University of Nottingham
UK | CHINA | MALAYSIA

ROLE PROFILE

Job Title: Senior Research Fellow in Systems Biology

School/Department: School of Veterinary Medicine and Science

Job Family and Level: Research and Teaching Level 5

Contract Status: Fixed Term until 31/07/2023

Hours of Work: Full time: 36.25 hours per week

Location: School of Veterinary Medicine and Science

Reporting to: Dr Tania Dottorini

Background to the Role:

The Government's White Paper 'Industrial Strategy – Building a Britain fit for the future' (November 2017) has identified maximising the advantages for UK industry from the global shift to clean growth, as one of four grand challenges. The Secretary of State for Business, Energy and Industrial Strategy, Greg Clark, has stated that 'The move to cleaner economic growth is one of the greatest industrial opportunities of our time.' (The Clean Growth Strategy – Leading the way to a low carbon future, October 2017). This appointment will ensure that the University of Nottingham makes an impact on rapidly shifting practices in sustainable manufacturing associated with global clean growth strategies through excellence in the optimal development of systems biology.

This appointment is firmly aligned with the University's Research Strategy which is accompanied by a major investment into the University's Green Chemicals Beacon of Excellence. As part of the University's expansive vision to address global challenges, the Green Chemicals Beacon aims to secure the low carbon economy of the future. Through this multi-disciplinary effort, the Green Chemicals Beacon will address several UN Sustainable Development Goals, such as Climate Action and Sustainable Industrialisation, by:

- Focusing on carbon feedstocks derived from waste outside the food value chain with minimal impact on land security;
- Spearheading the transformation from a petrochemical, energy intensive economy to a sustainable and more circular economy;
- Gearing research activity towards processes with favourable Life Cycle Analysis (LCA) outcomes.

The Green Chemicals Beacon integrates metabolic engineering, process development and green chemistry into a sustainable manufacturing paradigm. The Beacon aims to speed the development cycles through the technology readiness levels, particularly blending advances in computational chemistry, big data analytics and machine learning with world leading white biotechnology and enzyme engineering. Integrated, continuous processing is at the heart of the Beacon's vision, facilitating technology demonstration from carbon feedstock to purified product at large laboratory scale. Achieving these objectives, the Beacon will establish three application platforms harnessing emerging technologies to realise sustainable processing, viz. (1) an aromatics platform, (2) an aldehyde platform and (3) a terpenoid platform.

Through its investment in the Green Chemicals Beacon, the University strongly believes the next global industrial revolution will be driven by a step change in sustainable processing; where this appointment in systems biology will strengthen collaborations across the University, international academics and industry.

Purpose of the Role:

This role is integrated into a number of collaborative and interdisciplinary projects, viz. (1) an aromatics platform, (2) an aldehyde platform and (3) a terpenoid platform; aligned with the Green Chemicals Beacon research activity portfolio:

- To develop and apply transferable systems biology strategies and automated workflows, informing metabolic engineering strategies.

- To develop systems biology methods to evaluate the redirection of carbon flux within biochemical networks of microbial cell factories to desired products, minimising by-product formation.

The person appointed will join the School of Veterinary Medicine and Science, who have an extensive track record and expertise in systems biology and bioinformatics. The person appointed will be expected to plan, conduct and analyse research in this area and will be responsible for writing up work for publication and presentation at scientific meetings.

	Main Responsibilities
1.	To plan and conduct primary research towards the goals of the research project. To analyse data, interpret reports, evaluate texts and bring new insights to the research area.
2.	To write up research work for publication and contribute to the dissemination of research outputs at scientific conferences. To assist in the dissemination of research outputs to the general public.
3.	To identify opportunities and assist in writing bids for research grant applications.
4.	To supervise undergraduate and postgraduate students projects, where these fall within the goals of the research project.
5.	To liaise with other members of the research groups in the School of Chemistry and the Faculty of Engineering and wider Green Chemicals Beacon community and ensure the co-ordination of work and sharing of data generated.

Knowledge, Skills, Qualifications & Experience

	Essential	**Desirable**
Qualifications/ Education	PhD or equivalent in Systems Biology, Computational biology, Computer science, Mathematics, Bioinformatics or other relevant computational field.	PhD with a strong emphasis on systems biology, computational biology or bioinformatics in general.
Skills/Training	Demonstrable research skills in systems biology, computational biology and bioinformatics. Experience in creating systems biology tools and methodologies. Deep experience in the application of genome-scale modelling to metabolic engineering. Experience in programming (e.g. Python, Matlab, R). Expert knowledge in biochemistry, biochemical pathways and cellular metabolism.	Expertise in bioinformatics, in particular applied to comparative genomics, genome biology, sequence analysis and evolutionary biology. Understanding of incorporating omics data sets into genome scale modelling, such as transcriptomics, metabolomics and proteomics. Previous experience in multi-disciplinary collaborative research. Previous success in gaining support for externally funded research projects.

	Ability to analyse data, interpret reports, evaluate and criticise texts and bring new insights. Good communication skills, including the ability to communicate with clarity on complex information. Ability to collaborate with others, both internally and externally.	Ability to creatively apply relevant research approaches, models, techniques and methods.
Experience	Practical experience in applying several *in silico* methods outlined above and required for the role. Documented, previous experience in the essential skills listed above is required. Evidence of peer-reviewed scientific publications in the listed fields. Evidence of research ambition through timely publication of research.	Experience of developing new approaches, models, techniques or methods in research area. Documented experience in the desirable skills listed above.

Due to the requirements of the UK Border and Immigration Agency, applicants who are not UK or EEA nationals and whose immigration status entitles them to work without restriction in the UK will be considered on an equal basis with UK and EEA nationals. Other non-UK or non-EEA nationals whose employment will require permission to work subject to a resident labour market test may only be considered if there are no suitable UK or EEA national candidates for the post. Please visit http://www.ukba.homeoffice.gov.uk/ for more information.

Informal enquiries may be addressed to Dr Tania Dottorini, Email: tania.dottorini@nottingham.ac.uk. Please note that applications sent direct to this Email address will not be accepted.