

THE VALUE OF SCIENCE

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When Cesar Milstein and Georges Kohler received their Nobel Prize in 1984 for their work on the isolation and reproduction of monoclonal antibodies, no one could have predicted that their discovery would create a market for monoclonal antibody drugs which is now worth an estimated US\$32 billion.

But there were many hurdles to overcome along the way. At first, monoclonal antibody technology was developed by immunising mice. This produced rodent antibodies which were initially rejected by humans. In 1986, Greg Winter, working alongside Milstein, developed a technique to 'humanise' mouse monoclonal antibodies using genetic engineering. Winter went on to develop another technique which meant that human antibodies could be made using bacteria, bypassing the need to immunize mice or humans.

Winter's pioneering technologies have been licensed to approximately fifty companies and have generated over £300 million in royalties for the Medical Research Council. Winter and Dr David Chiswell also founded Cambridge Antibody Technology, a company acquired by AstraZeneca in 2006 for £702 million. Winter acknowledges that he couldn't have done this without the right kind of support. "I was lucky; the MRC allowed me the freedom to roam with my scientific research over the

borders to medicine and industry."

This is just one example of where investment in science has paid dividends, both in terms of the treatments available to us and the financial rewards. But investing in science doesn't just mean advances in technology or economic growth – it also means producing skilled graduates and researchers, enhancing our problem solving capabilities, increasing our knowledge of the world around us and developing networks of collaboration.

The UK currently does very well out of its investment in science. With a total government spend of £6.6 billion on science (equal to 3% of global funding for research), and 1% of the world's population, the UK produces 7.9% of the world's publications, receives 11.8% of citations and 14.4% of citations with the highest impact. But our competitors are accelerating their efforts. Recent announcements by the US of a \$21 billion boost for science, a €35 billion investment in the 'knowledge economy' by France and a commitment from the

German government to increase their federal budget for education and research by €12 billion by 2013 means that the UK cannot afford to be complacent.

In the current financial climate, no area of public spending is guaranteed. But we believe that cutting the science budget now would be a false economy. Even in these tough times may, the UK needs to invest in the future and concentrate spending where it already has an advantage.

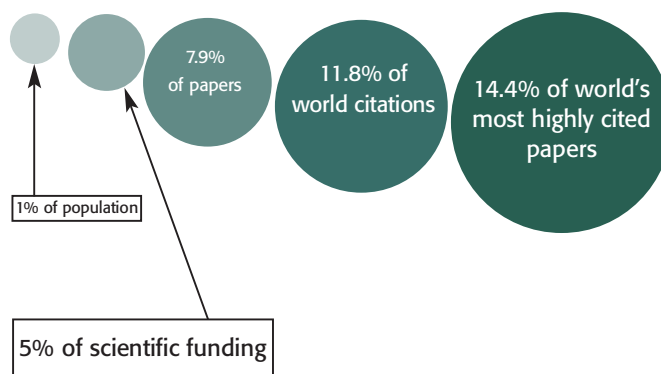
This is why the Royal Society convened an advisory group, which I chaired, and which included two Nobel Laureates, two former ministers of science, and leading figures from two high-tech companies. We wanted to ensure that the next government was fully informed when it came to budgetary decisions, because those

decisions could be the most important decisions for a generation.

The group spent a year gathering and analysing evidence and came up with a set of recommendations. Our report – 'The Scientific Century' – recommends that science should be at the heart of any long-term strategy for economic growth. It demonstrates how excellent people are at the core of our prosperity, and why we need to invest in their training and research.

Throughout its 350th anniversary year in 2010, the Royal Society will continue to promote these messages, because it wants to provoke a richer debate about the contribution that science and innovation can make to society now, and to our future prosperity.

THE UK'S SHARE OF GLOBAL SCIENCE



'The Scientific Century: securing our future prosperity' is available to download at royalsociety.org/the-scientific-century

