highly motivated, organized, reliable team player that can also work independently and has thorough education and strong interest in research. The candidate has good communication skills in oral and written English. Previous experience of any of the core subjects are meritorious. Information about postgraduate studies, including eligibility requirements and admission rules, can be found at [Research Training Programmes in Medicine and Pharmacy](#).

Additional qualifications

Previous experience with experimental setups, the wet-lab, cell culture, fluorescence microscopy, mass spectrometry is beneficial.

Admission requirements

A person meets the general admission requirements for third-cycle courses and study programs if he or she

- has been awarded a second-cycle qualification, or
- has satisfied the requirements for courses comprising at least 240 credits of which at least 60 credits were awarded in the second cycle, or
- has acquired substantially equivalent knowledge in some other way in Sweden or abroad.

How to apply

The application should contain the following

- Letter in which the applicant describes her- or himself, motivates why she/he has applied for the position, states relevant qualifications and indicates research interests and plans for the future
- CV including at least two references
- Authorized copies of relevant certificates, degrees and grades
- Copies of your master thesis (completed or draft) and other documents, such as publications, that you want to present.

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 1 March 2023 or as agreed. Placement: Uppsala

For further information about the position, please contact: Associate Professor Madlen Hubert, +46 73 673 77 81, madlen.hubert@farmaci.uu.se or Professor Per Artursson, +46 70 425 08 88, per.artursson@farmaci.uu.se.

Please submit your application by 5 January 2023, UFV-PA 2022/4463.

Are you considering moving to Sweden to work at Uppsala University? [Find out more about what it's like to work and live in Sweden.](#)

Please do not send offers of recruitment or advertising services.

Submit your application through Uppsala University's recruitment system.

Placement: Molekylär galenisk farmaci

Type of employment: Full time , Temporary position longer than 6 months

Pay: Fixed salary

Number of positions: 1

Working hours: 100 %

Town: Uppsala

County: Uppsala län

Country: Sweden

Union representative: ST/TCO tco@fackorg.uu.se

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Saco-rådet sacco@uadm.uu.se

Number of reference: UFV-PA 2022/4463

Last application date: 2023-01-05

[Apply for position](#)