OUT OF THE LAB

Academic Research Is the Engine of Europe's Biotech Industry.

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By Stephan Herrera
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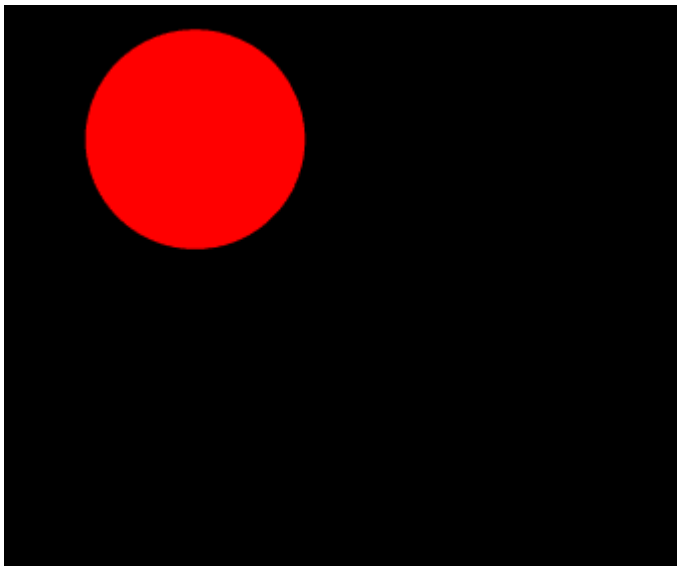
Nestled in the wooded hills surrounding the medieval German village of Heidelberg, the European Molecular Biology Laboratory (EMBL) is an apt metaphor for Europe's biotechnology industry. EMBL researchers produce groundbreaking biomedical research in important new fields like proteomics, comparative genomics, bioinformatics,



and developmental genetics--the last earning its authors a Nobel prize. Yet, EMBL is reluctant to commercialize its endeavors.

It's not because the lab lacks the resources. Like all European academic research institutions, EMBL has an office dedicated to commercializing its science. But as with most of Europe's tech-transfer operations, the number of licensing deals and spin-offs during the past 25 years are few and far between, compared with dozens of such deals signed each year by the likes of the Massachusetts Institute of Technology, Harvard University, and Stanford University. The same attitudes that are stifling EMBL plague the whole European biotech sector. In Europe, unlike the United States, science and profit are often seen as conflicting ideals.

It doesn't help EMBL's commercial prospects that all licensing and spin-offs must be unanimously approved by its board, which consists of one scientist from each of 16 nations--but excludes the head of its tech-transfer office. The board, like that at most European universities, worries that profit motives will make EMBL researchers like their U.S. counterparts: free agents with loyalties only as deep as their funding endowments.

Aware of these sentiments, American biotech entrepreneur Charles Cohen was skeptical when EMBL invited him to Heidelberg in late 1998 to explore running a proteomics spin-off. But he figured the visit would offer a rare peek at some of the lab's new technology--EMBL is famous for confining its discoveries to peer-reviewed

journals and keeping its few licensing deals quiet. It is not widely known even in biotech circles, for example, that the German bioinformatics firm Lion Bioscience, Europe's top-performing biotech IPO of 2000, is based on a license from EMBL.

"You don't say no to an invitation from EMBL," Dr. Cohen explains. "They are the MIT of Europe, so off I went, with high anxiety." He was accompanied by Stelios Papadopoulos of Atlas Venture, a longtime colleague with whom Dr. Cohen has cofounded well-regarded biotech firms like Exelixis, Creative BioMolecules, and Xenon Genetics.

It took over a year, but last May EMBL spun off Cellzome, a functional-proteomics company, with Dr. Cohen as its CEO. Cellzome is the first spin-off in EMBL's 25-year history. So far, it has raised $39 million from some of Europe's most prominent venture capital firms--Atlas Venture, Sofinnova Ventures, and Schroder Holdings. The caliber of the investors, along with Dr. Cohen's track record, went a long way toward reassuring EMBL's board that the spin-off was a good idea.

"We have 16 member nations watching this experiment," says Gabor Lamm, the director of EMBL's tech-transfer office. "Yes, Lion is a success, but it is just the ignition. The whole idea of an academic researcher going into industry, or of university science being turned into a company, are both still sniffed at. There is also great fear of failure. Try telling somebody in Europe that failure is just part of the process of building an industry."

Commercialization efforts like Cellzome could have an enormous effect on Europe's biotech industry. Academic research is the lifeblood not only of most U.S. biotech startups, but also of "big pharma." Most large drug firms are five years behind their own projections to acquire, trade, or develop commercially viable products, according to a report on global biotech research-and-development productivity, published this summer by the consulting firm Accenture. "In-house R&D efforts and biotech collaborations just aren't replenishing the pipeline as expected," says Scott Myers, a partner at Accenture's pharmaceutical and medical products practice. "Also, it so happens that the explosion of new genomic data is being produced increasingly at universities." This data will be crucial for hundreds of companies.

Fortunately for European biotech, Cellzome is not an isolated example of a more liberal tech-transfer policy. European biomedical science has been fortified by the Human Genome Project, in which the U.K., German, and French governments and companies played key roles. Likewise, government and university investment in nanotech medical research in the United Kingdom, Sweden, and Switzerland is the basis for the technologies of several of those countries' startups (see "The Graduates," below).

Tech transfer will be aided by the easing of restrictions against scientists turning their discoveries into companies. France and Switzerland recently passed laws allowing university researchers to take up to six years' leave of absence to start a company, with the guarantee of jobs and tenure upon return. In Sweden, which has the highest per-capita concentration of biotech firms in Europe, federal law automatically grants university researchers sole ownership of their discoveries, which is largely unheard of in America. The Swedish law was enacted in 1949, but only in the past few years have researchers taken advantage of it.

However, the tiny University of Edinburgh might embody the future of Europe's tech transfer. Viewing the research-commercialization process as one of collaboration, the university takes equity positions in its spin-offs. One prominent example: Cyclacel, a developer of tumor-fighting technology, has attracted $80 million in private-equity funding since its founding in 1999. Most universities, including those in the United States, tend to follow the "up-front fee and downstream royalty" model.

The time between breakthrough and spin-off may be shrinking, too. The University of Geneva, for example, spun off GeneProt in a matter of weeks late last year--with the blessing of the university and the government. GeneProt, which boasts the world's largest industrial proteomics operation, bypassed VCs altogether and went straight to

institutional investors, raising $100 million in its first year of business. "We're a tiny country with a lot of skeptics," says Laurent Miéville of the University of Geneva's tech-transfer office. "But we see biomedical innovation and commercialization as vital to our national interests."

Though debate continues as to whether European universities should be in the business of selling research, and whether researchers should be turned into entrepreneurs, it is unlikely that tech transfer will slow. There is simply too much at stake.

"Countries that figure out how to capitalize on their university research in an efficient and sensible manner that benefits the university and the region will be ahead of the game as biotech becomes a more important part of our national economies," says Thomas Hockaday of Isis Innovation, the tech-transfer arm of the University of Oxford. "The trick is producing success stories to calm the skeptics".

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