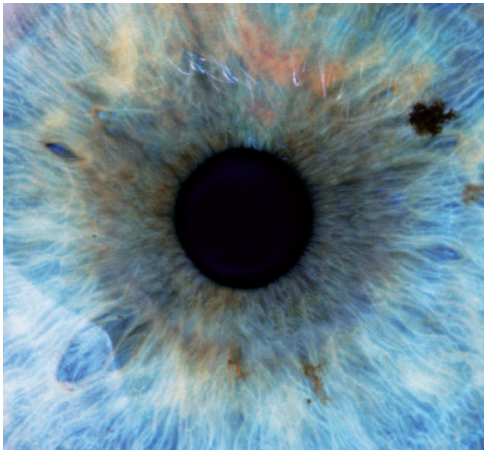

Research Councils UK

Excellence with impact

RESEARCH COUNCILS UK

Research for a **productive economy**

Stem cells: UK researchers discovered how to culture embryonic stem cells. Continuing support for stem cell research has placed the UK in a leading position in regenerative medicine, currently more than a £500 million per annum industry, estimated to rise to around £1 billion by 2013.

> "Science and technology is the backbone for productivity and innovation; not always information technology, but science and technology has been a driver of economic success."
>
> STEVE BALLMER,
> CEO MICROSOFT

Food security: Research has helped increase wheat production by £75 million per annum and its impact on world wheat production is estimated to be as much as £4.6 billion per annum.

Semantic web: UK scientists have been pivotal in the establishment of new interdisciplinary Web Science. These ideas are currently being applied by Sir Tim Berners-Lee and Professor Nigel Shadbolt in work commissioned by the Prime Minister.

Government: Game theory research resulted in £22.4 billion revenue to Government from 3G licence sales, equivalent to 2.5 percent GNP, or enough to build 400 new hospitals.

Spin outs: Arising from an RCUK funded PhD at the University of Edinburgh, Multichannel Transient ElectroMagnetics is Scotland's largest academic spin out and was sold for over £170 million.

Combating livestock disease: Research on the bluetongue virus has saved £485 million through prevention of outbreaks and has protected 10,000 UK jobs.

Crime: Research has helped establish Garlik Ltd, which specialises anti-identity theft software. It has received over £10 million in venture capital and has hundreds of thousands of users.

Inward investment: After only two years, Daresbury Science and Innovation Campus secured £70 million inward investment, created 90 high value new jobs and attracted 85 hi-tech SMEs producing sales valuing £15 million. In 2009 the campus was named the UK Science Park Association's *Most Outstanding UK Science Park*.

Research for a **healthy society**

Cardiac and mental health: Every pound spent on research in these areas results in health benefits and inward investment worth 39 pence to the UK each and every year thereafter. Between 1985 and 2005, interventions arising from cardiovascular disease research delivered a health gain of £53 billion.

Influenza: Every 8 months, on average, a disease transfers from animals to humans and the cost to the UK of a pandemic could be as high as 2 percent of the total national income. Long term investment provides the necessary agility to respond including contributing to the urgent development of a vaccine for use in the UK in autumn 2009 for the H1N1 pandemic.

Quality of life: Air pollution is currently estimated to reduce the life expectancy in the UK by an average of 7-8 months with estimated health costs of up to £20 billion each year. Research shows that planting larch, pine and ash can help remove tiny polluting particles from the air of towns and cities.

Immune system: Research aimed at understanding the fundamental properties of the immune system resulted in new antibody technology, used in drugs such as Herceptin, which has created an international market worth £12 billion in 2006, forecast to grow to over £26 billion by 2012.

> "Innovation alongside the ability to effectively apply knowledge and new ideas allow us to keep ahead in a global market. Sustained investment in UK research is needed to allow us to continue to tap in to some of the brightest and most innovative thinking in the world."
>
> DR TONY WOOD, VP, HEAD OF WORLDWIDE MEDICINAL CHEMISTRY, PFIZER

Independent living support: Innovative smart sensing systems, developed through research, will significantly reduce the £17 billion cost to the UK of dementia by supporting independent living.

Happier, healthier UK: Research on happiness and wellbeing has influenced policy innovations such as the New Deal Programme, the Working Families Tax Credit Scheme and the European Union's employment policy.

Smoking: UK research, started in the 1950s, showed the harmful effects of smoking. Further research on passive smoking was instrumental in bringing forward legislation that led to the smoking ban in 2007.

Research for a **sustainable world**

Environment: UK research discovered the hole in the ozone layer, crucial evidence for a ban on CFCs and subsequent closing of the ozone hole, with an estimated benefit to the UK economy of up to £42 million.

Afghanistan mining advice: The British Geological Survey, working with DFID, has helped to map copper deposits worth over £18 billion, thus enabling the Afghan government to take advantage of natural resources where mining is one of the best prospects for economic development, in turn supporting UK government security policy.

"In preparing to manage the severe risks of climate change, the world needs the very best researchers to work on the crucial challenges. RCUK is generating first-rate and innovative research which will provide vital guidance for both policy and society's response."

LORD STERN OF BRENTFORD

Energy spin outs: Ceres Power was formed from Imperial College in 2001 after ten years of research on materials and devices, and is now an AIM listed company employing 70 staff, working with British Gas to develop a fuel cell microchip product for the UK market.

Climate change – challenges and solutions: UK researchers were at the forefront of establishing that global warming is caused by human activity. Recent scientific efforts have included contributing evidence for the Stern Review and the 2009 Copenhagen Summit.

Lighting: New LED technology will cut carbon emissions by 23 million tonnes and slash household lighting bills by 25 percent.

Innovative environmentally friendly products: From an initial investment of £160K into sustainable art and design, the successful commercialisation of award winning innovative products using recycled glass now has an estimated commercial value of £3-4 million.

Predicting behaviour: Policy responses to climate change, such as raising energy prices in line with energy efficiency improvements, have been informed by research highlighting a 'rebound effect'. Consumer savings due to fuel efficiency may be spent on things which contribute to climate change, such as buying a fuel efficient car and using it more.

Flooding: Research informs the operation of the Thames barrier which protects London from flooding, protection valued at £30 billion.

“Research Councils UK is ensuring that the UK is a world leader in a global market.”

PROFESSOR ALAN THORPE
CHAIR, RESEARCH COUNCILS UK

Public investment in research makes certain that the UK is able to compete in the global economy. Research Councils UK (RCUK) is ensuring that the UK is a world leader in a global market. RCUK confirms that our research excellence and relevance today, positions the nation strongly to seize tomorrow’s opportunities.

This is our framework for the future. RCUK working in partnership cultivates the essential research and skills to provide the bedrock for the UK to have a **productive economy**, **healthy society** and contribute to a **sustainable world**.

PRODUCTIVE
HEALTHY
SUSTAINABLE

In these three mutually supportive areas, RCUK spans the full range of challenges facing society by drawing together world-leading interdisciplinary research programmes. Alongside the delivery of world-class research, RCUK invests in the next generation of researchers and scientific infrastructure to build the skills of the nation and ensure that the UK maintains a world leading position.

Research Councils UK is the strategic partnership of the UK's Research Councils. We invest annually around £3 billion in research.

www.rcuk.ac.uk/framework

Our focus is on **excellence with impact**:

- We nurture the highest **quality research**, as judged by international peer review providing the UK with a competitive advantage. Global research requires we sustain a diversity of funding approaches, fostering international collaborations, and providing access to the best facilities and infrastructure, and locating skilled researchers in stimulating environments.
- Our research achieves **impact** – the demonstrable contribution to society and the economy made by knowledge and skilled people. To deliver impact, researchers and funders need to engage and collaborate with the public, business, government and the third sector.