

Spin-outs and incubators: philosophy and practice



'Extracting the full value of academic research requires a sympathetic understanding of the rigours of academic life.'

Colin Howard, Vice Principal for Research at the Royal Veterinary College and Director of the London BioScience Innovation Centre

Academic life in the biological sciences has changed radically over the past decade. Yet few business angels, venture capitalists and professional advisers, seem to recognize, let alone understand, the pressures and forces that are at play on any academic's career, up what has become a tough ladder. Completing a PhD, the exit point from academia for most professional advisers in biotechnology, is but a starting point. Successful progression through lecturer and senior lecturer positions, to reader and full professorship, is dependent on peer-reviewed publication, peer-reviewed research funds and, increasingly, performance in teaching and academic administration.

A typical senior lecturer, possibly at a grade most synonymous with energy and productivity, will have a *curriculum vitae* containing at least 20 original scientific publications in international journals, be writing at least one major grant application and be attending at least two international scientific meetings per year. All this is in addition to managing a group of at least six students and short-term research staff. Furthermore, these lecturers frequently organize teaching modules and serve a managerial apprenticeship on various committees. They are at the cutting edge of their field, driven by the need to display evidence of an international scholarship, which is necessary for promotion to a professorship.

Professors with managerial responsibilities are responsible for an annual turnover worth several million pounds of public funds, grants and contracts. In an age of ever-larger academic departments, they control the lives and careers

of several hundred staff at all levels. These responsibilities are subject to frequent external audit and equal those of a chief executive running a medium-sized enterprise.

Investing in academics

Academic scientists are frequently criticized by large pharma as not offering value for money, yet recent data show that UK researchers spend less than half per patent than their equivalents in the USA. I suspect that this criticism partly reflects the lack of solid, long-term relationships between large pharma and the university sector in general. Universities often see multinational companies as a source of funds to shore-up their creaking infrastructure, and companies often fail to appreciate the need for universities to charge realistic overheads. The answer might lie in forging longer-term relationships, as has been done successfully in Oxford, Cambridge and elsewhere, where companies are prepared to invest in university facilities in return for first sight of potential new products and technologies. Such relationships make universities feel that they have ownership of a long-term strategy for commercializing their research, and this communicates itself down to the level of individual scientists who, in turn, become motivated and are rewarded appropriately.

Investors too often emphasize the weakness of academic scientists without necessarily recognizing their strengths beyond the immediate confines of their laboratories. For example, academics can write convincing proposals once the ground rules are known, yet there are few investors who define exactly what they want in business plans. Surely time can be saved for both parties if such requirements are known? In addition, academics are good at networking, with contacts frequently transcending academic and commercial barriers. It is somewhat of a myth that they talk too freely: life is so competitive in the funding arena that, if anything, academics are increasingly tight-lipped about their latest data and certainly reveal future plans at the peril of missing out on further funding opportunities.

What academics are not good at is placing a value on what they do. Advisers and investors expect an appraisal of commercial opportunities within a context of estimating potential markets and the competition, yet this is the area

where university support is at its weakest. Academic scientists are uncomfortable with the 'soft' nature of claims that markets currently are of so-and-so magnitude and will exceed so many millions of dollars in ten years time. Where is the evidence? How was it obtained and is a global estimate really global or just focused on North America and Europe, with only a passing glance of how the market will develop around the Pacific Rim? The chasm between academics and those with the money is deepened by the use of third party consultants who are not sufficiently conversant with the new technologies and concepts that have swept over biomedical research in the past five to ten years.

Innovation support in UK universities

The UK has a long tradition in promoting new technologies, particularly when the rest of the world shows signs of pulling ahead. The Great Exhibition of 1851 was arguably Britain's first 'incubator'. It was an intellectual melting pot for British innovation, art and industry, at a time when the Victorians were climbing to the height of the industrial revolution. Crystal Palace, built to house the Great Exhibition in Hyde Park, was designed and built in less than a year, and provided a showcase for British innovation and industrial might. History repeats itself by its very nature. We are now at the cusp of the biotechnology revolution and there is a real need to encourage – both regionally and nationally – the blossoming of genomic research and all that goes with it. In a sense, bioincubators are the modern-day equivalent of Crystal Palace – fertile environments for entrepreneurs, investors and those with the ideas driving forward technological innovation.

In July 2000, the Chancellor Gordon Brown stated that 'More than ever innovation is the key to higher productivity...Universities will be asked to address provision of on-site enterprise incubation...' The recent Higher Education Business Interaction Survey by HEFCE (Higher Education Funding Council for England) showed that although nearly two-thirds of UK universities offered some form of training in entrepreneurship, only one-third had access to on-campus business incubators. Even fewer offered laboratory facilities for start-ups in biotechnology and drug discovery.

Almost all incubators started in the UK have required a mix of public and private investment. These have been established more readily in cases where the land and buildings are already owned by an academic institution or a public body. Experience in both Europe and the USA shows that location is vital. Spin-out companies are most likely to succeed if close to the laboratory from which the intellectual property originates. The recipe for success is to have clusters of companies at various stages of growth closely associated with the academic centres of excellence from

which innovation springs forth. Proximity to business support and finance is also essential. Recent political imperatives that new centres of innovation should be placed in economically deprived areas contradicts the evidence and fails to distinguish clearly the needs of mature manufacturing and service industries from those of high-technology-based companies focusing on innovation and development.

As it is, funding these developments remains a knife-edge enterprise as equipping such facilities is not cheap. Infrastructure support is essential for start-ups to thrive. All too often, expensive items of kit are beyond the reach of start-ups. Few incubators have focused on providing shared facilities, for example, in support of gene array technologies. Value needs to be placed on rubbing shoulders with scientists in cognate disciplines, and ensuring access to libraries and common areas. These essentials are difficult to enumerate when budgets are set but academics know all too well their value. Many private research institutions in the USA, as well as large pharmaceutical companies, have recognized this need and provide large atria to maximize interactions. Providing the funds for such space is anathema to investors in start-ups and incubators, however, who push for the maximum lettable space and ignore the intangible benefits of shared common areas.

London's biotech cluster

The London BioScience Innovation Centre (LBIC; <http://www.londonbioscience.com>) was conceived in 2000 and aims to meet the growing demand for serviced laboratories with associated write-up areas and executive suites within the M25 region of Greater London. LBIC provides a sympathetic environment for the mentoring of academics based in London's universities and medical schools (>40% of the UK's biomedical research occurs in London). The companies currently in the centre are at that cutting edge – they include Inpharmatica, rapidly emerging as one of the strongest bioinformatics-based companies internationally; Microsens, tackling the problems of diagnosing diseases such as BSE; and Onyvax, a company with a novel approach to cancer vaccines. Being the only incubator for biotech companies in London has meant that demand has been strong: were the planned extension to LBIC available today, the additional space would have already been spoken for. Indeed, the London Biotechnology Network estimates that at least three additional incubators are needed to meet the demand, which is expected to exceed 500,000 sq. ft of laboratory space over the next five years in London alone.

Summary

There is often a failure on the part of investors and advisers to understand the academic way of life. Universities

have grown ever more complex in recent years, and most have risen to the challenge of fostering innovation within the traditional framework of academic life. What is currently missing in the UK is for large pharma and industry to adopt a more balanced and longer-term approach to dealings with UK universities, recognizing that the more commercially valuable discoveries often require a sustained system of mutual respect and support. Incubators could be used to provide the supporting environment, provided they are viewed as more than just property deals, and actually provide a range of sympathetic and quality support services. For this to happen, the barriers between

Government, university and private resources need to become ever-more blurred, and the longer-term strategic need for synergy must be recognized more often among both academic scientists and the business development community.

Colin Howard

*The Royal Veterinary College
Royal College St
London
UK NW1 0TU
tel: +44 207 691 2066
fax: +44 207 419 5983
e-mail: choward@rvc.ac.uk*

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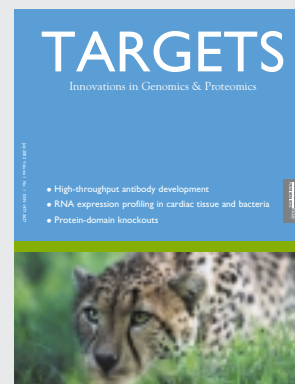
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