Patents pending

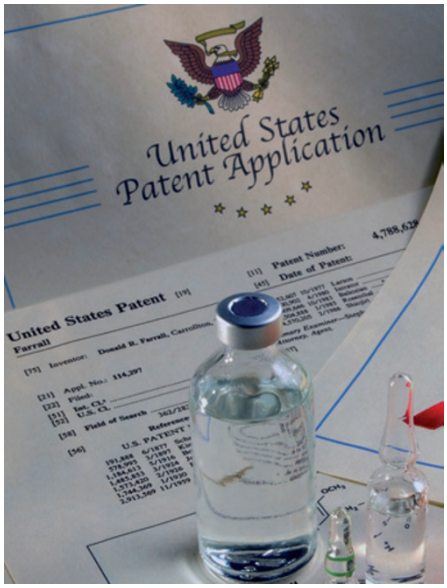
Technology-transfer activities have surged since the 1980s, but only few inventions are bound to become a commercial success. Academic patenting requires professional strategies and should be motivated by goals beyond licensing revenue.

On 16 September 2011, US President Barack Obama signed into law what the White House regards as 'the most significant reform of the Patent Act since 1952': the America Invents Act[1]. The new law, among other changes, ensures that the first inventor to file a patent application — rather than to report an invention — secures intellectual property (IP) rights; this brings the US system closer to that of other countries. The reform has been applauded by the Association of American Universities and other higher education associations, who expect that the "improvements will enable US inventors at universities and elsewhere to compete more effectively in the global marketplace" (ref. 2).

On average, US academics already patent significantly more inventions than their European peers. Technology-transfer offices in the US filed nearly 12,000 new patent applications in 2007, more than twice as many as European institutions[3]. However, a look at the balance sheet is sobering. Around the same time, a survey of technology-transfer offices at US academic institutions found that less than 20% of the programmes were self-sustaining[4]. Therefore a critical assessment of technology transfer is in order.

In this issue, we take a look at academic patenting. In an Interview with Tony Hickson of Imperial Innovations, a technology-transfer and investment organization based in London, we talk about their work with academic inventors and the challenges of patenting early-stage technology[5]. In a related Commentary, Quentin Tannock of CambridgeIP, a Cambridge-based provider of IP intelligence, takes a more focused scope and analyses the impact of academic institutions in patenting graphene–related inventions[6].

At first sight, the benefits of patents for universities seem obvious. The rise of academic technology licensing in the US started in 1980, when the Bayh–Dole Act allowed research institutions to own patents on inventions made using federal funding[7]. Technologies such as DNA cloning, developed at Stanford University, or more mundane inventions such as the University of Florida's Gatorade drink, generate millions of dollars in licensing revenue. A survey by the Association of University Technology Managers (AUTM) found that US research institutions had more than 38,000 active technology licenses and option agreements in 2010, resulting in a total license income of $2.4 billion (ref. 8). Although this number seems small compared with the $39.1 billion in federally funded research expenditures in the same year, it considerably exceeds the legal fees that were spent on IP protection.



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However, the success of university patents is notoriously hard to predict, and anecdotally only a few per cent of all scientific ideas result in profitable business. In fact, much of the licensing income in the US is concentrated in a small number of very successful institutions. Internationally, the extent and the success of licensing activities show similarly large variations.

Such disparities are only partly rooted in differences in research focus or legislation. The culture at an institution and the expertise of a local technology-transfer office can also have a large impact on patenting activity. Some academic researchers are still unaware of the patent literature[9]. Others may refrain from patenting their work in view of ideological concerns about the commercialization of publicly funded research — after all, although patents are a form of publication, their primary purpose is not the dissemination but the protection of knowledge.

Lately, extensive lawsuits — involving, amongst others, the mobile electronics and battery industries — have caused further damage to the image of patents, as well as hundreds of millions of dollars in litigation costs. Such lawsuits may also be of concern to academic technology-transfer offices, although the possibility of being sued by a corporation is generally slim. Nevertheless, the patent landscape is becoming increasingly crowded[10], and overlapping patents can lead to, possibly, unintentional breaches. Furthermore, the Organisation for Economic Co-operation and Development found that patent quality has declined across most countries from the 1990s to the 2000s, and that patents have become increasingly specific[11].

In view of these challenges, academic institutions need to develop technology-transfer expertise and professional patenting strategies to make an impact in the patent landscape. The best technology-transfer offices now employ a significant number of dedicated staff, who thoroughly research market potential before protecting an invention. Moreover, patent-related partnerships with industry can help push academic technology forward. For instance, in the case of graphene–related patents, some of the most successful academic institutions collaborate with major corporate players in the field.

Despite increasing professionalism, it is clear that financial returns cannot be the only motivation to patent and commercialize academic inventions. The odds of a 'big hit' are simply too slim. The unique strength of academia lies in explorative research — translating scientific results to applications should be the main driving force behind technology transfer. A professional patenting strategy is a powerful means to this end. ❐

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