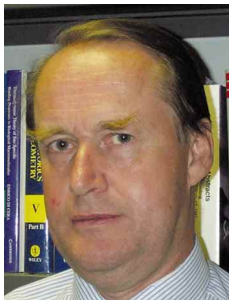
Building relationships between academia and the pharmaceutical industry



'The climate is perfect for a proactive search for partners between industry and academia.'

The research grants system is rapidly becoming inadequate for drug discovery research in academia. Genomics is driving the industry into new and uncharted fields, costs are escalating and laboratory automation is now essential if academia is to play a significant part in drug discovery. Unless links can be forged between industrial and academic partners, drug discovery research in universities will lag behind the needs of industry and might even have little practical relevance. Only in recent years have the universities begun to facilitate these links through Technology Transfer Offices (TTO). The links provide a formal mechanism for academics and industrial colleagues to work together so that the value created by the research can be shared between the partners. This article is based on ten years of personal experience at Cambridge University collaborating with the pharmaceutical industry.

Key attitude differences

At the expense of being accused of a parody, it is important to identify key differences in research attitudes in the two environments. Time management is of essence in industry, a more relaxed view is taken in academia. In the latter case, teaching commitments can be a significant burden reducing research time at the bench; this affects productive time management. Most academic laboratories will have several collaborations, which can reduce the focus on a particular project. Furthermore, high turnover rates for post-doctoral students can create difficulties in continuity of research.

Research attitudes are also very different; academics often try to chase problems as far as possible; industry puts constraints on the range of research. Academics are always talking about their research and find secrecy constraints a nuisance – this is particularly the case with regard to freedom to publish. A reduction in the rate of publications can pose a serious career problem for university-based post-doctoral students and can lead to disappointment within a collaboration. Beware of the academic being tempted by the Oxford Secret; a secret which is told in confidence only to one person at a time. Cultural differences in research habits between industry and academia have to be appreciated and worked through with some goodwill on both sides. In my experience, four models for building links are evident: sponsorship, partnership, collaboration and spin-out.

Sponsorship

Fundamental 'blue-sky' research without publication constraints, such as that carried out in a PhD project, is ideal for sponsorship. This is a good place for academics to start seeking industrial funding. No patent is envisaged as the outcome and the research is part of the general discovery process and is deemed useful to the industrial partner. Academics should not feel shy of approaching industrial colleagues at conferences and broaching the subject of sponsorship. Likewise, if a company has charitable money put aside for sponsorship, let the young scientists in the company act as talent scouts for untapped resources in academia. In my experience, sponsorship is good for the students so that the relevance of their research can be appreciated.

Partnership

Sharing of resources leads to a partnership; this is a deeper stage of the relationship and builds on a common research programme. Usually tools, or information, are shared between

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partners. Clearly, confidentiality is more of an issue where data is shared, or new tools are being developed. This type of arrangement is vital for university researchers who have little access to proprietary data, as it is essential to be able to test new ideas and methodologies on a large and industrially relevant scale. Appropriate contracts between the company and the TTO are needed to regulate disclosure of information. The partnering company is usually looking to sponsor a post-doctoral scientist on a well-defined research programme, and so publication constraints and time limits should be spelt out in the contract.

Collaborations

Collaborative ventures are more complex arrangements. Their aim is to combine specialized expertise from the university into a research programme initiated by the company. The company puts human resources, substantial funding and equipment into a tightly defined research programme. There will inevitably be time-lines, deliverables, licensing opportunities and potential royalties from the programme. It is essential for the academics to have advice from their TTO on the legal niceties of the contract.

If the collaboration is to be successful, it has to be actively managed and clear lines of communication and responsibility need to be determined before the project begins. The project manager must be skilful in keeping the different research cultures focused on the goal. If substantial funds are involved in the programme, industrial employees who are doing similar research within the company need to 'buy-in' to the project, as they might be naturally suspicious of outsourcing research; the distrust generated by the 'not invented here' syndrome can paralyse a collaboration. Information transfer within the collaboration has to be transparent and facilitated by daily conversations between the partners. Periodic progress assessments, through project management meetings and audits, should help to keep the programme on track. A particular encouragement to academic teams is the stimulus of receiving advanced royalties on completion of milestones during the project.

Spin-outs

Proof-of-concept projects can generate intellectual property (IP) of considerable value. The question that then arises is how to exploit the IP. Many universities are promoting spin-outs from their IP portfolio. There are many models for this process: the sponsoring company might want to set up a corporate venture and provide financing, with the university taking an equity stake in payment for the IP transferred; the spin-out might be financed from venture capital as a fledgling stand-alone company. Whatever route is chosen, the spin-out has to be managed commercially and it is usual to bring in a dynamic manager from the pharmaceutical industry to be the CEO.

The current climate for spin-out financing favours combining several technologies rather than having a single technology company. In my experience, the spin-out route is arduous, complex and extraordinarily time-consuming. Academics need considerable legal and financial help in making the transition from academia to the commercial marketplace. The Department of Trade and Industry (UK Government) has a financial advisory board to help academics embark on the spin-out process; there are also small financial awards to help entrepreneurial academics get started.

Technology Transfer Offices

Technology transfer has become an industry in itself in academia; TTOs have 'mushroomed' on every campus. Generally, TTOs are under-resourced and consequently unable to take a strongly proactive role in drawing pharmaceutical companies to universities. Their main value is in providing a mechanism for regulating co-operation between industry and academia. A pioneering venture has been the establishment of Catalyst Biomedica (London, UK) by the Wellcome Trust to enable academics working in the healthcare fields to develop their research into a commercially viable proposition. Electronic networks for providing a structure for academics and industrialists to locate common interests are not widespread in the UK. A model system has been set up in Cambridge to integrate local hi-tech/biotech companies and the local universities into an entrepreneurial environment (http://www.CambridgeNetwork.co.uk). This provides a hothouse for ideas and information exchange where key relationships can be established. A social programme built round 'how to do it' meetings, fosters these embryonic contacts.

Conclusions

The completion of Phase 1 of the Human Genome Project should have produced a plethora of targets that need to be assessed and validated. New methodologies must be developed both in bio- and chemo-informatics to cope with the data load. All universities are now keen to promote industrial liaisons. The climate is perfect for a proactive search for partners between industry and academia.

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