



Job title	Research Fellow (Title will be 'Research Associate' where an appointment is made before PhD is completed)	Job family and level	Research and Teaching Level 4 (Appointment will be Level 4 Career training grade where an appointment is made before PhD has been completed)
School/ Department	Chemical Engineering, Faculty of Engineering	Location	Biodiscovery Institute

Purpose of role

The purpose of this role is to design and test regenerative hydrogels based on the co-assembly of self-assembling peptides and protein solutions including biofluids. The role holder will be responsible for designing and optimising the peptide-protein co-assembling system and assess its functionalities using in vitro cell culture.

The post holder will be expected to undertake independent research as well as working as part of a team this will include using approaches or methodologies and techniques appropriate to the type of research, and will be responsible for writing up their work in order to contribute to published outcomes.

The role holder will have the opportunity to use their initiative and creativity to identify areas for research, develop research methods and extend their research portfolio.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Isolation, purification and characterization of bone marrow and blood Isolate, purify and characterize complex biological fluids through Sodium dodecyl-sulfate polyacrylamide gel electrophoresis (SDS-PAGE) and Liquid Chromatography with tandem Mass Spectrometry (LC-MS/MS).	20%
2	Biological characterisation of cell-laden hydrogels Characterization and optimization of cellular growth, cellular responses and functionality (3D cell culture, confocal microscopy, qPCR, immunostaining, western blotting and histology) of cell-laden hydrogel systems. Use of growth factors for stem cell differentiation.	35%
3	Assembly and optimization of peptide-based co-assembling gels Assist in the synthesis of amphiphilic peptides using solution and solid-phase peptide synthesis using both Fmoc and Boc chemistry and analytical, preparative and kinetic high-performance liquid chromatography (HPLC). Characterize and optimize co-assembling hydrogels using analytical techniques (z-potential, DLS, FTIR, CD).	25%

	Characterize and optimize structural and compositional properties of co-assembling gels (AFM, cryoTEM, SEM, oscillatory rheology).	
4	<p>Outputs Contribute to internal meetings meetings and work in conjunction with the research team to achieve objectives.</p> <p>Prepare research results for publication, read relevant literature and offer new insights to the research area.</p> <p>Contribute to dissemination at scientific meetings, resulting in successful outputs.</p>	10%
5	<p>Research Team Work in conjunction with others in the research team to achieve objectives and make an active contribution to the success of the team.</p> <p>Assist in the supervision of undergraduate and postgraduate students as appropriate.</p>	5%
6	<p>Laboratory upkeep Contribute to the undertaking of general laboratory duties such as ordering chemicals.</p> <p>Contribute to the upkeep and maintenance of key laboratory equipment, where appropriate.</p>	5%

Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> ▪ Careful experimentalist with high attention to detail. ▪ Excellent oral and written communication skills including the ability to clearly communicate complex information. ▪ Excellent problem solving and organisational skills. ▪ Ability to build relationships and collaborate with others. ▪ Ability to work independently and as part of a team. ▪ Ability to write high quality reports and high impact papers for publication. 	<ul style="list-style-type: none"> ▪ A strong commitment to interdisciplinary research. ▪ Flexible, proactive and dedicated approach.
Knowledge and experience	<ul style="list-style-type: none"> ▪ Experience working with both 2D and 3D hydrogels. ▪ Experience working with self-assembling peptides and peptide-based extracellular matrices. ▪ Experience with cell culture and biology assays. ▪ Experience developing in vitro models based on hydrogel systems. ▪ Experience in isolation, purification and characterisation of complex biological fluids, including bone marrow aspirate and blood-derived components. ▪ Present work effectively to a variety of professional and academic audiences at national and international meetings and conferences. 	<p>Experience in one or more of the following:</p> <ul style="list-style-type: none"> ▪ Self-assembling peptides ▪ Solid-based peptide synthesis and purification ▪ Polymer and peptide cross-linking ▪ Cell and tissue culture ▪ Hydrogels ▪ Different microscopy techniques ▪ Immunohistochemistry ▪ Experience in supramolecular chemistry ▪ First author publications in high quality journals ▪ Experience with grant writing and student supervision ▪ Evidence of working across chemistry/biology/materials science with an interdisciplinary approach ▪ Recognition by external peer review (e.g. poster or conference prizes)
Qualifications, certification and training (relevant to role)	<ul style="list-style-type: none"> • A first degree in Biotechnology, Chemistry, Materials Science, Engineering, or related discipline. • A PhD close to completion or awarded in Bioengineering, Biomedical Engineering, Biotechnology or related discipline. 	<ul style="list-style-type: none"> ▪ Some postdoctoral experience



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



