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Ms Hazel Gibson
Office of the Chief Scientific Advisor
Scottish Executive
Room 1 N01
St. Andrew's House
Edinburgh
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Dear Ms Gibson,

Science and Innovation Strategy for Scotland: Consultation Paper

Thank you for inviting comments on aspirations and aims for a *Science and Innovation Strategy for Scotland*. Cancer Research UK welcomes the development of such a strategy and the recognition that science and innovation are vital to Scotland's future.

Cancer Research UK¹ is the world's largest independent organisation dedicated to cancer research and has an annual research spend of over £250 million. We carry out world-class research to improve our understanding of cancer and to find out how to prevent, diagnose and treat different types of the disease.

Cancer Research UK provides significant support for medical research in Scotland. This year, over £25 million of our annual spend will be dedicated to supporting around 120 research groups or projects involving scientists, doctors and nurses in research institutes, universities and the major hospitals across the country. Of this, approximately £13.5million will be spent in Glasgow, £5 million in Dundee, £6 million in Edinburgh, and smaller amounts in Stirling, St Andrews and Aberdeen. The charity's funds are raised almost entirely through public donations, a portion which comes through 100 local committees, 80 shops and members of the public across Scotland.

Cancer Research UK Scotland research groups are renowned for their high quality expertise in designing and running clinical trials to test potential new and/or improved treatments. Scottish research groups share expertise with scientific and medical colleagues in other parts of the UK and Europe in their quests for earlier diagnosis; more effective, less toxic treatments; and long-term prevention.

¹ Registered charity no. 1089464

General comments

We value commitments in this consultation paper to support and promote the science and research base in Scotland, harnessing the benefits of scientific discovery for Scotland's economy and society, and inspiring the next generation to embark upon careers in science.

While overall, we are supportive of the aspirations laid down by the Scottish Executive, at this stage it is not clear how many of these ideals will be achieved in practice. As the Science Strategy emerges, it is imperative that this contains concrete and achievable plans for how to tackle some of the outstanding barriers to science and innovation across Scotland, and how to achieve the rightly ambitious aspirations detailed here.

The opportunity awarded to Scotland in its devolved powers must be seized to ensure that we are training and retaining the necessary people to make Scotland the 'Science Nation' to which it should rightly aspire. This naturally involves ensuring that Scotland can adequately compete with other regions of the UK, the European Union and the US, who also seek to develop their own excellence in science.

Working through the consultation, there are a few areas where we believe further commitments are needed if the Executive is to realise its aims, based loosely around five of the 'themes' identified in the consultation paper:

1. Maintaining and Developing the Excellence of the Science Research Base (THEME 1)
2. Intensifying knowledge exchange between academia and business (THEME 3)
3. Modernising science education and promoting science careers (THEME 5)
4. Increasing public engagement in science (THEME 6)
5. Developing better use of science by Government (THEME 7)

1. Maintaining and Developing the Excellence of the Science Research Base (THEME 1)

Ensuring that Scottish Science is adequately funded

Cancer Research UK joins the Executive in welcoming the commitment to investment in the science base over recent years by the UK Government. However, we are concerned that proposals announced in the 2006 Budget to bring together the two health research funding streams of the MRC and the DH, in England, under the auspices of the recommendations of the Cooksey Review, are not adequately developed to take into account the needs and priorities of research in the Devolved Administrations. Like the MRC, Cancer Research UK funds research across the whole of the UK, not only England. It remains unclear how the 12% of the MRC research budget currently awarded to Scottish institutions will be affected by these changes.

Rewarding excellence

We welcome proposals to encourage partnership working and recognise the need for debate about how best to promote and foster excellence in research across Scotland. It is particularly important, therefore, that proposals for a new system to replace the Research Assessment Exercise after 2008 are appropriately designed to

meet Scotland's needs and are introduced in a manner that does not disrupt ongoing or forthcoming research.

Providing infrastructure support

Investment in science is an essential component for economic growth. Biomedical research greatly benefits the health and prosperity of the nation. Sustainability should therefore be at the heart of any research funding policy. Funding for research infrastructure in universities is essential for maintaining and promoting the high standard of scientific research conducted in Scotland.

We would like to see further consideration of the infrastructure support required within Scotland's research institutions to achieve the long-term aspirations outlined in this consultation. This includes research support services, administration and electronic and IS support, all of which are vital for the smooth running of high quality research facilities and the development and communication of research at all levels.

The commitment to supporting the policy of Full Economic Costing higher education research is welcomed. We would like to see further long-term commitments to this scheme included in any final Science Strategy. It is also important to ensure that this policy includes the provision of sufficient funding for charity-funded research. Currently, charities are disadvantaged in Scotland due to the comparatively low levels of supportive funding provided by the Scottish Higher Education Funding Council, as compared to that made available through the Charity Research Support Fund in England. Charities provide increasingly significant research funding to Scottish institutions, of around £90 million per annum. The work supported by these grants is of great benefit to the Scottish public and to Scotland's national research base.

2. Intensifying knowledge exchange between academia and business (THEME 3)

A cornerstone of the UK's success in the global research market is the balance between academic and industry research undertaken in the UK. For example, the clinical academic research community is highly skilled in working with patients to partner them in research. This works to the advantage of pharmaceutical companies in carrying out their research and of patients who will benefit from new developments in treatment and care.

It is important that academic institutions are encouraged to work closely with pharmaceutical and biotechnology companies to promote the transfer of discoveries from early phase development into clinical trials and on to products. Cancer Research UK has a number of ongoing collaborations with industry partners and we take drugs to a stage in development where they are of interest to commercial research funders.

Indeed, cancer provides a good model for how this technology transfer can work effectively between academia and industry partners. Cancer Research Technology, Cancer Research UK's development and commercialisation company, works closely with leading international cancer scientists, institutes and funding bodies to protect and develop intellectual property arising from their research and to establish links with commercial partners. To this end, CRT facilitates the discovery, development, marketing and commercialisation of new cancer therapeutics, vaccines, diagnostics and enabling technologies.

However, in general, the UK is ill equipped to undertake technology transfer from the academic sector into industry. This problem is related to a number of factors:

- The focus of technology transfer is currently on short-term financial or political expediency, rather than ensuring that drugs are transferred into clinical benefit as quickly as possible.
- Technology transfer must be driven by the need for long-term human benefit rather than short-term profit-making considerations.
- UK universities are still incentivised to develop spin-out companies, rather than undertake transfer of technology for human benefit,
- The UK lacks sufficient non-industry phase I clinical trial facilities and expertise,
- A balance has not been struck between strategic and response led funding to promote drug discovery in the UK sufficiently well.
- UK industry has historically not had a reputation for developing the breadth or flexibility of relationships with academia to allow the most successful technology transfer relationships to flourish.

It is our experience that a coordinated approach is needed to improve knowledge transfer between these two sectors, the cornerstone of which must be a focus on maximising outcomes and benefits for society (such as cancer patients), rather than maximising revenue for academic institutions.

4. Modernising science education and promoting science careers (THEME 5)

Scotland and the UK should be among the most attractive countries in the world in which to pursue a career in science. The future of scientific research across the UK relies heavily on fostering an interest in young people to pursue a career in science.

Excellent science education in schools and universities is essential for ensuring the supply of competent students wanting to study science at university and post-doctorate level. We therefore welcome the aspirations and actions outlined in the consultation to address science teaching in schools and universities.

We would, however, also like to see an explicit statement on the need to support the continued training and development of young scientists, who will be vital to meeting the ambitions of the strategy. This early stage training is vital for the retention of scientists and for their future career development.

5. Increasing public engagement in science (THEME 6)

There could be no clearer demonstration of the public's confidence and trust in research than the enormous level of donations to medical research charities across Scotland and the UK every year. Opinion polls have also shown that the public have a good appreciation of the importance and benefits of science.

The funders of research have a collective interest in developing ways of gaining public trust and confidence in science and medical research and engaging the public in constructive discussion. We therefore welcome the Scottish Executive's commitment to further promote public engagement.

6. Developing better use of science by Government (THEME 7)

We welcome the focus on Government use of science in policy making. This is particularly important in Scotland where the success of evidence-based public health initiatives has made significant differences to the public's understanding of cancer, so as to reduce the number of people at risk of developing the disease. We again congratulate the Executive on the leading role that Scotland played in driving forward legislation for smokefree workplaces.

However, we also believe that there could be more emphasis from government and its departments on transparency in the process of obtaining and evaluating scientific advice with the inclusion of all relevant stakeholders in this process. Seeking and understanding scientific advice is not a passive process, and requires all stakeholders to be actively engaged.

We therefore would greatly value the opportunity to work further with the Scottish Executive as they consider how best to draw on scientific advice to inform policy.

I hope these comments are helpful. We look forward to seeing the results of this consultation, and helping to shape the emerging science strategy. We would welcome the opportunity to provide further information or assistance as this development progresses.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'J Toy', with a stylized flourish above the 'T'.

**Professor John Toy PhD FRCP
Medical Director
Cancer Research UK**