

**RSC Submission to the Scottish Parliament’s Enterprise and Culture Committee’s inquiry, ‘What needs to be done to increase the rate of sustainable business growth in Scotland over the next 10 years.’**

The Royal Society of Chemistry (RSC) welcomes the opportunity to comment on the inquiry into how the rate of sustainable business growth in Scotland can be increased over the next 10 years.

This document represents the view of the RSC. Under its Royal Charter the RSC has a duty “to serve the public interest” and it is this spirit that the RSC makes this submission based on its experience as an independent learned and professional scientific society. The RSC would be happy for this submission to be put into the public domain.

The document has been written from the perspective of the RSC; consequently our comments focus on the growth of chemical science-based business and spin-out activity in Scotland. We believe that chemical science-based business will have a positive effect on innovation and employment opportunities in Scotland and over the country as a whole.

**Summary**

- The gap between the science base and business needs to be bridged to allow potentially commercial ideas to come to fruition. One way of bridging this gap is to staff university technology transfer offices with more individuals who have a high level of business acumen.
- A lack of entrepreneurial spirit should be addressed at school and university level to create an entrepreneurial culture which will subsequently spur innovation and business growth in Scotland.
- The lack of experienced business management in spin-out companies significantly undermines spin-out activity. Schemes such as the secondment of industrial commercial managers into university spin-outs and mentoring by successful CEOs should be developed. The Enterprise Fellowships should be extended across all sectors and not limited to Scottish Enterprise cluster priorities.
- The realistic provision of resources for IP filing and protection needs to be addressed. A university or university spin-out could not realistically finance the costs of the prosecution or defence of the broad portfolios of patents felt needed to provide adequate commercial protection. To address this issue, the RSC recommends including the costs of patent filing under ‘R&D’ costs for the purposes of calculating a rebate under the R&D tax credit scheme.
- More access to affordable business incubator facilities is essential. Business incubators provide office space and skills services vital for nurturing spin-out growth. Public agencies in Scotland should consider a co-ordinated approach to overcome this issue.

## Overview

The chemical sciences play a key role in economic growth *via* R&D investment and the formation of chemical science spin-out companies. These spin-out companies promote innovation and job creation which subsequently leads to business growth. However, business growth in Scotland is below the UK average - to understand why Scotland's business growth falls below that of the UK average we need to gain a better understanding of the opportunities and challenges faced by the chemical science-based industries in Scotland.

The RSC and Chemistry Leadership Council (CLC) recently produced a report entitled 'Chemical Science Spin-outs from UK Universities'<sup>1</sup> which provides an in-depth look into spin-out activity in the UK. It details the key barriers facing the growth of chemical science-based spin-out companies in the UK and puts forward key conclusions and recommendations on how to tackle these issues. The conclusions and recommendations from this report can be readily applied to the Scottish science base to successfully overcome the barriers in Scotland to business growth *via* spin-outs.

## Funding Issues

It is evident from the RSC/CLC report that a significant barrier to the creation of university spin-outs in the UK is availability of early-stage funding. The RSC believes that there needs to be easier access to financial resources early in a spin-out's growth and development. It is recognised that Scottish Enterprise has made considerable progress in addressing the funding issues with its *Proof of Concept Fund* and *Scottish Co-Investment Fund*.

Some universities have tried to combat this lack of funding by 'signing up' with a specific venture capital entity thus reducing the dependence on public funding. Whilst early indications suggest this relationship works well and adds to wealth creation there are concerns that it may stem innovation if the venture capitalist feels an idea is not worth investing in and in turn limits the growth of a particular spin-out. This is an area worth exploring in more detail.

The RSC/CLC report found evidence of a funding gap at the £2m-5m stage. Large funds may look to invest £5m and small funds may look to invest £500k, if the spin-out or start-up requires £1.5m they don't fall into either category and miss out on vital funding. The RSC supports Scottish Enterprise working with other agencies to identify ways to bridge the funding gap in the private investment infrastructure for growing companies. We suggest that Scottish Enterprise and other agencies continue to explore innovative means by which a healthy and competitive private sector investment climate can be fostered in Scotland.

## **Effective Knowledge Transfer**

UK universities have a huge knowledge pool which needs to be effectively transferred to the commercial sector to maximise its financial potential. In the majority of cases this transfer of knowledge is not happening effectively and steps need to be taken to rectify this.

The gap between the Scottish science base and the commercial sector can be bridged in a number of ways with the university Technology Transfer Office (TTO) being a particularly effective route. However, the evidence from the RSC/CLC report suggests that although, in general, commercialisation is realised through TTOs, universities are often constrained by their lack of resources.

The extent of knowledge transfer is dependent on the expertise and number of staff involved in the process. The RSC feels that TTOs have found it difficult to attract recruits with the right experience in dealing with commercial, financial and funding issues because the positions are often underpaid relative to industry. However, it is recognised that many research intensive Scottish TTOs employ staff with some industrial or commercial experience, but it is evident there is a skills gap in the areas of deal making and negotiation that needs to be addressed.

The RSC/CLC report also discussed third-stream funding which is dedicated to supporting knowledge transfer from the science base. All the TTOs interviewed had access to such third-stream funding through their national Funding Councils and other government initiatives. However, TTOs were concerned about how the funding was allocated and the availability of follow-on funding. Scotland was perceived as being somewhat ahead of the rest of the UK in respect of SHEFC's Knowledge Transfer Grant (KTG) scheme, but the RSC feels that in using metrics to inform the KTG allocation higher weighting needs to be given to licensing and spin-out activity.

The RSC welcomes the formation of the Intermediary Technology Institutes (ITIs) and the SEEKIT programme which have been set up to aid knowledge transfer and commercialisation in Scotland. These schemes must be advertised widely to guarantee they have maximum impact on business growth.

## **Entrepreneurial Spirit**

Spin-out and start-up companies exist because of the entrepreneurial spirit of certain individuals. Consequently, universities are actively promoting an entrepreneurial culture amongst undergraduates and graduates – such a culture is missing throughout the UK. The RSC believes that higher education facilities have a key role to play in giving graduates the key skills and entrepreneurial flair that is needed to create business growth from the university base.

The lack of entrepreneurial spirit, skills and confidence needs to be addressed at both university and school level by introducing more ventures like the recently established *Centre of Confidence and Well-being* which aims to direct the next generation of children. More university-driven enterprise programmes focusing on encouraging entrepreneurship will encourage budding entrepreneurs to start up new business in Scotland. Schemes such as the *Scottish Institute of Enterprise* and the *Hunter Centre for Entrepreneurship* at the University of Strathclyde (which is charged with enhancing entrepreneurial capabilities of undergraduate and postgraduate students in all disciplines) need to be promoted more explicitly. Furthermore, the Hunter Centre's blueprint could be adopted by other universities.

### **Good Business Management**

Good business management is essential to sustaining business growth in a new spin-out company. Many spin-outs and start-ups fail because good business management is not brought in at the early stages of a company's development. The RSC supports setting up schemes that promote or facilitate secondments and exchanges of industrial commercial managers into spin-outs or mentoring by experienced individuals and suggests that this should be investigated further in the Scottish context.

The RSC also welcomes programmes such as the Royal Society of Edinburgh *Enterprise Fellowship Programme* which promotes commercialisation by individual researchers. The Fellowship helps enhance the business acumen of the individual and ultimately the spin-out company by providing on-the-job business training and access to a network of business experts. The scheme could benefit by extension to all sectors.

Some higher education facilities are beginning to address the issue of business management by introducing master classes in specific aspects of business management skills, e.g. writing a business plan and encouraging students to include business as part of their science degree. Again the model of the Hunter Centre at Strathclyde could be considered.

### **Intellectual Property (IP)**

As the IP is generally owned by the university, and not the academic staff, the cost of filing and maintenance of a patent is the responsibility of the university. Were a patent to be challenged, it is unlikely that the university could afford the expensive defence – the university therefore runs the risk of losing the patent. This problem is also found in spin-out companies which are also in a poor position to carry the costs of prosecution or defence of patents. Consequently, spin-out companies may be forced to restrict the geographical coverage of filings to match their financial means. To address this significant barrier, the RSC advocates the inclusion of the costs of patent filing within

'R&D costs' when calculating a rebate under the R&D tax credit scheme. This could act as an effective encouragement to file.

The RSC/CLC report also found that universities provide little or no support to follow-on or related IP after the company has been spun-out. This seriously decreases the likelihood that the spin-out will be successful.

### **Access to Wet Chemistry Facilities**

The RSC/CLC report agrees with the Wright Report<sup>2</sup> which states that access to premises on a science park is key to the successful growth of a spin-out company. Science parks provide specialist equipment and expertise – facilities that are needed at the early stage of a company's development. It was found that a spin-out company's credibility as a viable business entity was impeded if it remained within the confines of the university.

Furthermore, the RSC believes there is a need for a larger number of affordable incubator facilities which offer access to wet laboratory facilities and specialised equipment. The economics of providing wet lab incubation facilities mean that a long-term funding commitment from the public sector agencies is usually required to secure sustained provision. The RSC recommends that Scottish public agencies with common interests need to work closely together and in innovative ways to provide sufficient facilities.

The RSC believes the chemical sciences play a key role in the economic growth of Scotland particularly through spin-out formation and SME growth. But to ensure this comes to fruition the gap between the science base and business needs to be bridged to allow potentially commercial ideas to be developed as well as encouraging entrepreneurial spirit from schools upwards to spur innovation. Experienced business management should be brought in at a company's early stage of development and with this, together with the realistic provision of resources for IP and more access to affordable business incubator facilities, the spin-out activity should increase and underpin the business growth and wealth creation in Scotland over the next 10 years.

For further information please contact

Melanie Washington  
Industry Executive  
Royal Society of Chemistry  
Burlington House  
Piccadilly  
London,  
W1J 0AB

Direct Tel: +44 (0)20 7440 3304  
Fax: +44 (0)20 7734 1227  
Email: [washingtonm@rsc.org](mailto:washingtonm@rsc.org) Web: [www.rsc.org](http://www.rsc.org) or [www.chemsoc.org](http://www.chemsoc.org)

## References

<sup>1</sup> Chemical Science Spin-outs from UK Universities – Review of Critical Success Factors, Royal Society of Chemistry and Chemistry Leadership Council, London, 2005.

(<http://www.rsc.org/pdf/science/ChemSciSpinOuts.pdf>)

<sup>2</sup> Spin-outs from Universities: Strategy, Financing and Monitoring, Professor Mike Wright, 2004