



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	School of Medicine, Translational Medical Sciences	Location	Biodiscovery Institute, University Park Campus

Purpose of role

The purpose of this role will be to have specific responsibility for research, for developing research objectives and proposals for a research project in Stem Cell Biology. You will be expected to plan and conduct work using approaches or methodologies and techniques appropriate to the type of research and will be responsible for writing up your work for publication.

The specific objectives we will address will be to:

- 1) Create hiPSC-CM cultures in which novel RNAs are knocked out with CRISPR or upregulated by forced overexpression
- 2) Use high throughput/content and/or automated approaches to ask what impact modulation of RNAs has on gene expression, structure & function of hiPSC-CMs
- 3) Use a systems biology approach to integrate data on the transcriptome and proteome to unveil new mechanistic insight by identifying target pathways

You will join an established team, led by Prof. Chris Denning, whose main areas of research interest include using human pluripotent stem cells to explore heart function, repair and regeneration with regards drug-gene interactions, disease modelling and cell therapy.

You will have the opportunity to use your initiative and creativity to identify areas for research, develop research methods and extend your research portfolio.

The School of Medicine recognises the importance of continuous professional development and therefore the importance of providing opportunities, structured support and encouragement to engage in professional development each year.

	Main responsibilities (Primary accountabilities and responsibilities expected to fulfil the role)	% time per year
1	Research Responsibilities: <ul style="list-style-type: none"> ▪ To manage, plan and conduct own research activity using recognised approaches, methodologies and techniques within the research area. ▪ To resolve problems, in meeting research objectives and deadlines in collaboration with others. 	70%

	<ul style="list-style-type: none"> ▪ Culture and differentiation of human pluripotent stem cells (hPSCs) to cardiovascular lineages to understand impact of genetic and drug challenge. ▪ To use CRISPR knock-out, RNAi knockdown and/or overexpression approaches to study the target loci identified by our previous 'omics work. ▪ Differentiate to high purity cardiovascular lineages, including cardiomyocytes, cardiac fibroblasts and cardiac endothelial cells. ▪ The work above will feed into different phenotyping approaches, which may include <ul style="list-style-type: none"> ○ RNAseq ○ Proteomics ○ Characterisation by e.g. immunostaining, flow cytometry, qPCR etc, supported by confocal microscopy and macro writing ○ Analysis of mono-cultures or co-cultures in 2D and 3D, including engineered heart tissue ○ Use of functional assays such as metabolism, cAMP, viability, electrophysiology, calcium flux and contractility. ▪ Planning, troubleshooting and problem solving. ▪ Support lab running: The role will include contribution to efficient running of the labs, including adherence to processes for Health & Safety. ▪ To 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. 	
2	<p>Engagement, Communication and Continuation Responsibilities:</p> <ul style="list-style-type: none"> ▪ To write up research work for publication and/or contribute to the dissemination at national/international conferences, resulting in successful research outputs. ▪ To collaborate with academic colleagues on areas of shared interest for example, course development, collaborative or joint research projects. ▪ The project is joint between the University of Nottingham, King's College London and the Cardiovascular Research Institute (Singapore). You will work closely with staff at each location to prepare data, present the work (including summaries, conclusions and next steps), exchange resources and facilitate tech transfer in a two-way manner. This may involve travel and working between sites. 	20%
3	<p>Teaching:</p> <ul style="list-style-type: none"> ▪ To supervise undergraduate and/or postgraduate students projects as appropriate. ▪ To participate in the assessment of student knowledge and co-supervise projects at Masters level. ▪ You are expected to make a contribution to teaching that is in balance with wider contributions to research and other activities. 	10%
4	<p>Other:</p> <ul style="list-style-type: none"> ▪ Any duties as required in accordance with the nature and grade of the post. ▪ The School of Medicine recognise the importance of continuous professional development and therefore the importance of providing 	N/A

	opportunities, structured support and encouragement to engage in professional development each year.	
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Person specification

	Essential	Desirable
Skills	<ul style="list-style-type: none"> ▪ A can-do attitude, with enthusiasm, conscientiousness and self-motivation to drive success. ▪ Ability to establish and maintain good working relationships at all levels. ▪ Experience in cell culture and good aseptic technique and precision in approach. ▪ Planning, troubleshooting and problem solving, organisation and time management. ▪ Progress reports (oral, written). ▪ Ability to build relationships and collaborate with others, both internally and externally. 	<ul style="list-style-type: none"> ▪ Differentiate to high purity cardiovascular lineages, including cardiomyocytes, cardiac fibroblasts and cardiac endothelial cells.
Knowledge and experience	<ul style="list-style-type: none"> ▪ Experience in one or more of the following approaches: <ul style="list-style-type: none"> ○ genetic modification, such as CRISPR, RNAi and/or overexpression ○ Molecular and cell biology phenotyping, such as immunostaining, flow cytometry, qPCR, confocal microscopy, western blots etc ○ Use of phenotyping approaches, such as include realtime cell analysis, metabolism, cAMP, electrophysiology, calcium imaging and contractility ○ Skills in 'omics approaches, including RNAseq, proteomics and bioinformatics. ▪ People management and collaboration. 	<ul style="list-style-type: none"> ▪ Grant writing skills to secure funding. ▪ Experience of developing new approaches, models, techniques or methods in research area. ▪ Contributed to published information to show these capabilities (e.g. papers, thesis etc). ▪ Experience in maintaining human pluripotent stem cells (hPSCs) in well-defined conditions.

	<ul style="list-style-type: none"> ▪ Track record of peer-reviewed publication(s), progress reports (written and oral). 	
Qualifications, certification and training (relevant to role)	<ul style="list-style-type: none"> ▪ PhD or equivalent in relevant subject area or the equivalent in professional qualifications and experience in research area OR near to completion of a PhD. 	
Other	<ul style="list-style-type: none"> ▪ Willingness to adopt the vision and values of the School of Medicine 	



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

