Applications are invited for a PhD fellowship/scholarship at Graduate School of Health, Aarhus University, Denmark.

High-throughput sequencing and nanoscale ligand patterns: requirements for B-cell activation and immune response.

Research area and project description:

During this project you will study events taking place during activation of the immune system. The project will combine studies on immune responses to defined nanoscale ligand patterns with the use of Single-cell RNA sequencing. Sequencing by Drop-seq allows analyses of gene expression in thousands of individual cells in a single experiment; in this project primarily B-cells will be the main cell of interest. The project will focus on the characterization of immune responses following exposure of the immune system to model antigens. The antigens in question will be generated using nanotechnologies with specific patterning of B-cell ligands. The experiments will involve *in vitro* experiments on presentation of such patterns to transgenic or knock-in B-cells combined with *in vivo studies*, including but not limited to the B1-8/NP system.

The project is highly interdisciplinary and part of a novel large Danish National Research Foundation center, CellPAT: Center for Cellular Signal Patterns, with partners at iNANO and HEALTH at Aarhus University as well as international institutions: King's College London, UK, Ludwig-Maximilians-Universität Munich (LMU) and Max Plank Institute of Biochemistry (MPIB) Munich, Germany. The overall aim of the centre is to understand the role of multivalency and patterns in immune recognition, cell adhesion and signaling and disease. The student will collaborate with other students and post-doc's within the project.

The 3-year PhD program includes PhD courses (in total app. ½ year), writing scientific articles and the PhD thesis, teaching and disseminating your research, active participation in scientific meetings etc.

Qualifications and specific competences:

Applicants to the PhD position must have a relevant Master's degree in molecular biology, biochemistry, nanoscience or equivalent. Competences in cell culture work, imaging, in vivo models or next-generation sequencing will be an advantage but are not mandatory. The applicant should be fluent in written and spoken English (i.e., equivalent to an English B level or better).

Place of Employment and Place of Work:

At the Department of Biomedicine at Aarhus University we conduct research in biology and diseases and educate students within the field. Biomedicine bridges natural science and clinical medicine and the research thus covers a wide range of research areas. The Department employs around 450 people. We are currently located in six different buildings on the AU campus where modern laboratory facilities with associated support, core and animal facilities provide the framework for our research. The project will move to a large new Biomedicine building, 8,300

square meters of laboratory buildings, 4,000 square meters of underground construction scheduled to be ready for use by summer 2018.

Contacts to the main supervisors of the project:

Applicants seeking further information are invited to contact:

Søren E. Degn, Department of Biomedicine, Aarhus University, sdegn@biomed.au.dk , Mobile: +4522141703 or Steffen Thiel, Department of Biomedicine, Aarhus University, st@biomed.au.dk , Mobile: +4529270890

Application and attachments:

Applications (attach pdf-files only, max. total of 20 MB, no zip) must contain the applicant's CV, a motivation letter (cover letter), list of publications, diploma and transcripts of records (grades etc.), and at least one letter of support/1-3 professional referees. Applications should be mailed to Steffen Thiel at st@biomed.au.dk no later than **April 1st, 2018.** We may request further information or invite the applicant to attend an interview. All interested and qualified candidates are encouraged to apply, regardless of their personal background.

Please note that the selected candidate will have to apply for and get approved for enrolment at the AU Graduate School of Health http://phd.health.au.dk/application/ in a separate procedure before starting as a PhD student. For the chosen applicant, application deadline for enrollment is 16th April – 14th May, 2018. Expected starting date will thus be summer 2018.