

Chapter 5

Encouraging the development of clusters in the UK

- 5.1 The previous two chapters have described our understanding of clusters in the UK and US in terms of the factors we see as critical, identifying examples of best practice and barriers to further development. In the following paragraphs, we make recommendations and raise issues for further consideration in order to address the barriers to the development of clusters in the UK, drawing from our findings in the US.

Science base

- 5.2 Universities, other public research institutes and teaching hospitals, are important components of clusters as sources of company formation, skilled personnel, and collaborative partners with industry. However, as we have noted earlier, some are more active than others in contributing to the growth of clusters.
- 5.3 We were impressed during our visits by the extent to which the culture within universities towards commercialising their IP is improving. We also encountered a growing recognition of the need to improve further, and to secure the resources to do this professionally and to consider possible synergies with IP held by other HEIs. The support provided by some universities through their technology transfer offices is good but performance is far from uniform. We therefore suggest that greater priority should be given by universities to improving the way their technology transfer operations are resourced so that they can realise the true commercial potential of their intellectual property. We encourage the OST and universities to address these issues as a priority.
- 5.4 We also came across another significant obstacle to technology transfer. Deciding on the ownership structure of IP was identified by a number of those we met as a major impediment to commercialising research findings. Problems were particularly acute for multi-funded research where too often the disparate IP policies of the funding bodies (including BBSRC, MRC, Wellcome and other charities) produced conflicting claims on ownership which can take lengthy negotiations to resolve and deter potential investors.

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- 5.5 In contrast, as we comment in Chapter 4, the system of IP ownership in the US has the virtue that there are clear procedures for the vesting of IP with the research institute or university, and that there are formulas for allocating royalty and licensing revenues.

We recommend that Research Councils, Medical Charities and others work with the Office of Science and Technology to review their respective policies on Intellectual Property (IP) ownership to ensure clarity and avoid conflicting claims, for example by ensuring that IP ownership is vested in the organisation generating the IP.

- 5.6 Biotechnology start ups also need to have a sufficiently broad technology base to enable them to grow. We are encouraged by what has been achieved to date by the DTI's Biotechnology Exploitation Platforms Challenge (see Chapter 3) in helping to bring together complementary IP across research institutions. We are pleased to learn that there are plans for an extension of £6.4 million to the Challenge for the next 4 to 5 years.

Entrepreneurial culture

- 5.7 The teaching of entrepreneurship and management to engineers and others is valuable and we believe that universities in this country can learn from the approach and courses run by the MIT Entrepreneurship Centre. As we note in Chapter 4, business competitions can be a valuable way to boost commercialisation and engender a real sense of adventure and entrepreneurship among university students. We believe, that there is a need for universities and the venture capital community to create business competitions in the UK which are based on real rather than imaginary ideas and that they are properly resourced and bidders are supported so that they have access to advice on IP protection, business planning and raising finance. It would be possible for such competitions to operate at the regional level, and take advantage of the Reach Out fund and the new micro-project element of the SMART scheme.

We recommend that universities seek, in collaboration with the new Science Enterprise Centres, to make more knowledge about management and entrepreneurship available to their science undergraduates and graduates.

We recommend that universities, in conjunction with venture capitalists and other sponsors, introduce student business competitions similar to the MIT \$50k prize to stimulate entrepreneurship and the number and quality of university start-ups.

Growing company base

- 5.8 Equity finance is typically the main way biotechnology SMEs finance their research and development activities, but Government also has an important supporting role to play. In the UK there have been a number of welcome improvements in support for early stage R&D based companies, such as University Challenge, Venture Capital Trusts, and various sectoral programmes,³⁸ as well as planned improvements such as the Enterprise Fund and the proposed R&D tax credit.
- 5.9 The SMART scheme has been very successful in providing vital finance and endorsement at the early stage of development and has recently benefited from additional support from the DTI. But like those that we consulted we suggest that there should be further support mechanisms for early-stage start-ups to increase their financing options. We believe there is an important opportunity for Government to stimulate R&D particularly in areas which may otherwise be neglected because they are seen to be too far ahead of viable markets or in a niche market. We were impressed by the R&D support available for SMEs in biotechnology and other sectors provided by the Small Business Innovation and Research (SBIR) programme in the US, and believe the benefits it provides should be subject to further analysis.

The DTI will consider, in consultation with other Government Departments and devolved administrations, the lessons which can be learnt from the US about ways to stimulate R&D in SMEs.

³⁸The Biotechnology Mentoring and Incubator Challenge and the UK Biotechnology Finance Advisory Service

Ability to attract key staff

- 5.10 Biotechnology companies, although often small, compete and operate globally. To succeed they must be able to attract high calibre management. In the UK, in order to meet the growing demand for experienced managers, we need to attract back some of the managers who went in the early years of the biotechnology industry to the US. Equity-based remuneration is an important way that a cash-poor company can remunerate and provide incentives to its staff. When in the US, we heard that companies in biotechnology and other high technology sectors were offering share options schemes in the region of £500,000. The current tax advantaged Company Share Option Scheme in the UK gives incentives to hold up to £30,000 in shares under option at any one time. This limit may be too low to apply to key management joining high risk companies, although such companies may choose to offer higher levels of options without the tax advantages of approved schemes.
- 5.11 The Government has recognised there is a need to consider whether tax incentives might be required to encourage high calibre managers to join and stay with smaller companies. US experience tends to suggest that share options can be a very effective way of encouraging the entrepreneurial spirit needed to make businesses grow rapidly, and we saw plenty of evidence to support this view during our two US visits. The number of British entrepreneurs who have been attracted to work in the US biotechnology industry (often occupying senior positions) is a trend we must reverse and ways must therefore be found to improve the attractiveness of share options. We note that a series of recent reports³⁹ have all promoted the case for targeted tax-advantaged share incentive schemes.

We welcome the decision by the Chancellor to provide incentives to enable companies to attract and retain the best staff and from next year small, growing companies will be able to offer key staff tax-advantaged options over shares up to £100,000.

³⁹The report on the financing of high technology businesses by a group headed by Sir Peter Williams; the Smaller Quoted Companies group; and the report of the DTI Competitiveness Working Party on Investment.

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Availability of finance

5.12 An impressive amount of venture capital has been invested in the UK biotechnology industry over the last ten years (see Chapter 2). As the industry grows, however, there is a very real risk that the current levels of venture capital will not keep pace with demand and fresh impetus will be required to unlock additional funds. It is inevitable that the growth of the industry in Europe will give rise to fresh investment opportunities which will further dilute the availability of venture capital in the UK. The US experience suggests that changes in Capital Gains Tax (CGT) may influence investment. We are pleased that the Government has recognised the need to provide incentives in this key area.

We welcome the recent changes to Capital Gains Tax to provide taper relief which introduces lower effective rates⁴⁰ which we believe will help to increase equity finance in the UK.

Premises and infrastructure

5.13 Concerns were expressed on all our visits in the UK about the shortages of specialist premises and the length and inflexibility of leases. Unlike many other high technology sectors, biotechnology companies need specialist premises (with wet labs) which are flexible enough to meet their needs as they develop.

5.14 We learnt that often companies were obliged to take on leases of 15-20 years which is far too long for a young start up which is struggling to look beyond its first year and faces almost daily uncertainties about its future. Long lease times also create problems for companies wishing to expand quickly or conversely who encounter problems and need to contract. To find a way round this companies were forced to occupy two or more separate sites, hampering their efficiency and internal communication. As we noted in paragraph 3.35, there are some property developers who are becoming more ready to talk to biotechnology companies about their needs and to accept more flexible leases.⁴¹ We encourage the private sector, University landlords and others to consider ways to provide short term leasing arrangements for biotechnology companies, and for biotechnology companies to communicate better their current and future accommodation needs.

⁴⁰ 10% for longterm holdings of shares qualifying as business assets.

⁴¹ We also note the Business Property Federation initiative on simplified business leases, which we hope may facilitate the provision of short term and flexible leasing arrangements.

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- 5.15 A related difficulty is planning restrictions which can be a significant barrier to cluster growth. At present this is a particular problem in Cambridge, Oxford and London, but we think that it is problem that other areas may encounter as clusters develop. In the knowledge driven economy, university towns will become more dynamic generators of the sources of economic growth, particularly for small, research-intensive businesses. The conflict between environmentally sensitive areas and growth must be resolved in innovative ways. There is an assumption that when biotechnology companies reach the large-scale production stage much of that work will be contracted to third parties. But as we found time and again proximity is much more important in the early stages and therefore research and incubation will need to remain close to leading knowledge centres.
- 5.16 We are encouraged by the emphasis on economic development as part of DETR's work to modernise planning, and the review of planning and clusters announced in the Competitiveness White Paper. An innovative planning solution, consistent with the development of clusters is to manage high technology growth by fashioning 'Urban Networks', and to designate zones where innovative clusters may develop. These 'Urban Networks for Innovative Cluster Areas' (UNICAs) consist of a research and incubator-intensive 'mother city', well-linked by digital and land-transport communications to modest and easily accessible growth points for specialised production, analysis, testing and services. Existing axes such as the M11 in Cambridgeshire, M40 and A34 in Oxfordshire, could form the spinal links to local growth points nearby. Technology park development in growth points could be stimulated by private finance initiative (PFI) and partnership investments involving the property, investment, and even 'big pharma' industries. This issue needs to be taken into account in the economic strategies of RDAs.
- 5.17 The objective must be to plan for growth which meets the needs of clusters while avoiding unacceptable impacts on sensitive environments. We suggest that the preparation of UNICA zones could be progressed by DETR in association with RDAs and local government in England and, as appropriate, by the devolved authorities elsewhere in the UK. In England we think the most appropriate and timely way to progress the concept of UNICA zones would be for DETR to incorporate guidance in a Planning Policy Guidance note. The Regional Planning bodies, taking account of the RDA's strategy, could then incorporate the designation of UNICA zones in Regional Planning Guidance which could then be implemented as appropriate by the

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relevant local authorities. We also suggest that government should consider how resources could be directed to these growth points to help support the required infrastructure.

We recommend that the Regional Development Agencies give consideration to the need to promote ‘Urban Networks for Innovative Cluster Areas’ (UNICAs) in their regional strategies and that the DETR issue guidance to Regional Planning Bodies and local authorities on how to take account of this concept through the planning system.

- 5.18 We are pleased that DETR is considering these issues in the review they are leading with the DTI on how the planning system can best help promote the needs of clusters.

Effective networks

- 5.19 We heard a lot of positive things about the role of regional biotechnology associations and were impressed by what has been achieved so far. It was apparent the associations, typically industry led, were highly valued by member companies and had helped to create a sense of identity and a collaborative environment. Services to members, equipment sharing and lobbying were other benefits which these initiatives offer.
- 5.20 All of the initiatives had been established recently with public pump-priming funding from the DTI and others. It is our view that it would be premature for them to become fully self funding in the short term and that future public support is therefore justified.

We recommend that the DTI and the RDAs find ways to provide continuing financial support for the regional biotechnology associations linking together biotechnology clusters, and to establish new ones in areas with emerging clusters.

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Supportive policy environment

5.21 It appears to us that a starting point in the process of mapping progress in clusters is the development of reliable, quantifiable data on the level of innovation, and the growth of the number of companies and other bodies. Comparative data of this kind has been part of the cluster landscape in the US for a number of years and has proved to be a powerful tool to improve competitiveness and healthy rivalry between individual states. We therefore support plans for the development of innovation indices in the UK.

To better understand the dynamics of clusters, the DTI will consider developing the UK Competitiveness Index to stimulate data capture for individual clusters and conduct a mapping exercise of all cluster activity across sectors in the UK

5.22 As we have commented earlier, it is important to distinguish between the separate, but complementary roles of the DTI and the RDAs in helping clusters to flourish. The role of the former should be to develop national programmes and policies. The focus of the RDAs should be on the tailoring of national programmes and policies to regional circumstances and helping with their implementation at a local level. We believe that it is essential that the DTI and RDAs work closely together in this area and we hope that this report will encourage them to do so.

We invite Regional Development Agencies, and the equivalent agencies of the devolved administrations, in those areas with existing or strong potential for biotechnology clusters, to look at improving the environment for cluster growth, for example by addressing skills, planning, supply chain and inward investment issues.