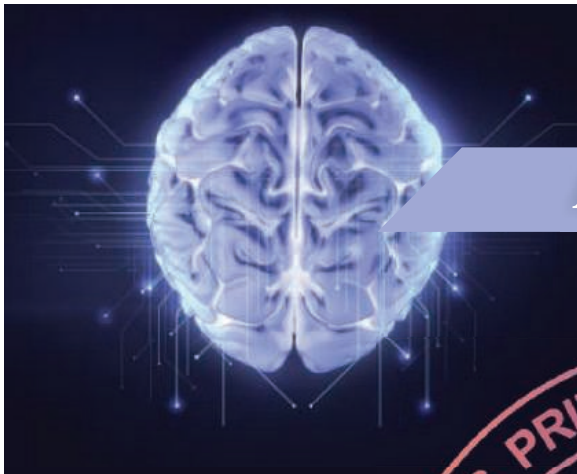

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Beating the world's biggest killers

Since the late 1980s, research funders and government bodies across the world have set seemingly impossible grand challenges to solve big questions and make revolutionary breakthroughs. Applicants set out their unique solution to the specified problem and often compete for funding that would help them bring their ground-breaking concept to fruition. But can such a challenge really help tackle a major, global health problem like heart and circulatory disease?

Grand challenges are not for business-as-usual research. They are for the big ideas – the leaps that would not be possible without free-thinking and brilliance. They tackle major questions, with far-reaching consequences, and the solutions can be epic. The ambitious nature of the proposals developed during grand challenges means that these sorts of radical approaches couldn't be countenanced without the large-scale investment that's made available through each challenge.

When big questions are tackled by a team of highly-skilled experts, with the commitment and passion to succeed, possibility becomes a reality. Whole new fields of research can and have emerged, and we stand to reap the rewards of these mega-projects for decades after they have finished.

Beating the world's biggest killers

The British Heart Foundation is offering a single research funding award of £30 million, to support a radical advance towards beating any type of heart and circulatory disease, through the launch of the first ever Big Beat Challenge.

The playing field is totally open, the canvas is blank. World-leading researchers and innovators are being challenged to first identify and then solve any major problem in heart and circulatory disease. The only caveat: think big.

The Big Beat Challenge is not just about money.

This is a challenge of creativity and ambition – an appeal to the part of you that says anything is possible.

£30 million is not just a research prize to be awarded to a winner. It could be the start of a journey to create

Enter the Big Beat Challenge

£30m research funding award

Be radical with your ideas, be bold, but most of all, demonstrate how your idea will help the people affected by heart and circulatory diseases every day.

For application details and criteria, visit:
bhf.org.uk/bigbeatchallenge

The criteria

- Transformation
- Patient relevance
- Without borders, without boundaries
- Scope and scale
- Milestone-led
- Engagement

a world very different from today. It could lead to a cure for a rare inherited heart condition or provide a radically new approach for a common condition like heart attacks.

Only the very best ideas will make the cut

The problem posed, and its novel solution, must be transformative for the chosen heart or circulatory disease. Clinicians, scientists, engineers, technology experts, innovators and entrepreneurs across the world must look beyond incremental gains and propose breakthroughs with real world impact. The project doesn't have to reach clinical impact in the proposed time frame but must demonstrate a clear, understandable route to patient benefit.

Working across disciplines and borders can be complex, but Big Beat Challenge applicants should draw inspiration from the successes of grand challenges in other fields, and take this opportunity to propose ideas that could not be funded any other way.

Alongside the very best scientific rigour, proposals must also provide clear milestones, against which the project will be measured throughout its progress. Applications must demonstrate the ambition that this huge challenge demands, and be willing and able to tell the world about the research that could change the face of heart and circulatory disease.

The time is now

For more than half a century, BHF-funded researchers have pioneered world-leading efforts to understand the causes of heart and circulatory diseases and develop new methods of prevention, diagnosis and treatment. But the burden continues to rise. Around the world, 18 million people die from heart and circulatory diseases each year, and the World Health Organization (WHO) expects this to rise to 23 million by 2030. The time is now for drastic action against the world's biggest killers.

A dramatic change is needed

Funding on this scale promises to kick-start a new way of thinking about heart and circulatory research: not to work towards incremental gains, but to focus on the big problems that must be addressed now.

Recent advances in genome editing, artificial intelligence, and stem cell research demonstrate that we now have the knowledge and tools to accelerate breakthroughs. What has been missing, and what the Big Beat Challenge offers, is the funding to achieve this.

Future-proof

Grand challenges like the Big Beat Challenge don't just solve major health issues. By bringing together visionaries across boundaries and borders, they can also inspire a network of collaborative and pioneering approaches that long outlive the application process and leave a lasting legacy of innovation for generations to come. Most importantly, they deliver a difference that counts.

Grand challenges and impossible ideas

Human Genome Project

1988: US National Institutes of Health lay out ambitious plan to completely map all the genes of human beings

Over 20 years of scientific collaboration across continents, governments and funding bodies

2001: Project publishes series of papers in Nature providing the first analysis of the entire human genome sequence

Cost: $2.7 billion

Genes responsible for serious illnesses, including some cases of Parkinson's, cancer, Alzheimer's and Down's Syndrome identified

Gene mapping time reduced from years to weeks

Genomes for many animals published, including rat, mouse, honeybee, cow and chimpanzee

New fields of research into the ethics and legalities of storing genetic data are created

Ocean Clean-up

2013: 16-year-old Boyan Slat poses a TEDx talk: How the oceans can clean themselves. Video goes viral and raises $90,000 dollars in thirty days

2014: $2.2 million raised through crowd-funding from 160 countries

2016: North Sea prototypes launched to determine whether the technology can match the epic task of cleaning up the Great Pacific Garbage Patch, the biggest pile of plastic in the ocean

True scale of oceans' pollution researched and quantified

October 2018: Using an entirely novel hypothesis, System 001 starts collecting plastic from the Great Pacific Garbage Patch

For the first time in history, a large scheme starts to remove plastic from our most polluted oceans

EPSRC Healthcare Technologies Challenges Awards

2015: Engineering and Physical Sciences Research Council (EPSRC) launch scheme to improve diagnosis and treatment for long-term health challenges through the development unique healthcare technologies

2016: £9 million awarded to 9 research teams

2017: £8 million awarded to 8 research teams

Awarded projects are diverse, including the application of microscopy and medical imaging to aid diagnosis and treatment of heart failure, and the use of bioelectronics as an alternative to invasive heart surgery

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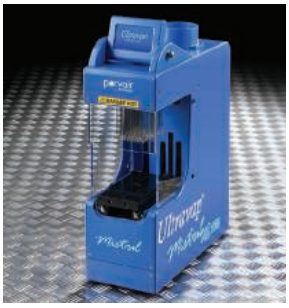

Automated Solvent Removal
The UltraVap Mistral XT 100 from Porvair Sciences allows completely automated dry down of organic solvent–based samples in tubes up to 100 mm in length. It is the company's latest fully robot-compatible, nitrogen blow-down evaporator, suitable for integration adjacent to most leading laboratory liquid-handling robots. Designed with the demands of linear robots in mind, the XT 100 uses a sample shuttle that can serve and retrieve tubes or microplates from the deck of Perkin Elmer, Tecan, Hamilton, and Beckman Coulter liquid handlers. This color touchscreen–controlled solvent dry-down station accepts 24-, 48-, 96-, or 384-well microplates, and comes complete with clear safety side screens and full integral fume management. Installation of the unit requires only connection to a gas supply and mains electricity. Safety of solvent-removal operation is ensured, as this compact, CE-marked unit fits into all fume cupboards.
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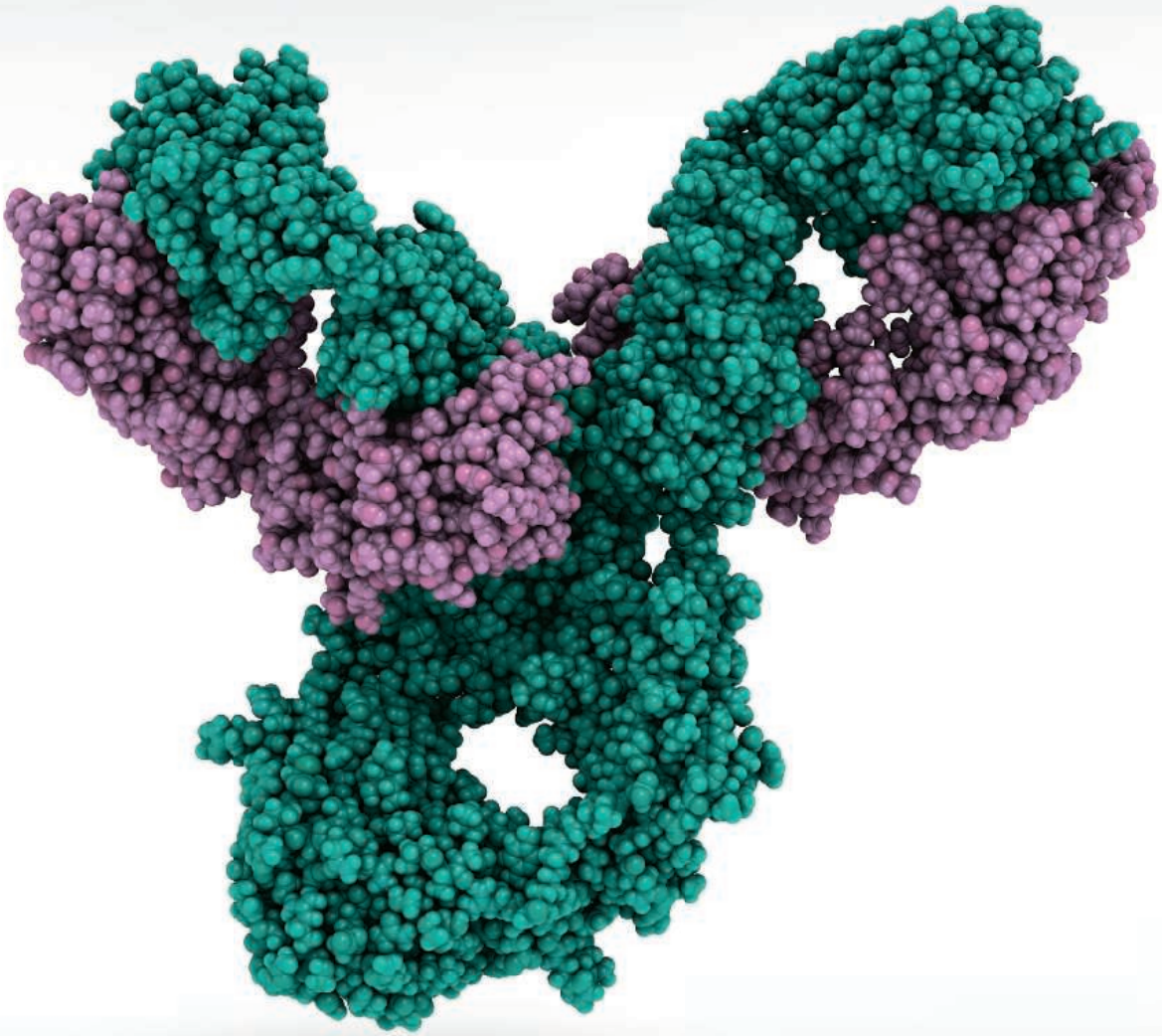

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