MEDIA RELEASE

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Regenerative focused research grant to repair and restore damaged hearts

The Centenary Institute's Associate Professor Dan Hesselson has been awarded $750,000 to accelerate pioneering research into heart regeneration, through a prestigious Senior Researcher Grant under the NSW Cardiovascular Research Capacity Program, funded by NSW Health.

The funding will support a three-year project aimed at developing new ways to repair the heart and improve outcomes for individuals recovering from heart attacks or living with heart disease.

This work addresses a critical gap in cardiac care. While current treatments can manage symptoms, they cannot restore heart function once muscle cells are lost. This irreversible damage is why heart failure remains a leading cause of death worldwide.

Associate Professor Hesselson's research aims to address this challenge by developing therapies based on engineered proteins capable of repairing or regrowing damaged heart muscle cells and tissue.

The project will combine advanced data science and laboratory techniques, including a key method known as directed evolution. This approach mimics natural selection by refining proteins through repeated testing to identify those with the strongest therapeutic potential.

To help ensure results translate to human health, these proteins will be tested in human heart cells grown from stem cells, a model that closely reflects real human heart tissue. Artificial intelligence will also be used to analyse experimental data and predict the most promising protein designs, helping to speed up the development of new treatments.

Associate Professor Hesselson, Head of the Centre for Biomedical AI at the Centenary Institute, said the project represents a shift towards regenerative approaches in cardiovascular disease.

"This project is about moving beyond treating the symptoms of heart failure and instead developing therapies that can repair the underlying damage," he said.

"By using data-driven approaches to guide the development of regenerative treatments directly in human heart cells, we hope to unlock new possibilities for restoring heart function."

Executive Director of the Centenary Institute, Professor Marc Pellegrini, said the grant highlights the importance of innovative, forward-looking research.

“This funding recognises the Institute’s strength in AI-driven medical research,” said Professor Pellegrini.

“Associate Professor Hesselson’s work has the potential to reshape how we approach heart disease, shifting the focus from managing decline to actively repairing the heart and improving long-term patient outcomes.”

The NSW Cardiovascular Research Capacity Program supports outstanding researchers to drive innovation, build research capability and accelerate the translation of discoveries into improved patient care across New South Wales.

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Images:
Associate Professor Dan Hesselson
https://drive.google.com/file/d/1XYHP_Ex-in1Z3vCutTu0fb9HPo6oV2A-/view?usp=sharing

For all media and interview enquiries, please contact
Tony Crawshaw, Media and Communications Manager, Centenary Institute on 0402 770 403 or email: t.crawshaw@centenary.org.au

About the Centenary Institute
The Centenary Institute is a world-leading independent medical research institute, closely affiliated to the University of Sydney and the Royal Prince Alfred Hospital. Our research spans the critical areas of cancer, cardiovascular disease, rare diseases, infectious diseases and biomedical AI. Our strength lies in uncovering disease mechanisms and applying this knowledge to improve diagnostics and treatments for patients.

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