

Careers

Beyond the eureka moment

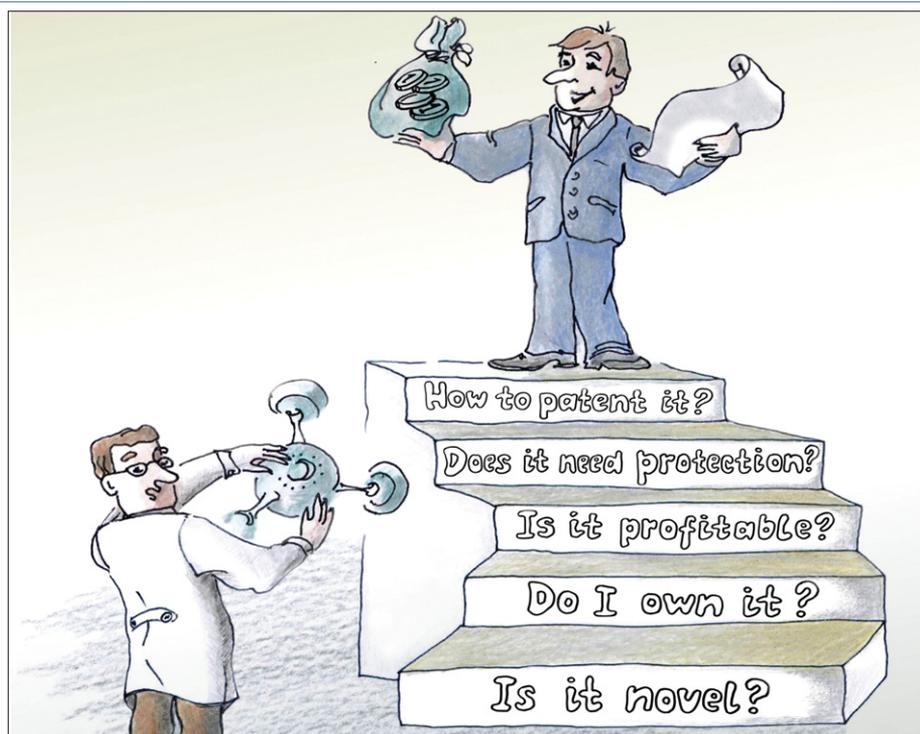
For academic inventors, having a great idea is just the beginning. Figuring out what to do next can be a much bigger challenge, as **Nadya Reingand** explains

Scientists who invent something practical face an immediate dilemma: should they continue their research, or try to commercialize their invention? Although it is very satisfying to see an invention become a commercial success (and the monetary rewards are also nice!), this process usually takes a long time and much perseverance. Continuing research is often more fun, and may even lead to more inventions.

Yet academic scientists cannot ignore the commercial implications of their research altogether. The image of academic research as an “ivory tower” activity is currently undergoing rapid and not always voluntary changes, as universities increasingly judge scientists by the amount of funds they bring in via external contracts. Furthermore, such external financing – from government agencies as well as industrial sponsors – has penetrated academia to such a degree that if it suddenly dried up, university research would in some cases come to a grinding halt. So, rather than complaining about commercialization, individual scientist-inventors should focus on turning inventions into a rewarding part of their careers.

Novel, profitable, owned by you

If you decide to pursue commercialization, the first thing to consider is whether your invention is novel – and by novel, I mean “patentable”. The patenting process allows you to eliminate competitors for a while, giving you the freedom and time to perfect your invention without somebody stepping on your toes. Although official confirmation of your invention’s novelty must come from the relevant Patent Office authority, it is perfectly possible to do the initial estimation yourself. Open-access databases such as



Tanya Balashova/Taylor and Francis

those on the websites of Google Patent, the US Patent Office and the European Patent Office (see links below) are all good choices for an initial search for “prior art”, which is any public disclosure of material (especially patents) relevant to your invention. However, my overall impression is that performing a patent search is a kind of witchcraft that requires the searcher to combine logical steps with the stardust of intuition. It is definitely an art, not a science and, like any art, it takes time to master.

The next question is whether your invention could turn a profit. This is a complicated question with many unknown parameters, and practical schemes for addressing it fill an entire chapter of a new book on patents that I have edited (*Intellectual Property in Academia: a Practical Guide for Scientists and Engineers*, CRS Press). But the short answer is that if your valuation shows that your estimated total income from your invention is less than about \$100 000, then it is not reasonable to bother with patenting and commercialization.

Once you have decided that your invention is novel and profitable, the next step is to clarify whether you actually own it. For university employees, the answer can probably be found in your employment agreement (for students, it is a little more complicated – see box). Typically, these agreements state that the university owns all inventions that were made in the course of your “job for hire” (meaning that inventing is considered part of your duties), and also any inventions that were developed using university facilities.

However, in certain cases the agreement may also include “everything you invent during the time of employment”. For example, if you are a theoretical physicist but you invent a mechanical component that improves the operation of your garden hose, then it is possible that the university could still own your invention. Obviously, it is important to read the intellectual property (IP) section of your employment agreement carefully.

Invention ownership may be negotiable. For example, if your university is not interested in pursuing patent protection for your innovation, it may release it and give all rights to you. Alternatively, you may be able to negotiate joint ownership of your invention. Under US law, joint ownership means that each owner possesses 100% of the invention and may do as they wish with the patent without asking another owner and without sharing the profit if the patent is sold or licensed. Under UK and EU law, in contrast, such actions are subject to consent by all co-owners.

Possible pitfalls

Commercialization is a team effort, with contributions required from not just the inventor, but legal and business professionals and university officials too. Working with such a team can have some pitfalls. One possible problem is that universities have limited funding for patenting inventions, and unfortunately most research grants do not allow recipients to spend grant funds on patenting. A change here in practice or legislation would be very beneficial, because uni-

Student inventions

Who owns student inventions is a complicated issue. On the one hand, students are generally paying for their education, so if they invent something, that invention cannot be classed as part of a “job for hire” at their university. On the other hand, student inventions are typically made with support from university staff, and such help can be crucial in an invention’s success.

Problems with ownership of student inventions have become more acute thanks to the current outburst of developing “apps” for smartphones or social-networking sites such as *Facebook*. These apps can be worth big money, and the legal questions that arise from them are now being debated across academia. One recent example is the case of Tony Brown, an undergraduate student

at the University of Missouri (MU) who created an app that made it easier to track local apartment rentals on his iPhone. His app, called NearBuy, became a huge success, with hundreds of thousands of downloads.

So far, so good for Brown – until MU’s lawyers abruptly demanded a 25% ownership stake and two-thirds of any profits. In the end, MU officials relented, in the hope that by giving students more rights over their inventions, along with other incentives, the institution will become attractive to young entrepreneurs. However, MU’s (belatedly) enlightened attitude is more of an exception than the rule. The usual practice is that student inventions are considered part of the department’s research, and therefore belong to the university.

Stanford University, both of which have offered undergraduate lectures and seminars on intellectual property for a number of years. Another leader has been the Inventor’s Studio at Rensselaer Polytechnic Institute, which offers an IP course where the goal is that each student should finish the class with a patented invention. Courses of this type can benefit both students and the university: for example, in 2007 at Stanford, a class of 75 students created smartphone and social-networking apps that collectively had 16 million users after just 10 weeks, generating about \$1m in advertising revenue during the term.

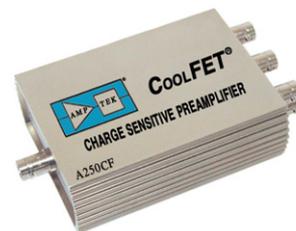
For more experienced researchers, some large conferences offer short courses and workshops on invention patenting and commercialization as part of their programme. For example, I co-chaired such a workshop in May at an SPIE conference on optical metrology (<http://spie.org/x47301.xml>). This “industry meets academia” workshop was dedicated to exchanging experiences among industrial and academic partners, and it was followed by specific courses that addressed important subjects such as intellectual property, technology evaluation, contracting and negotiation strategies. But in my view, we need many more such workshops, short courses at conferences, online courses and university classes to help scientist-inventors make the most of their discoveries.

Useful links
www.google.com/patents
<http://patft.uspto.gov>
<http://worldwide.espacenet.com>

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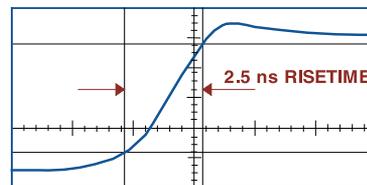


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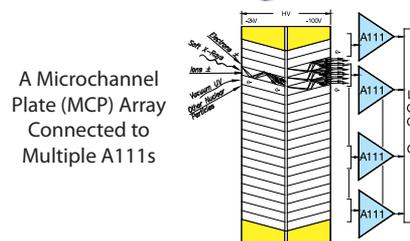
A250 STATE-OF-THE-ART



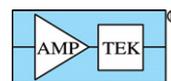
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