

Lund University and University of Nottingham seed funding

Project descriptions

Importance of INSL3 to analyse the role of androgen receptor variants in male physiology

Aleksander Giwercman (LU) and Ravinder Anand-Ivell (UoN)

A large proportion of the male population suffer a range of debilitating illnesses when they grow older, including bone and muscle weakness, cognitive decline, metabolic disease and cardiovascular problems. Most of these are linked to poor responsiveness to and production of the hormone testosterone, which itself is very variable and technically hard to measure. The research teams at the Universities of Lund and Nottingham are developing new biomarkers, such as insulin-like peptide 3 and androgen receptor genetic variants, better to predict already in younger men, those who will later develop such age-related illness and thereby benefit from early preventative measures.

Next generation model of ‘breathing’ lung tissue for IPF drug discovery

Darcy Wagner (LU) and Amanda Tatler (UoN)

Idiopathic pulmonary fibrosis (IPF) is a devastating chronic lung disease with no cure. Despite the identification of compounds capable of curing animal models of pulmonary fibrosis, few effective drugs have translated into the clinic. This may partially be due to a lack of complex models which use human lung tissue. Such models could be used in the lab to screen potential new therapies. In this new Nottingham-Lund collaboration, we aim to combine the expertise at each site to develop a new model for IPF drug discovery which uses human lung tissue and incorporates mechanical stretch to mimic breathing.

Lund–Nottingham Cancer Network: Enhancing our Cancer Research Impact and Outputs

Martin Johansson (LU) and Nigel Mongan (UoN)

The goal of this project is to consolidate and extend successful University of Nottingham and Lund University cancer research collaborations. The focus of our interactions has been broadly based around research into novel molecular mechanisms in prostate cancer metastasis, but also includes research activities in breast cancer, leukaemia, lymphoma and basic molecular cell biology. Together, we have created a research pipeline from target identification and molecular structure/function studies in cancer cell lines, target validation in clinical tissue samples, through to drug discovery using biochemical and cell based assays, supported by genome editing, RNA Sequencing and animal models. This enables our network to investigate detailed molecular mechanisms underpinning tumour microenvironment and

metastasis of prostatic and other solid tumours. The clinical relevance of our research is supported by interactions with pathologists and clinicians within our associated clinical facilities (Malmö SUS) and (QMC and City Hospital Nottingham) permitting us to accelerate the translational benefits of our activities. We now plan to extend the initiative to new investigators, and in particular early career researchers. To do this we will hold workshops in Nottingham and Lund and extend our research collaborations to new areas including molecular pharmacology, drug delivery, next generation pathology, epitranscriptomics and tumor immune function.

MIMO communication in a wave chaotic environment and in the near field

Mats Gustafsson (LU) and Gregor Tanner (UoN)

Resuming 'ordinary lives' through education: asylum seeking and refugee children post settlement in Europe

Sinikka Neuhaus (LU) and Joanna McIntyre (UoN)

The project focuses on the educational experiences of refugee children as they begin their new lives in Europe. There are three inter-related elements for this pilot exchange. The first is the empirical study bringing together head teachers from each locality to compare the barriers and opportunities for schools seeking to support refugee children in Lund and Nottingham, working alongside the research team to develop both evidence-based policy and a new conceptual model for understanding the transitions newly arrived children go through. The second is to develop funding bids for longer term research in this area building towards a sustained and nuanced understanding of how we can work together in a holistic way to support integration through education. The third is a collaborative writing plan of high quality research outputs.

Health issues in China

Ulf Gerdtham (LU) and Ada Ma (UoN)

We propose to work together to study the unmet needs and under diagnoses of diabetes in China. Through this collaboration we hope to explore further opportunities for grant applications and expanding the capacity of health economics research on both sites. Lund already have researchers who are very knowledgeable about health economics and about China, and UNNC is seeking to expand on its capacity and capability in doing a wider variety of health economics research. We plan to also work with the colleagues of Nottingham UK and Malaysia to explore how we may carry out assessments of health technology in China.

Spiders in space – crossing boundaries to understand the mechanisms underlying natural pest control by beneficial organisms

Yann Clough (LU) and Sara Goodacre (UoN)

Sheetweb spiders are widely known for ballooning in large numbers on long strands of silk. Less well known is that they are important beneficial organisms in agriculture. They are often already in the farmer's fields and ready to feed on pests such as aphids as soon as they fly into the crops, which helps prevent pest outbreaks. Researchers at University of Nottingham and



Lund University have started collaborating to get a better insight into the biological basis for spider persistence in these highly disturbed environments. Spiders must either persist in the fields, where they face disturbances such as tillage and pesticide applications, or in rapidly colonize the fields from safer, less disturbed areas. Sheetweb spider populations are very variable in both their dispersal behaviour and their tolerance for pesticides, and evidence suggests that microbial symbionts of the spiders may also be exerting an influence on these traits. Understanding the processes underlying these patterns and the ecological consequences through combining molecular genetics and agent-based modelling techniques has the potential not only to advance a fascinating scientific frontier, but also to contribute towards securing the basis for sustainable agriculture.