

**UNIVERSITY OF NOTTINGHAM
RECRUITMENT ROLE PROFILE FORM**

Job Title: Research Fellow/Associate (Combining chemistry and topography to control cellular response)

School: School Pharmacy

Job family and level: Research and Teaching Level 4

Hours of Work: Full-time, 36.25 hours per week

Contract Status: Fixed-term contract for a period of 24 months starting December 2017

Location: School of Pharmacy, University Park

Reporting to: Prof Morgan Alexander

Purpose of the Role:

Advanced biomaterials are essential components in targeting infectious diseases and cancers, realising the potential of regenerative medicine and achieving the medical devices we need in future. A multidisciplinary team spanning the Engineering, Science and Medical Faculties in Nottingham, in collaboration with 4 leading international groups, has been combined to realise the vision of materials discovery in 3D. Without this leap beyond 2D screening methodologies we will miss new advanced materials because the screens omit architecture and often poorly represent the *in vivo* environment. The aim is to move beyond the existing limited range of generic bioresorbable polymeric drug and cell delivery agents and medical device polymers currently licensed for use in man, to bespoke materials identified to function optimally for specific applications.

This post will be one of 10 tackling this significant task in a 5-year funded grant which has now being going for two years. The aim of this researcher's tasks will be to bring together combinatorial topography (Topochip, Jan deBoer et al.) and chemical screening (Morgan Alexander et al.) to probe the inter relationship between these two key factors that define cell response to biomaterials. This will be undertaken initially on existing UV triggered acrylate, acrylamide and beta amino ester acrylate libraries, but will be extended in time to new libraries under development in other areas of the project and click alginate libraries developed by our MIT collaborators (Dan Anderson et al.). 3D printing technologies will be utilised in collaboration with the Nottingham Centre for Innovative Manufacturing in this area (Hague and Wildman).

Main Responsibilities

1.	<p>Plan and conduct supervised research using recognised approaches, methodologies and techniques within the Next Generation Biomaterials Discovery grant. This will include but is not limited to:</p> <ul style="list-style-type: none"> • Using UV triggered acrylate polymerisation chemistries to develop combinatorial chemical biomaterial libraries. • Using and developing click chemistries to functionalise alginates to produce hydrogel biomaterial libraries. • Embossing polymer surfaces with combinatorial topography libraries. • Culturing mesenchymal stem cells on the surfaces identified above and using previous topo hits to encourage bone formation. • Undertaking both surface and bulk chemical material and physical analysis in order to correlate cell response with surface structure and optimise materials properties.
----	--

2.	Analyse and illuminate data, interpret reports, evaluate and criticise texts and bring new insights to research area.
3.	Develop research objectives and proposals for own and/or collaborative research area.
4.	Prepare research work for publication and/or contribute to the dissemination to relevant groups including external bodies and conferences, resulting in successful research outputs. Assist in the preparation of scientific reports and publications for the grant.
5.	Identify opportunities and assist in writing bids for research grant applications. Prepare proposals and applications to both external and/or internal bodies for funding, contractual or accreditation purposes.
6.	Build relationships with both internal and external contacts in order to exchange information, to form relationships for future collaborations and identify potential sources of funds and/or opportunities for collaboration. In particular, building good working relationships with the existing international partners.
7.	Locally co-ordinate the operational aspect of tasks within the grant, for example, arranging meetings and updating web sites etc. and contribute to collaborative decision making with colleagues in area of research.
8.	Work in conjunction with others in the research team to achieve objectives and make an active contribution to the success of the team. Provide support, guidance and supervision to other staff, where appropriate in their own area of expertise.
9.	Assist in the supervision of undergraduate and/or postgraduate student projects, fieldwork and placements, as appropriate. To participate in the assessment of student knowledge and co-supervise projects at Masters level.
10.	Collaborate with academic colleagues on areas of shared interest for example collaborative or joint research projects.
11.	Plan and manage own research activity and resolve problems, if required, in meeting own/team research objectives and deadlines in collaboration with others.
12.	Contribute to the organisation of research resources and facilities, laboratories and workshops as appropriate. Undertake general laboratory duties such as ordering of reagents, equipment maintenance, and laboratory housekeeping.
13.	Contribute to teaching, for example through laboratory demonstrations, lectures to postgraduate workshops and/or delivery of Level 1 modules.

Person Specification:

	Essential	Desirable
Qualifications/ Education	1. A 1 st or upper-second class honours degree and a PhD thesis submitted or awarded in Chemistry, Materials, Pharmacy or related discipline.	
Skills/Training	2. Polymer science. 3. A strong commitment to interdisciplinary research, in particular between cell biology and materials. 4. Excellent oral and written communication skills including the ability to communicate complex information with clarity and write to a publishable standard. 5. Strong analytical skills including the ability to analyse and illuminate data, interprets reports, evaluate and criticise texts and bring new insights.	<ul style="list-style-type: none"> • Biomaterials science • Cell biology • Optical microscopy-cell imaging • Surface analysis • ToF SIMS • AFM • Electron microscopy • Acrylate photo polymerisation • Alginate chemistry

	<p>6. Excellent problem solving, IT and organisational skills including the effective deployment of resources.</p> <p>7. Ability to build effective relationships as part of a team and collaborate with others, both internally and externally.</p> <p>8. Flexible, proactive and dedicated approach.</p> <p>9. Ability to travel within the UK and overseas.</p>	<ul style="list-style-type: none"> • Click chemistry • Informatics • Topographical patterning • Material Characterisation (GPC, MALDI, NMR, DSC, TGA etc)
Experience	<p>10. Presenting work effectively to a variety of professional and academic audiences at meetings and conferences.</p> <p>11. A consistent track record of published research in peer-reviewed journals and writing high quality reports and papers for publication.</p>	<ul style="list-style-type: none"> • First author publications in high impact factor journals. • Previous success in gaining support for externally funded research projects. • Experience of developing new approaches, models, techniques or methods in biomaterials. • Training and/or supervision of staff or students.

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 Professor Morgan Alexander, email: morgan.alexander@nottingham.ac.uk. Please note that applications sent directly to this email address will not be accepted.

Equality and Diversity

The University of Nottingham has [a range of policies to promote equality and diversity in the workplace](#) which are fully supported and promoted by the School through its Equality and Diversity Committee. The School welcomes applications from all candidates and you can read more about our commitment to equality and diversity at <http://tiny.cc/UoNPharmEandD>