▼ Perfecting your patent search

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Got a great idea for forming a company? The Internet can help you learn whether someone else has thought of it too.

To a great extent, most of the value of a startup biotechnology company lies in its intellectual property–specifically its patents. Thus, if you are planning to start a biotechnology company, you are going to need a patent for your discovery. To do that, you need to assess whether your discovery is novel and nonobvious–more specifically, whether someone has beaten you to it. Taking a spin through a patent database can help you find out just how derivative or innovative your discovery is, and whether some other company has first dibs on it.

Why bother?

If an invention has already been described, or a patent for it is pending or awarded, then it cannot be patented. Applying for a patent can cost tens of thousands of dollars, even if the application is rejected, so a thorough search of prior art is a good investment. A patent search is also necessary to determine a company's freedom to operate, because existing patents might preclude certain strategies or make them more expensive.

Patent searches were long viewed as the province of well-paid specialists. Unfortunately, hiring lawyers or professional patent searchers was an expensive business, sometimes costing $500 or more. Until recently, many inventors found the search process intimidating, but the advent of the Internet and the rapid expansion of high-quality databases, many of them free, has taken many of the headaches out of both patent and prior-art searches.

Many experts now agree that even novices can execute professional-quality patent searches for many purposes. Before starting, though, one should decide on the purpose of the search, which will help determine how reliable the result needs to be and whether professional help will be necessary (see "Advice from the experts").

What you need to know

Although researchers are familiar with searching the scientific literature, few feel at ease with the patent literature. However, all a good patent search takes is a spin through the right patent databases. The links provided in the tool kit provide you with a place to start.

The first problem you will encounter when looking for patents that could invalidate the patentability of your latest discovery or technology is that many countries have their own patent offices, and thus an invalidating patent may be hidden away in a database rather off the beaten path. Many Internet sites offer databases that claim to be a one-stop resource, collating patents from all the main national and international databases. Though private databases may offer collated data from many patent offices, the best starting point is generally the free online databases of national patent offices, and the best approach is an iterative forward-and-backward approach that should be familiar to most graduate students.

In addition to searching the patents of multiple nations, you may need to find all of the prior art in an area, including results reported in research papers and at conferences. Remember, a patent worth millions of dollars could be invalidated by a single abstract printed in an obscure publication years ago.

The search itself

Begin with broad search terms, or keywords, that cover an area, or else list many specific terms that are related to a particular technology. When researching protein and DNA patents, remember that genes and proteins often have multiple names, and try to use as many as possible. Narrow the search until a reasonable number of records is retrieved, then begin reading the patent abstracts to find additional terms that can narrow or broaden the search as needed.

In addition to keywords, pay attention to the classifications of patents, the

inventors' names, and citations. Classifications are used by patent offices to group particular patents together, and once the relevant classifications have been found, browsing through them can yield new discoveries. The inventors listed on a patent may have other patents, probably on related technologies. Like a research paper, a patent will also cite earlier patents, and will be cited by later ones—most databases now provide links to both types of citations. By thoroughly tracing links through classifications, inventors, and citations, it should be possible to uncover most of the relevant patents in a given country.

To search internationally, look for the International Patent Classification System category of a relevant patent, and use that as a starting point in another national database. Some national-level databases, particularly those of the European Union and German patent offices, also provide tools for direct searches on patents in other countries. European patents are generally available in English, and Japan is rapidly translating its patents into English as well.

Patentability searches should extend beyond patents, to research publications cataloged in PubMed and even to more specific databases of more specialized or technical articles, such as the Thomson ISI's Biotechnology Citation Index or the Web of Science.

In addition, you should be searching the grant databases of major funding organizations such as the US National Institutes of Health. Finally, conference proceedings, faculty CVs, and departmental web sites can be searched surprisingly thoroughly with standard Internet tools like Google.

Box 1: Advice from the experts

Should an entrepreneur rely on free online resources for a patent search, or hire professional help? Surprisingly, most patent attorneys advise you to do it yourself, at least initially: "Five or six years ago, it was virtually impossible for people to do a meaningful search on their own, but nowadays...entrepreneurs should be all over it," says Andrew Currier, an attorney at Lang Michener (Toronto, Ontario). And this sentiment is echoed by patent attorneys in the United States.

Nor does doing the search yourself require paying high fees to access private databases. Marvin Motsenbocker, an attorney at Heller Ehrman White & McAuliffe (Washington, DC) who spends much of his time researching patents, argues that "the Web itself, using a good search engine, actually is better than any database I can think of." These days, Motsenbocker does virtually all of his searches using free services, though he does occasionally use a fee-based database "to cover myself, in case of a client wanting to argue that I didn't do my best."

Colin Sandercock, also of Heller Ehrman White & McAuliffe, adds that "the guy who's doing it himself can do a pretty good job by basically being a sleuth. Just keep following the clues and using the tools."

Though novices may be able to do nearly as well as professionals, neither can be sure of perfection. "There's no way to have a 100% confidence level or even 90% without spending an awful lot of money. Patents may or may not be valid. The questions is, for the particular task and the budget, what's the appropriate confidence level?" says Sandercock.

Finally, even a thorough search should probably conclude with professional help. "You don't want to start practicing law yourself," says Currier, so "you probably do want to gather up what you've got and at least have a patent attorney spend 5 minutes looking at it."

Box 2: Glossary

Prior art: Existing patents and publications related to your discovery that will enable determination of whether it is novel and can thus be registered.

Web links

Encyclopedia of Life Sciences

⇒ http://www.els.net/els/subscriber/home/default.asp?sessionid=8ca7a0683d85fb2e

Patenting genes and their products