



<b>Job title</b>	Research Associate/Fellow: Responsive hydrogels for targeting brain tumours	<b>Job family and level</b>	Research and Teaching Level 4
<b>School/ Department</b>	School of Pharmacy	<b>Location</b>	University Park Campus

## Purpose of role

The project looks to develop a responsive biopolymer-based hydrogel to encapsulate and deliver tumour-targeted drugs to treat glioblastoma. The project is funded by La Caixa Foundation and is led at Nottingham by Professor Alvaro Mata and by Professors Bruno Sarmento at the University of Porto and Bruno Costa at the University of Minho.

This post will be focused on the design, synthesis, and characterization of the hydrogel system. A range of biopolymers and degradable cross-linkers will be tested to engineer a responsive matrix with the capacity to safely encapsulate tumour-targeting drugs and controllably release them. The work has a strong translational component and is expected to deliver a safe and translatable material for preclinical and clinical use.

The work will involve direct interactions with the different partners, with visits to their sites in Portugal as necessary during the project.

The post will be based across labs in the Biodiscovery Institute at the University of Nottingham.

	<b>Main responsibilities</b> (Primary accountabilities and responsibilities expected to fulfil the role)	<b>% time per year</b>
1	<p><b>Formulation and characterisation of the responsive hydrogel</b></p> <ul style="list-style-type: none"> <li>• Design and fabrication of responsive biopolymer-based hydrogels.</li> <li>• Design, optimisation and characterisation of dynamic cross-linking systems.</li> <li>• Plan and independently execute experimental work, including formulation optimisation and protocol development.</li> <li>• Detailed bio-physical characterisation of the hydrogels, including degradation behaviour and controlled delivery of therapeutic cargos.</li> <li>• Operate and maintain relevant laboratory instrumentation and develop/optimize analytical and characterisation methods where required.</li> <li>• Maintain accurate and reproducible experimental records (e.g. electronic lab notebooks, SOPs, and data management systems).</li> <li>• Proactively grow the collaborations with the partners in Portugal, including contributing to joint experimental planning and knowledge exchange</li> </ul>	60%

2	<p><b>Preparation of research outputs and project deliverables</b></p> <ul style="list-style-type: none"> <li>• Analyse and illuminate data, interpret reports, evaluate and criticise texts, and bring new insights to research area.</li> <li>• Preparation of research reports; preparing and giving presentations for both internal and external audiences.</li> <li>• Preparation of technical and other reports as required by La Caixa Foundation.</li> <li>• Maintain awareness of IP opportunities that arise from the work and prepare patent documents.</li> </ul>	10%
3	<p><b>Reporting, dissemination, and publication of research</b></p> <ul style="list-style-type: none"> <li>• Contribute to internal meetings and work in conjunction with the research team to achieve objectives.</li> <li>• Prepare research results for publication, critically evaluate relevant literature and offer new insights to the research area.</li> <li>• Contribute to dissemination at scientific meetings.</li> <li>• Provide analytical input and interpretation that advances the scientific direction of the project and the research group more broadly.</li> <li>• Liaise effectively with consortium partners to ensure alignment of research outputs and reporting timelines.</li> </ul>	10%
4	<p><b>Research Team</b></p> <ul style="list-style-type: none"> <li>• Have a leading chemistry role within the research group in the area of polymer- and peptide-based biomaterials.</li> <li>• Work in conjunction with others in the research group to achieve objectives and make an active contribution to the success of the research group and environment.</li> <li>• Guide and mentor graduate student members within the research group.</li> <li>• Contribute to the undertaking of general laboratory duties such as ordering consumables/chemicals, maintenance of lab rotas, and supporting equipment and facilities upkeep.</li> <li>• Support a motivating, safe, inclusive, and productive laboratory environment.</li> </ul>	20%

Person specification

	<b>Essential</b>	<b>Desirable</b>
<b>Skills/Training</b>	<ul style="list-style-type: none"> <li>▪ Experience in fabrication and characterisation of polymer-based, protein-based, or peptide-based hydrogel biomaterials.</li> <li>▪ Experience in hydrogel formulation and cross-linking systems, including chemical and/or physical cross-linking approaches.</li> <li>▪ Effective communicator at all levels and in highly interdisciplinary situations.</li> <li>▪ Strong collaborative skills with experience contributing to team-based and interdisciplinary research projects.</li> <li>▪ Strong practical experience in creative experimental design, execution, and troubleshooting in a wet laboratory environment.</li> <li>▪ Demonstrated ability to independently plan, prioritise, and deliver experimental research.</li> <li>▪ Motivated by transforming science into societal benefits.</li> <li>▪ Excellent problem solving and organisational skills.</li> <li>▪ Motivated, proactive and dedicated approach.</li> <li>▪ Strong organisational skills, including time management and ability to manage multiple research tasks.</li> <li>▪ Commitment to high-quality research practices, including reproducibility, accurate record keeping, and data integrity.</li> </ul>	<p>Experience in one or more of the following:</p> <ul style="list-style-type: none"> <li>▪ Experience working with cells, cell culture assays (e.g. viability, uptake studies).</li> <li>▪ Experience in biological evaluation of biomaterials (e.g., cell-material interactions, drug delivery efficacy, or immunological assays).</li> <li>▪ Evidence of published or submitted peer-reviewed work in hydrogel biomaterials, drug delivery systems, or related.</li> <li>▪ Experience with advanced characterisation techniques (e.g. rheology, microscopy, spectroscopy, particle sizing, degradation assays).</li> <li>▪ Strong computational or data analysis skills (e.g. image analysis, statistical analysis, or scientific software tools).</li> <li>▪ Experience contributing to grant-funded projects and/or reporting to external funding bodies.</li> </ul>
<b>Knowledge and experience</b>	<ul style="list-style-type: none"> <li>▪ Ability to work effectively within a highly interdisciplinary research team, including collaboration across chemistry, materials science, and biomedical disciplines.</li> <li>▪ Ability to work independently with minimal supervision, while also contributing effectively to the team.</li> <li>▪ Comfortable with getting involved in all areas of the project and projects within the research group.</li> <li>▪ Strong analytical skills including the ability to interpret data, evaluate and criticise prior data, and generate new insights.</li> <li>▪ Present work effectively to a variety of professional and academic audiences.</li> <li>▪ Proven ability to write high-quality scientific outputs, including reports, peer-reviewed publications, and grants.</li> <li>▪ Experience with key hydrogel biomaterial analytical and characterisation techniques such as NMR, DLS, CD, FTIR, UV-Vis, GPC, HPLC, etc.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Experience in research work within industrial settings.</li> <li>▪ Demonstrated motivation for scientific discovery, curiosity-driven research, problem-solving.</li> <li>▪ Evidence of working across materials science, chemistry, biology, engineering, medicine.</li> <li>▪ Creative approach to experimental design and problem-solving, with the ability to propose and test novel hypotheses.</li> <li>▪ Experience in preparing or contributing to high quality peer-reviewed publications.</li> <li>▪ Familiarity with translational research environments, including consideration of scalability, manufacturability, or clinical relevance of biomaterials systems.</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Experience with microscopy techniques such as SEM, TEM, AFM, and confocal microscopy.</li> <li>▪ Experience with mechanical characterisation of soft biomaterials.</li> <li>▪ Ability to maintain accurate, reproducible experimental records and adhere to high standards of research integrity and data management.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Experience with biomaterials or drug delivery systems, particularly hydrogels, or responsive polymer systems.</li> <li>▪ Exposure to regulatory, quality, or documentation standards (e.g. GLP awareness or structured reporting practices).</li> </ul>
<b>Qualifications, certification and training (relevant to role)</b>	<ul style="list-style-type: none"> <li>▪ A 1<sup>st</sup> or upper second class first degree in a relevant field</li> <li>▪ PhD submitted or awarded in the project relevant discipline</li> </ul>	<ul style="list-style-type: none"> <li>▪</li> </ul>



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 friendly, engaging and receptive, putting others at ease. Actively listens to others and goes out of way to ensure people feel valued, developed and supported.

### Taking ownership

Is clear on what needs to be done encouraging others to take ownership. Takes action when required, being mindful of important aspects such as Health & Safety, Equality, Diversity & Inclusion, and other considerations.

### Forward thinking

Drives the development, sharing and implementation of new ideas and improvements to support strategic objectives. Engages others in the improvement process.

### Professional pride

Is professional in approach and style, setting an example to others; strives to demonstrate excellence through development of self, others and effective working practices.

**Always inclusive**

Builds effective working relationships, recognising and including the contribution of others; promotes inclusion and inclusive practices within own work area.

## Key relationships with others

