

Walk-through cancer diagnoses and robotics muscles among groundbreaking projects backed by government

- Six pioneering health technology research projects aiming to transform NHS healthcare delivery benefiting from £32 million government investment
- projects include novel AI X-Ray scanner to diagnose cancer and osteoarthritis more effectively and robotic muscles to assist those who have suffered from a stroke
- ventures part of the government's commitment to help advance healthcare outcomes through its ambitious Research and Development (R&D) Roadmap and to increase R&D public spending to £22 billion per year by 2024 to 2025

Debilitating diseases such as cancer and osteoarthritis could be identified and treated faster and more effectively, thanks to 1 of 6 projects benefiting from £32 million government funding.

As part of a keynote speech on research and development at London Tech Week 2020, the Science Minister Amanda Solloway will today (Monday 7 September) announce 6 new projects aimed at developing revolutionary new technological approaches that aim to transform care and treatments in the NHS by 2050, helping to improve people's quality of life as they age.

InlightenUs, led by the University of Edinburgh, will receive £5.4 million to use a combination of artificial intelligence (AI) and infra-red lasers to produce fast, high resolution 3D medical images, helping to identify diseases in patients more quickly.

Working with the universities of Nottingham and Southampton, the new research will initially be developed for use on hospital wards and GP surgeries, and by 2050 aims to scale up to walk through airport style X-Ray scanners, which will be able to pick up detailed images of structures often hidden within the human body that can reveal tumours.

Another of the 6 projects, emPOWER, will be led by researchers at the University of Bristol, and will receive £6 million to develop artificial robotic muscular assistance to help restore strength in people who have lost muscle capability. This could include patients who have suffered a stroke or are living with degenerative diseases such as sarcopenia and muscular dystrophy.

Using these highly targeted robotics will help overcome the limitations of current wearable assistive technology of regenerative medicine. Often, these technologies can be bulky and uncomfortable to wear, and can require 2 people to put on and take off. Users can also find the movements too slow. Through using robots, emPOWER will provide life changing benefits for sufferers,

restoring their confidence, independence and quality of life, all while reducing the cost to the NHS.

Ahead of her keynote speech on R&D at London Tech Week, Science Minister Amanda Solloway said:

The pioneering projects we are backing today will help modernise healthcare, improving all of our lives now and into the future.

Today's announcement is part of our ambitious R&D Roadmap and underlines our commitment to back our incredible scientists and researchers and invest in ground-breaking research to keep the UK ahead in cutting-edge discoveries.

The funding is being delivered through the Engineering and Physical Sciences Research Council (EPSRC), part of UK Research and Innovation, through the Transformative Healthcare Technologies for 2050 call.

As part of her speech, Minister Solloway will set out the government's ambitions for research to address significant issues such as advancing healthcare outcomes for patients and ensuring the UK is at the forefront of transformational technologies like artificial intelligence.

It follows the launch of the government's [R&D Roadmap](#) in July 2020 which detailed plans to make the UK the best place in the world for scientists and researchers to live and work, building on the government's commitment to increase R&D public spending to £22 billion per year by 2024 to 2025.

Innovation minister Lord Bethell said:

Throughout this global pandemic, the NHS has continued to be there for us all and to treat cancer patients and those living with chronic illness as a priority.

These pioneering new projects will help us further improve care for patients and make life easier for NHS staff, cementing the UK's status as a world leader in research and technology and ultimately saving thousands of lives.

EPSRC Executive Chair, Professor Dame Lynn Gladden, said:

The projects announced today will develop new approaches which could become routine in the NHS and community and home care in the coming decades.

Harnessing the latest technologies and the UK's world-leading expertise will allow us to deliver a step-change in how healthcare is delivered and benefit millions of people, emphasising the critical role the UK's R&D sector plays in improving the health of

the nation.

Other projects receiving funding

Non-Invasive Single Neuron Electrical Monitoring (NISNEM)

Led by Imperial College London, it will receive £5.5 million to develop a Non-Invasive Single Neuron Electrical Monitoring technology, which when combined with AI will allow researchers to monitor the brain in a way never achieved before. This will help scientists gain a better understanding of neurological diseases such as Parkinson's and Alzheimer's. Currently approaches to monitoring the brain are invasive and so this new method would enable new pharmacological and neurotechnology-based treatments to be developed which are far more effective than any current treatments.

COG-MHEAR: Towards Cognitively Inspired 5G-Internet of Things enabled, Multi-Modal Hearing Aids

Led by Edinburgh Napier University, it will receive £3.2 million, to develop hearing aids designed to autonomously adapt to the nature and quality of their surroundings. Currently only 40% of people who could benefit from hearing aids have them, while most current devices make only limited use of speech enhancement. These hearing aids would be able to adapt to the nature and quality of the visual and acoustic environment around them, resulting in greater intelligibility of noise and potentially reduced listening effort for the listener.

Quantum Imaging for Monitoring of Wellbeing and Disease in Communities

Led by the University of Glasgow, it will receive £5.5 million to develop a project which aims to create a home of the future, providing homeowners with feedback on their health and wellbeing. Bringing clinically approved sensors into the living environment will enable individuals, carers or healthcare professional to monitor blood flow, heart rate and even brain function, in the home. Monitoring physical and emotional well-being in the home will enable tailored programmes to be built for lifestyles improvement, as well as rehabilitation.

U-care

Led by Heriot-Watt University, in partnership with the universities of Bath and Edinburgh, it will receive £6.1 million to exploit new laser, optical fibre and imaging technologies, delivering therapy for bacterial diseases and viruses in confined regions of the body such as the lungs, catheters inserted into the body for prolonged periods and areas of the body that have been subject to surgical procedures. The platform will be able to cut out single cells leaving the cells around it undamaged in cancer surgery, aiming to offer a cure for currently unresectable tumours – tumours that are too close to critical structures and cannot be cut away safely with current approaches.

Notes to editors

The Engineering and Physical Sciences Research Council (EPSRC), in collaboration with the Medical Research Council, will shortly be inviting proposals for adventurous projects as part of the second phase of the Transformative Healthcare Technologies for 2050 call.

This call will target projects that are guided by a longer-term vision to pursue new, 'high risk high reward' ideas and develop thinking and approaches supported by the next generation of underpinning science, engineering and emerging technologies in the healthcare space. We seek and encourage adventurous ideas, new thinking and collaborations that have the potential to significantly improve healthcare delivery by 2050. [Read further details](#).