

Bell Labs Is Gone. Academia Steps In.



Noah Berger for The New York Times

William Beeson, a graduate student, is researching alternative fuels at the University of California, Berkeley. Some of the lab's work will be pursued by BP.

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Published: December 16, 2007

PAY me now, and pay me later.

That's the new mind-set at some leading research universities in dealing with business — and the essence of an emerging model for how corporations can tap big brains on campus without having to pay their salaries.

Corporations have long been able to license intellectual property from universities, but these deals are cumbersome to negotiate and tend to work best when corporate researchers know exactly what they need to create.

They don't always. Often, they explore scientific and technological frontiers without a map. After blue-sky thinking and random experimentation, they build new products without relying on neatly defined patents or published scientific papers — the bread-and-butter of academic knowledge production.

In the bygone days of innovation, large corporations — like RCA, [Xerox](#) and the old [AT&T](#) — maintained internal laboratories like Bell Labs. These corporate labs were essentially research universities embedded in private companies, and their employees published academic papers, spoke at conferences and even gave away valuable breakthroughs. Bell Labs, for instance, created the world's first transistor after World War II — and never earned a dollar from the innovation.

Almost no corporate labs based on the Bell or Xerox model remain, victims of cost-cutting and a new appreciation by corporate leaders that commercial innovations may flow best when scientists and engineers stick to business problems.

The obsession with marrying research and markets, while generally a strength of American capitalism, leaves some needs unmet. To fill them, “companies need boots on the ground at universities,” says Henry Chesbrough, a business professor who studies innovation at the University of California, Berkeley.

A vanguard group of universities is giving corporations greater access to ivory-tower laboratories — for a price. Stanford has paired with [Exxon Mobil](#) in a deal worth \$100 million over 10 years. The University of California, Davis, is getting \$25 million from [Chevron](#). And Intel has opened collaborative laboratories with Berkeley, the [University of Washington](#) and Carnegie Mellon.

The appeal of these arrangements is that “we get broad engagement with universities,” says Andrew A. Chien, Intel's director of research. “Their researchers work on frontiers, in unexplored territory. We want explorers.”

Intel hopes to learn more about scientific and technical developments that might influence its business, even decades from now. The company says it benefits from having its own employees rub shoulders with professors, while gaining the chance to observe younger talent in Ph.D. programs.

“You can view this as a pure pipeline,” says Mr. Chien, himself a former professor.

Jean Stéphenne, president of the vaccine division of [GlaxoSmithKline](#), the pharmaceutical company, says university partnerships with corporations will grow “because technology is changing so rapidly.” Even if companies have the resources to finance their own research and identify the right academic problems to tackle, they usually don't have the time to assemble a staff to pursue these problems. Without help from university professors, Mr. Stéphenne asks, “How can we cope?”

Some people doubt that formal partnerships between corporations and universities can deliver real benefits.

“Universities don't innovate,” says Curtis R. Carlson, chief executive of SRI International, a nonprofit research institute in Menlo Park, Calif., that bought what

remained of RCA's lab. "Innovation means you get it out so people can use it. The university is not going to take it to the world."

But corporations hope that universities can help them take innovations to the world faster and more efficiently. Last month, [BP](#) pledged to spend \$500 million over 10 years on alternative-energy research to be carried out by a new Energy Biosciences Institute at Berkeley, which will manage work done at a nearby Department of Energy lab and at the [University of Illinois](#) at [Urbana](#)-Champaign.

"This is a new model we're working through in real time," says Robert J. Birgeneau, the chancellor of Berkeley.

CRITICS of corporate-university partnerships fear limits on academic freedom or, worse, that companies might censor results that go against their interests. The risk of such interference seems small, however. Despite the large amount being offered by BP, the money will be divided three ways; of Berkeley's annual research budget of \$500 million (nearly all from the federal government), BP will be contributing less than 3 percent.

Under the terms of the partnership, meanwhile, Berkeley professors are free to publish results of BP-funded research. The university also will own the rights to any resulting intellectual property. BP would even have to license that intellectual property, though payments are capped and the company would get the first look at promising results.

The alternative to corporate funds is for universities to rely even more on government funds. And that raises parallel issues in the minds of some academics. The idea that government funding plays no role in prioritizing research "is completely at odds with reality," says Michael Crowe, the president of [Arizona State University](#).

The marriage of corporations and university researchers is still in its early days. "In the decades ahead, we will see more differentiation among universities in how they go about doing this," Mr. Crowe says.

For universities, no matter what models emerge, the key is to deliver benefits to society and business.

"Will these partnerships produce products you won't get from two people in a garage?" Mr. Birgeneau asks. "We don't know that yet. It is an important question."

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