



Researchers identify three proteins which have the potential to prevent heart failure after heart attack

Publication in Science Translational Medicine describes three proteins which have been shown to preserve heart function following acute myocardial infarction (heart attack) via a unique combination of cardioprotective mechanisms in preclinical proof-of-concept studies

Research was advanced by Forcefield Therapeutics at King's College London and supported by the British Heart Foundation

London UK, 31 August 2022 – Scientists working to develop new therapies and treatments for heart failure patients have discovered three proteins that can be injected immediately after a heart attack, which have the potential to preserve heart function following an attack.

Positive preclinical data in *Science Translational Medicine*, published today, outlines the mechanisms of the three proteins, which have been shown to restore heart function following a heart attack in mice.

Heart failure is the primary cause of death and disability globally, affecting approximately 64 million people worldwide according to the British Heart Foundation. There is currently no effective therapeutic treatment.

Led by Mauro Giacca, Professor of Cardiovascular Sciences at King's College London, supported by the British Heart Foundation, researchers developed an innovative technology called FunSel that searched for proteins that could protect heart cells against the rapid cell death that typically occurs following a heart attack.

Forcefield Therapeutics, a pioneer of best-in-class therapeutics to retain heart function via protection of cardiomyocytes, which was launched in 2022 backed by leading healthcare investor Syncona, is undertaking the development work to enable clinical trials in patients in the future. The work originated at the International Centre for Genetic Engineering and Biology (ICGEB) and the University of Trieste, Italy.

Funsel, a protein 'search engine' screens a library of human proteins to identify those with therapeutic potential, in an unbiased manner (unconstrained by the bias that researchers typically bring to drug development). Starting from a library of over 1,000 proteins, it identified three, (Chrdl1, Fam3c and Fam3b) which have been shown to prevent cardiac damage in mice after a heart attack and preserve cardiac function over time.

According to the British Heart Foundation, one person every five minutes is admitted to hospital with a heart attack in the UK. While seven out of 10 people survive, heart attack is the main cause over time of heart failure – a condition that now affects almost one million people in the UK and 64 million worldwide.



Heart failure after a heart attack is caused by the irreversible loss of cardiac cells, hence the need to develop effective therapies to prevent the death of these cells.

“This is the very first time that potentially curative factors for the heart are directly identified for their therapeutic potential,” said **Professor Mauro Giacca, Professor of Cardiovascular Sciences at King’s College London.**

Prof. Giacca added: “Any of the three proteins we have identified can be administered immediately after a heart attack to minimise cardiac damage and thus prevent heart failure. There has been no significant development in this field for a long time, so we are very excited by this discovery.”

Richard Francis, Chief Executive Officer of Forcefield Therapeutics, said: “Heart failure continues to have a devastating impact on public health and, despite the remarkable efforts in disease management, the long-term prognosis remains poor.

“Heart attack is the main acute cause of heart failure, providing a significant economic burden upon healthcare systems globally and reducing the healthy life span of those affected. This research is exciting not only because of the potential it offers for heart medicine, but also because it’s a great example of academia and business, with the support of the UK’s leading heart charity, collaborating effectively to bring a potential therapeutic to patients at speed.”

Professor Ajay Shah, Director of the British Heart Foundation Centre for Research Excellence at King’s College London, said: “This is early-stage data but if the results we have seen in mice are borne out in human trials, the potential for this therapeutic is extremely significant and could revolutionise treatments for patients at risk of heart failure. There are no effective protective therapeutics to prevent the typically rapid deterioration of heart tissue in the aftermath of a MI so this is a major breakthrough in this field.”

Professor James Leiper, Associate Medical Director at the British Heart Foundation, said: “Halting damage to the heart after it has become injured is a huge challenge in cardiology, but this major development has the potential to spearhead a new type of treatment to help protect and minimise damage after a heart attack. We’re proud to support such a ground-breaking discovery that will hopefully lead to new protective medicines in the future.”

After successful preclinical testing, first clinical trials in humans will take place in the next two years.

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Notes to Editors

About Forcefield Therapeutics Ltd.



Forcefield Therapeutics Ltd (Forcefield Tx) is a pioneer of best-in-class therapeutics to retain heart function via protection of cardiomyocytes.

Forcefield Tx was founded by scientists, industry experts and investors with a shared purpose to revolutionise treatment following acute myocardial infarction (AMI). Forcefield's unique approach can both retain and protect heart cells, minimising the impact of AMI and preventing the cascade of events that may lead to subsequent heart failure. Forcefield Tx is led by a proven team with a record of success from discovery to commercialisation. It launched in April 2022, backed by leading FTSE 250 healthcare company, Syncona with an initial investment of £5.5 million. For more information please visit: forcefieldtx.com.

About King's College London

[King's College London](https://www.kcl.ac.uk) is one of the top 35 UK universities in the world **and one of the top 10 in Europe** (QS World University Rankings, 2020/21) and among the oldest in England. King's has more than 31,000 students (including more than 12,800 postgraduates) from some 150 countries worldwide, and some 8,500 staff.

King's has an outstanding reputation for world-class teaching and cutting-edge research. In the 2021 Research Excellence Framework (REF), King's maintained its sixth position for 'research power' in the UK. King's has also been rated third amongst multidisciplinary institutions for impact, with 67.8% of its research impact rated outstanding.

Since our foundation, King's students and staff have dedicated themselves in the service of society. King's will continue to focus on world-leading education, research and service, and will have an increasingly proactive role to play in a more interconnected, complex world. Visit our website to find out more about Vision 2029, King's strategic vision to take the university to the 200th anniversary of its founding.

World-changing ideas. Life-changing impact: <https://www.kcl.ac.uk/news/headlines.aspx>

About the British Heart Foundation

It is only with donations from the public that the BHF can keep its life-saving research going. Help us turn science fiction into reality. With donations from the public, the BHF funds ground-breaking research that will get us closer than ever to a world free from the fear of heart and circulatory diseases. A world where broken hearts are mended, where millions more people survive a heart attack, where the number of people dying from or disabled by a stroke is slashed in half. A world where people affected by heart and circulatory diseases get the support they need. And a world of cures and treatments we can't even imagine today. Find out more at [bhf.org.uk](https://www.bhf.org.uk)

About the International Centre for Genetic Engineering and Biotechnology (ICGEB)

The ICGEB is a unique intergovernmental organisation conceived as a Centre of Excellence for research and training with special regard to the needs of the developing world. The Centre conducts



innovative research in life sciences and strengthens the research capability of almost 70 Member States through training, funding programmes and advisory services. Located in Trieste (Italy), New Delhi (India) and Cape Town (South Africa) the ICGEB Components provide a scientific and educational environment of the highest international standards. Further information available at <https://www.icgeb.org>

Contacts:

Forcefield Therapeutics

Richard Francis, CEO
contact@forcefieldtx.com
+44 (0)20 3855 6324

Consilium Strategic Communications

Amber Fennell, Jessica Hodgson, Genevieve Wilson
forcefield@consilium-comms.com
+44 (0)203 709 5700

King's College London

Sian Young
Sian.young@kcl.ac.uk
comms@kcl.ac.uk

British Heart Foundation

Anna Clark
newsdesk@bhf.org.uk