University of Nottingham
UK | CHINA | MALAYSIA

Role profile

Job title	Research Associate/Fellow (Immune cell response to surfaces)	Job family and level	Research & Teaching Level 4
School/ Department	School of Life Sciences	Location	University Park Campus

Purpose of role

A novel class of polymers developed in our labs show great promise in reducing infections and controlling host response in the clinic. We recently added the use of micro topography to provide a synergistic stimulus to tackle infections and found an improvement in the host immune response which is applicable to achieving better implant integration and wound healing. These are being developed in this project to improve outcomes for medical devices in the clinic.

The mechanisms that underpin immune cells polarisation on our novel polymer surfaces is not well understood, so in this EPSRC funded project we will use combinatorial material libraries in ChemoTopo Chips to screen response. We will develop models across a range of surfaces correlating surface chemistry, topography and bio-interfacial composition with bacterial, immune and stromal cell responses. These models will be used to inform optimal materials for use as implanted meshes and external wound care products for the post antibiotic era.

This post will involve cell culture of human-derived immune and stromal cells (e.g. macrophages, fibroblasts), establishing appropriate co-cultures and their functional characterisation using relevant analytical techniques such as automated fluorescence microscopy, ELISA, flow cytometry and PCR.

The successful candidate will be expected to work closely with data and material scientists and provide in vitro data for in silico model development and material design. There are links to two US collaborators, Bob Latour (Clemson University) and Daniel Anderson and Robert Langer (MIT) with whom the study visits are expected.

This is a collaborative project between the School of Pharmacy, The School of Computer Science, Physics and Astronomy, the School of Life Sciences and the Faculty of Engineering in Nottingham as well as collaborators in UCL. This full-time post will be offered on a fixed-term contract until 28th February 2027 in the first instance and is available immediately.

We pride ourselves on the collegial and supportive culture created by our staff. We are dedicated to creating an environment which enables both our staff to thrive and achieve their potential. Our commitment to Equality and Diversity has been recognised in the awarding of an Athena SWAN Silver Award.

	Main responsibilities	**% time per year**
1	• Cell culture of human-derived immune and stromal cells including macrophages, and fibroblasts. Establishing co-culture models as required	25%
2	• Applying microscopy analysis (automated fluorescence microscopy, circular dichroism, flow cytometry, PCR, ELISA) to monitor immune response to polymer surfaces.	20%
3	• Identifying correlations between material and bio-interfacial data with cell responses.	15%
4	• Lead and make significant contributions to scientific publications.	15%
5	• Presentation of results at internal and external meetings.	10%
6	• Assistance in the supervision of undergraduate and postgraduate students.	5%
7	• Organisation and assistance in general laboratory duties such as ordering of reagents, equipment maintenance, and laboratory housekeeping.	5%
8	• Active contribution to group meetings by *e.g.* problem solving, suggestions, *etc.*	5%

Person specification

	Essential	Desirable
Skills	• Experience of mammalian-derived cell culture. • Experience of working with macrophages and stromal cells • Experience with immunochemical analysis. • Excellent information technology and computing skills. • Careful experimentalist with high level data processing capabilities. • Experience with fibroblast and developing immune-stromal cell co-cultures • A strong commitment to interdisciplinary research, in particular between microbiology, mammalian cells and materials. • Excellent oral and written communication skills including the ability to communicate complex information with clarity. • Problem solving skills. • Ability to work independently and as part of a team. • Flexible, proactive and dedicated approach.	• Automated fluorescence microscopy experience • Circular dichroism experience • Flow cytometry • Mass spectrometry experience, particularly surface analysis.
Knowledge and experience	• Experience with surface chemical analysis data acquisition and interpretation. • Present work effectively to a variety of professional and academic audiences at meetings and conferences. • Significant contribution to publications in high quality journals.	• Working knowledge of using TOF-SIMS.

Qualifications, certification and training (relevant to role)	• A first degree in Biology, Chemistry, Materials, Pharmacy, Physics, Engineering, or related discipline. • PhD submitted or near to completion in the immunology/ biological sciences or chemistry area.	

The University of Nottingham is focused on embedding equality, diversity and inclusion in all that we do. As part of this, we welcome a diverse population to join our work force and therefore encourage applicants from all communities, particularly those with protected characteristics under the Equality Act 2010.

The University is a signatory of the Declaration on Research Assessment (DORA). As such we commit to focus on the scientific content of publications (where requested or provided as part of the recruitment and selection process) as a basis for review of quality, and consideration of value and impact of research conducted, rather than any proxy measures such as Journal Impact Factor.

Expectations and behaviours

The University has developed a clear set of core expectations and behaviours that our people should be demonstrating in their work, and as ambassadors of the University's strategy, vision and values. The following are essential to the role:

Valuing people	Is always equitable and fair and works with integrity. Proactively looks for ways to develop the team and is comfortable providing clarity by explaining the rationale behind decisions.
Taking ownership	Is highly self-aware, looking for ways to improve, both taking on board and offering constructive feedback. Inspires others to take accountability for their own areas.
Forward thinking	Driven to question the status quo and explore new ideas, supporting the team to "lead the way" in terms of know-how and learning.
Professional pride	Sets the bar high with quality systems and control measures in place. Demands high standards of others identifying and addressing any gaps to enhance the overall performance.
Always inclusive	Ensures accessibility to the wider community, actively encouraging inclusion and seeking to involve others. Ensures others always consider the wider context when sharing information making full use of networks and connections.

Key relationships with others