



Awards 2024

Research Project of the Year: STEM

Institution Name	University of Manchester
Submission title or project name	World-First Bedside Genetic Test to Prevent Babies Going Deaf
Nominee / key personnel	William Newman; John McDermott; Richard Body; Glenda Beaman; Rachel Corry; Rhona MacLeod (Manchester University NHS Foundation Trust and The University of Manchester) Ajit Mahaveer; Nicola Booth; Rachel James (Manchester University NHS Foundation Trust) Paul Wilson (Alliance Manchester Business School) Fiona Ulph (University of Manchester) Iain Bruce (NIHR Biomedical Research Centre and Manchester University NHS Foundation Trust)
URL	https://www.manchester.ac.uk/discover/news/genetic-test-to-prevent-newborn-babies-going-deaf-recommended-by-nice/
Submission	1 in 500 babies carry a gene that causes permanent deafness when given gentamicin, an antibiotic commonly used in intensive care. Working with University of Manchester start-up company Genedrive Plc, Manchester researchers developed the world's first, rapid bedside genetic test. The test was trialled in 751 babies in neonatal units in Manchester and Liverpool. The test takes just 25 minutes, compared with several days for conventional methods, allowing doctors to give an alternative antibiotic within the recommended hour to those babies carrying the gene. The technology could save the hearing of 180 babies in the UK every year, and save the NHS ~£5 million annually, by reducing the need for interventions such as cochlear implants. The test is now being rolled-out in all of the Neonatal Intensive Care Units in Greater Manchester, and the NHS is exploring how the technology can become part of routine clinical care across the UK.



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Research Project of the Year: STEM

Institution Name	Anglia Ruskin University
Submission title or project name	Nanotechnologies for retinal disease
Nominee / key personnel	Professor Barbara Pierscionek, project lead, Anglia Ruskin University Collaborator: Professor Robert Stevens, Director, Drive Systems Ltd
URL	https://www.bbc.co.uk/news/uk-england-essex-66789400
Submission	Sight loss has a devastating impact on quality of life. The most severe eye disease that causes complete loss of central vision is age-related macular degeneration (AMD), the incidence of which is increasing globally as the population is ageing. Deterioration of the retinal pigment epithelium and the membrane that supports it are causal factors in AMD. These retinal layers do not regenerate. Hence, the only effective cure for AMD is transplantation of the retinal pigment epithelium with a biocompatible supportive membrane. The research team led by Professor Pierscionek, in collaboration with engineering expertise in electrospinning, made a breakthrough by creating a viable and sustainable retinal pigment epithelial layer on an electro-spun nanofibre membrane. The membrane incorporates anti-inflammatory agents to prevent tissue rejection after transplantation. The research was published in 2023, achieved wide media attention and has led to a company dedicating its facilities to production of retinal tissue for transplantation.



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Research Project of the Year: STEM

Institution Name	University of Central Lancashire
Submission title or project name	The Giant Arc and the Big Ring
Nominee / key personnel	Alexia Lopez
URL	https://www.youtube.com/watch?v=OV9BHDvBi-0 ; https://ui.adsabs.harvard.edu/abs/2022MNRAS.516.1557L/abstract
Submission	The discoveries of the Giant Arc and the Big Ring, two ultra-large-scale structures in the Universe, raise potential challenges to fundamental assumptions upon which the standard model of cosmology is founded. Alexia Lopez, a PhD student from the University of Central Lancashire, presented her work at two American Astronomical Society (AAS) meetings and both times she was selected to present her work at their press conference. Following these events, Lopez's work appeared in articles worldwide, and she appeared in interviews (live and recorded) on television and radio and appeared in a BBC Four documentary with Professor Jim Al-Khalili in 2022 (following the discovery of the Giant Arc). More recently, Lopez was invited to present her work at a prestigious Royal Society meeting, "Challenging the Standard Cosmological Model", held in April 2024.



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Research Project of the Year: STEM

Institution Name	University of Leeds
Submission title or project name	Auxetic materials development
Nominee / key personnel	Professor Helen Gleeson, Cavendish Professor of Physics, School of Physics and Astronomy
URL	https://auxetec.co.uk/
Submission	Researchers at the University of Leeds have made a groundbreaking discovery - a new material that thickens as it stretches. Led by Professor Helen Gleeson, the team explored the semi-soft elasticity of liquid crystal elastomers. This synthetic material is the world's first to exhibit auxetic behaviour at the molecular level, expanding under pressure. Auxeticity - where a material thickens rather than thins when stretched - offers advantages in shock absorption, fracture resistance and durability. Potential applications include electronic screens, glass for buildings and vehicles, and extending the lifespan of wind turbine blades. Professor Gleeson's spin-off company, Auxetec, aims to capitalise on this innovation, backed by a £2 million seed investment from Northern Gritstone, by focusing activity on testing the properties of the material and expanding their understanding of what is achievable via real-world applications.



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Research Project of the Year: STEM

Institution Name	Cardiff University
Submission title or project name	Global Real-time Early Alarm for Tsunami
Nominee / key personnel	Dr Usama Kadri, Reader in Applied Mathematics
URL	https://www.cardiff.ac.uk/news/view/2715680-using-artificial-intelligence-to-create-a-tsunami-early-warning-system
Submission	Tsunamis have caused over 250,000 deaths in the past 20 years. Over 680 million people live in tsunami risk areas, so reliable early tsunami warning systems are vital. Current warning systems rely on seismic and sea-level measurements which lead to false alarms; reducing false alarms has been a focus for UNESCO. Dr Usama Kadri and his team started working on tsunami-related research in 2010. In the past few years, funding has allowed the development of the technology. The team has developed a real-time early tsunami warning system complementing current intergovernmental efforts. This more reliable real-time early tsunami warning system can assess tsunamis in coastal areas, globally, in less than 30 seconds and can reduce the number of false alarms and, most importantly, the impact on people.



Awards 2024

Research Project of the Year: STEM

Institution Name	University of Exeter
Submission title or project name	Windows of Hope
Nominee / key personnel	Professor Andrew Crosby; Professor Emma Baple
URL	
Submission	It is estimated that one in 15 people worldwide will develop a rare genetic condition, commonly during childhood. There are more than 7,000 rare genetic conditions, and diagnosis takes five years on average, although >50% of patients still remain undiagnosed. Finding a precise genetic cause is crucial to access specialist care, unlock new treatments and avoid unnecessary investigations. However, the rarity of these diseases makes them extremely difficult to study in the general global population. University of Exeter researchers Professors Andrew Crosby and Emma Baple established the Windows of Hope project (WoH), a collaboration with the North American Amish communities, largely funded by the MRC, NIH, Wellcome and Medical Research Foundation. WoH began in 2000 and entails the world's most successful discovery programme of Amish genetic disorders, which has transformed clinical and diagnostic services for medically underserved Amish communities and for people with these conditions worldwide.