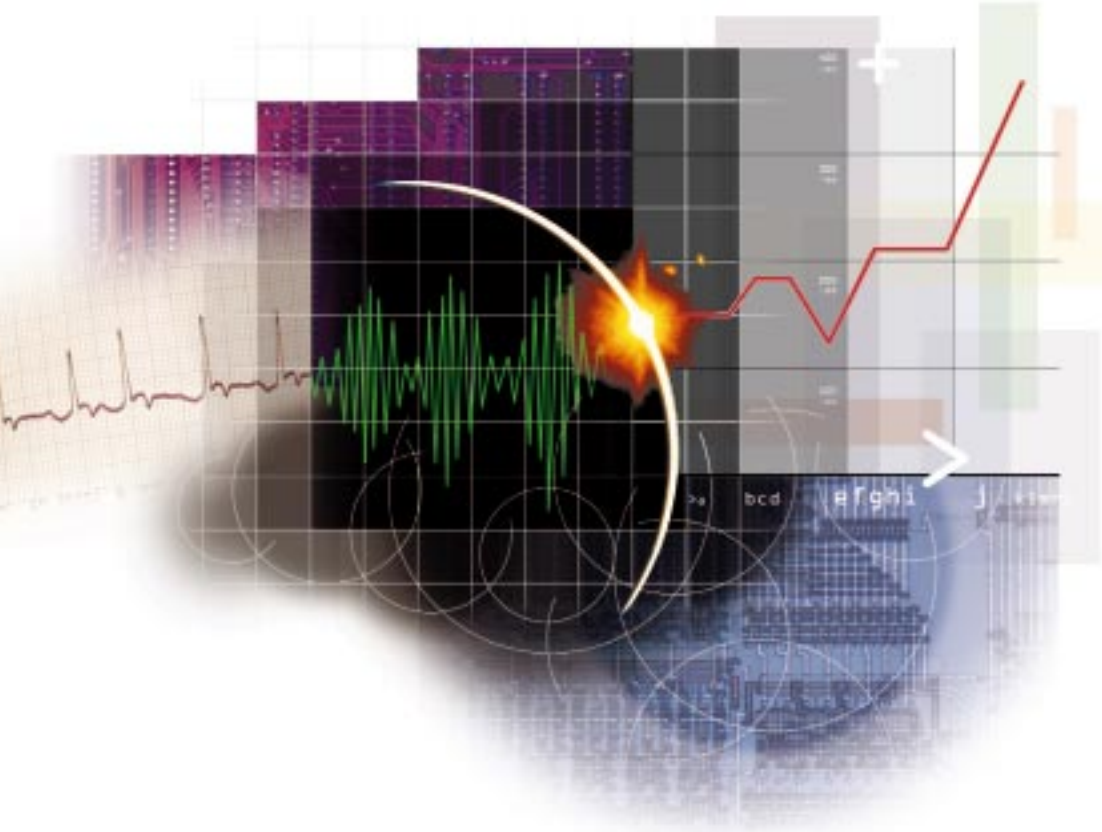


# Excellence and > Opportunity

– a science and innovation policy >  
for the 21st century



>executive summary

**dti**

Department of Trade and Industry

## A Science Policy for the 21st century

1. Science, and the innovations it has created, have widened choice, improved the quality of life, treated disease and allowed people to learn, travel and communicate more freely than ever before. Science is creating genetic medicines, cleaner transport systems and helping the police solve crimes. Science is a driving force for progress throughout modern society and the pace of scientific advance is increasing. Modern societies are doing more scientific research, more productively than previous generations and translating the results more quickly into products and services.

2. Science will soon breed new families of products and with them new global markets such as microrobotics – miniature robots built on an atomic scale – that

could unclog sclerotic arteries; and synthetic materials that will mimic substances found in nature that could help to clean the earth's environment. New industries and jobs will be created, and existing industries, including public services such as education, transport and health care, will be transformed in the process.

3. The potential of a scientific breakthrough, such as the sequencing of the human genome, will be realised only if it feeds innovation. Innovation is the key to the knowledge-driven economy, turning ideas and knowledge into products and services. Innovation gathers momentum as it moves in a cycle, as ideas are taken up by entrepreneurs and businesses, backed by investment and management, and turned into products and services that consumers want.

Public satisfaction feeds the cycle because public support underpins investment in the basic science that fuels the innovation process.

### Excellence in Science

4. There are grounds for optimism. Our science education is better than in many other countries. Our record for scientific research is second only to the US. Yet we cannot afford to be complacent. Other countries are increasing their investment in science. We are in a global competition for scientific talent.

5. We must invest in science if Britain is to lead the global networks that drive modern scientific inquiry. Britain could become a scientific hub of the world economy: an exciting place

for the brightest people to gather, learn, work and succeed.

6. Government must play many roles as an investor, facilitator and regulator of science and innovation. The White Paper *Excellence and Opportunity* addresses each of these roles. This is not about picking winners. But the market alone will not generate the basic investment in research, the networks to link universities and business, nor the public confidence to drive innovation forward.

7. Government must be a lead investor in basic scientific research, bringing in matching investments from foundations and corporations. Through education policy, Government has a critical influence on the strength of the science base.

8. As an intelligent investor, committed to enhance the excellence of our science, the Government will:

- invest in a new £1 billion programme in partnership with the Wellcome Trust to renew the infrastructure for science, providing world-class buildings and equipment for leading edge research;
- give a £250 million boost to research in key new areas that will shape life in the 21st century: genomics, e-science and basic technology such as nanotechnology, quantum computing and bio-engineering;
- provide additional funding to increase over three years the basic support for post-graduate research students to £9,000 a year;
- launch, in partnership with the Wolfson Foundation and the Royal Society, an initial fund of £4 million a year to assist in the recruitment of up to 50 top researchers so we can compete in the world market for the best academics; and
- make 2001/2002 Science Year and run a new Science Ambassadors programme to capture children's imagination and encourage them to take up careers in science and engineering.

### Opportunities for Innovation

9. Scientific breakthroughs are often not exploited to the full because universities and businesses operate at arm's length. Public funding, especially at a regional level, can help spawn clusters of innovation that draw them together.

10. And Government must provide the best framework for scientists and business to make international links.

11. To extend opportunities for innovation the Government will:

- establish a Higher Education Innovation Fund of £140 million over three years incorporating the Higher Education Reach Out to Business and the Community fund to build on universities' potential as drivers of growth in the knowledge economy. This will triple existing funding by the third year, to increase universities' capabilities to work with industry, particularly small firms;
- launch a new Foresight fund, initially up to £15 million, to get the best ideas from Foresight 2000 put into action fast;
- run one further round of the University Challenge competition, to provide seed venture funding for knowledge transfer; double the number of new starts for Faraday Partnerships from four to eight a year, to link the science base to business networks; and put £15 million more into Science Enterprise Centres to bring business skills into the science curriculum;
- create new Regional Innovation Funds worth £50 million a year to enable Regional Development Agencies (RDAs) to support clusters and incubators and new clubs of scientists, entrepreneurs, managers and financiers;

- support 20 Business Fellows who will lead their academic colleagues in working with business. They will spend part of their time advising companies, particularly SMEs, on their business problems, providing technical and research solutions;
- publish science and innovation strategies for Government departments;
- introduce a Small Business Research Initiative to open up to small firms R&D procurement worth up to £1 billion, with a target of procuring £50 million of research from them;
- change the rules for Government funded research, so that research bodies own the Intellectual Property Rights; issue new guidelines on incentives and risk-taking for staff in public sector research establishments<sup>1</sup>; and provide £10 million to commercialise research done in the public sector, including the NHS; and
- double the number of International Technology Promoters from 8 to 16 and link their work closely with British Trade International and other UK agencies overseas, to help UK universities and businesses make new partnerships across the world. And we plan to extend the network of science attachés in embassies abroad.

<sup>1</sup> *Good Practice Guidance for PSREs and Staff Incentive Schemes*, July 2000.

## Confident Consumers

12. Government plays a critical role as regulator. Britain must combine the highest possible standards for consumer safety with competitive and open markets to reward innovators. Only then will we realise the full benefits of scientific advance.

13. This requires an intelligent combination of competition and regulation to make sure consumers are confident that new products are safe. The Government is committed to learning the lessons from recent controversies over BSE and genetically modified food.

14. We will create a robust and transparent framework to address consumer concerns over safety.

As a first step we will:

- implement stronger guidelines from the Chief Scientific Adviser on how scientific advice should be used in drawing up Government policy<sup>2</sup>
- publish a code of practice for all scientific advisory committees committing them to high levels of openness and transparency in their work<sup>3</sup>.

15. When the applications of science are properly regulated and address clear human needs, they win public support. Science is threaded through every aspect of our lives. That is why Britain will succeed as a 21st century nation only if it has a confident relationship with science. And that is what this White Paper aims to make possible.

<sup>2</sup> *Guidelines 2000: Scientific Advice and Policy Making*, July 2000.

<sup>3</sup> *Consultation as a Code of Practice for Scientific Advisory Committees*, July 2000.

Copies of the White Paper *Excellence and Opportunity – a science and innovation policy for the 21st century* (Cm 4814) can be obtained from the Stationery Office Ltd.

and can be found on the DTI's website:

[www.dti.gov.uk/ost](http://www.dti.gov.uk/ost)

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