Press release: UKRI launches in Wales

Harnessing Wales' rich research and innovation heritage is vital to our future global trading success – this will be the clear call from the Secretary of State for Wales Alun Cairns at the launch of UK Research and Innovation (UKRI) in Wales today.

The Secretary of State will be joined by UKRI chief executive Professor Sir Mark Walport at the event in Techniquest in Cardiff to introduce the new organisation to Wales, and to underline the UK Government's continued commitment to supporting ground-breaking research and innovation in Wales.

Harnessing the diverse and ambitious research and development landscape in Wales is vital to the success of UKRI. From turning buildings into sustainable power stations and plastic-fuelled cars, to Alzheimer's medication from daffodils and a genetics and genomics centre tackling the UK's health, the breadth and depth of the innovative work in Wales plays a major role in fuelling the success of the UK on the world stage.

The launch event falls in the week leading up to the one year anniversary of the publication of the UK Government's modern Industrial Strategy.

UK Research and Innovation (UKRI) plays a central role in the strategy, providing a single and stronger voice for UK researchers and innovators, and working closely with partners in academia, with business and with government to surface the most exciting ideas and opportunities, and to take them on the journey from discovery to commercialisation.

Secretary of State for Wales Alun Cairns said:

> Right across Wales, UK Government funding in research is yielding incredible results which are helping to build a greater understanding of the world we live in, as well as creating the next game-changing technologies and innovations.
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> But we all need to do more if we are to support Wales' transformation into a well-spring of innovation that could irrigate the whole of the British economy. This is where UKRI stands ready to support. Wales must now capitalise on this all-new powerhouse backing British innovation, and work together with our universities and with the Welsh Government to drive partnerships between the best minds in research and business, and help to put Wales and the UK at the forefront of the industries of the future."

UK Research and Innovation was formed on 1 April 2018 by bringing together seven Research Councils, Innovate UK and Research England. It is the body that will help deliver on the UK Government's commitment to invest £7 billion in new public funding for science, research and innovation. It will also aim

for the goal of research and development investment reaching 2.4 per cent of GDP by 2027 – more than ever before.

UKRI investment in Wales includes:

- 264 active research grants with a value of over £187 million
- 351 companies funded, with 261 active grants worth £98 million
- Supporting more than 860 researchers across UKRI

Some examples of the exciting innovation taking place in Wales with support from UKRI include:

Buildings as power stations

A new Active Building Centre (ABC) at Swansea University aims to remove barriers and accelerate market adoption of new solar-powered building design. The ABC builds on the successes of the SPECIFIC Innovation and Knowledge Centre, also based at Swansea – a ground-breaking project to turn buildings into power stations, bringing significant environmental and economic benefits. The UK Government has invested over £150million in R&D at Swansea University since 2010.

Discovery of gravitational waves opens entirely new areas of science

In 2016 the Laser Interferometer Gravitational Wave Observatory (LIGO) international science collaboration announced the first-ever direct detection of gravitational waves – the final remaining unconfirmed major component of Einstein's general theory of relativity. The work was awarded the 2017 Nobel Prize for Physics, with the UK, including Cardiff University, playing a key role in the technological and computing advances that enabled the advance.

This was followed, in October 2017, by the announcement of the detection of a neutron star collision. The aftermath was also observed by space and ground-based telescopes – the first detection of both gravitational waves and electromagnetic radiation.

Behavioural neuroscience improved firefighter decision-making

A rapid mental checklist has been developed by behavioural neuroscientists to ensure firefighters make the best decisions on the job.

The research at Cardiff University underpinned changes made to the national guidance provided to Incident Commanders in the UK Fire and Rescue Services. The new decision control process has also been incorporated procedures used when UK emergency services come together to tackle large complex incidents.

Dr Sabrina Cohen-Hatton, now Deputy Assistant Commissioner with London Fire Brigade, began her research whilst working for the South Wales Fire Service in the city. Her study with the School of Psychology showed commanders often rely on intuition under pressure, regardless of whether a situation was complex or routine.

Welsh daffodils provide Alzheimer's medication

A sustainable Alzheimer's medication has been developed from daffodils grown in the Welsh Black Mountains. Agroceutical Products, co-founded by Welsh businessman Kevin Stephens, produces sustainable quantities of naturally derived Galanthamine – an alkaloid (a member of a large group of chemicals that are made by plants and have nitrogen in them) that, when isolated, has been found to effectively treat vascular dementia and Alzheimer's.

It works by inhibiting an enzyme that leads to the cognitive impairment found in Alzheimer's patients. However, natural galanthamine is hard to source due to the difficulties in cultivating flowers that produce enough of the alkaloid. This has led to a worldwide supply that's almost exclusively synthetic – and has associated side effects. Agroceutical Products could have the answer, processing galanthamine from daffodils grown on Kevin's family farm in Glasbury-on-Wye in Powys.

Electric car battery life extended by 50%

Caerphilly-based Deregallera is developing a new hybrid energy storage system to extend the life of an electric vehicle battery by 50%. The project is funded through the Faraday battery challenge, which is part of the Industrial Strategy Challenge Fund.

Sustainable jellyfish collagen plant

Wales-based marine biotechnologies business Jellagen is to step up sales of its next-generation jellyfish collagen products after attracting £3.8 million from investors.

The company is the first commercial manufacturer of jellyfish collagen for cell culture and medical applications including wound care and regenerative medicine. Set up in 2017 with support from UKRI's Innovate UK, the 7,500 square foot facility serves the research, medical, biotech and pharmaceutical markets.

Collagen is the most abundant protein in the human body and provides structural support for cells in the body's tissues and organs. It has been used in medical device and research applications for many years. It is usually sourced from pigs, cows, rats and horses.

Creative Clusters

A collaboration between government, universities, all major Welsh broadcasters and more than 60 screen industry businesses will see researchers work on ways to help the already thriving film and television industry in South Wales reach its full potential.

The Creative Industries Clusters Programme, which is part of the UK Government's Industrial Strategy, is an £80 million investment into collaboration between the UK's internationally-renowned creative industries and universities from across the UK.

World-leading neuroscience

Scientists have discovered 50 new gene regions that increase the risk of developing schizophrenia. They have also used state-of-the-art information about brain development to accurately pinpoint new genes and biological pathways implicated in this disorder.

In the largest study of its kind, researchers at UKRI's Medical Research Council Centre for Neuropsychiatric Genetics and Genomics at Cardiff University examined genetic data in 100,000 individuals including 40,000 people with a diagnosis of schizophrenia and found that some of the genes identified as increasing risk for schizophrenia have previously been associated with other neurodevelopmental disorders, including intellectual disability and autism spectrum disorders.

Energy Safety Research Institute

The Energy Safety Research Institute at Swansea will use the university's existing strengths in the energy sector with a unique focus on Safety Research. Supported by UKRI's Research England, the institute will be built on the industry-facing Science and Innovation Campus, and sponsored by the College of Engineering. The nature of its research will draw on long-term strengths in petroleum and chemical processing, in particular computational science (rock fracture modelling and 'fracking') and corrosion.

The centre will bring this together with more recent capabilities, including: marine energy, nuclear, tidal, advanced water treatment ('fracking' post-treatment and separation), materials, crisis management, more novel areas such as Photo Voltaic (PV) and Nanotechnology.

The project will include the design and construction of a new 3500m2 building. This will be designed to develop the quality and scale of the university's research efforts in this area. The focus on safety will look at developing and expanding existing energy processes, and the safe deployment and integration of new 'green' energy technologies. The combination of research into energy with a focus on safety reflects the university's research strengths, and the significant position of Wales in the UK energy market.