

Entrepreneurs

Universities That Turn Research Into Revenue

Maureen Farrell, 09.12.08, 6:00 PM ET

Stanford University's fertile breeding ground for breakthrough technology may have spawned the likes of Hewlett-Packard and Google, but little Stevens Institute of Technology in Hoboken, N.J., really knows how to get serious returns on its research and development.

To wit: In 2006, the school took in \$4.5 million in research-related income (including licensing revenue and returns on equity stakes in start-ups) while shelling out \$28 million on research--a 16% yield. That same year, Stanford pulled in \$62 million against a \$700 million investment; return on investment (ROI): 8.7%.

You might expect a school named after Colonel John Stevens III, the founder of the United States' Patent and Trademark Office, to spin ideas into gold. Indeed, Stevens aims to go so far as to trademark its very education process--called "Technogenesis"--in which students and professors work through research and commercialization issues concurrently, rather than concentrating on discoveries and letting someone else worry about how to make money from them. School president Harold J. Raveché thinks Stevens can generate a startling \$50 million in licensing revenue next year.

In Pictures: 15 Top Patent-Revenue-Generating Universities

"Those [Silicon Valley] companies were started after the students left Stanford," says Raveché. "Our students start companies here."

The economics of academic research changed back in 1980 when the U.S. Congress passed the Bayh-Dole Act, allowing universities to cash in on campus brainiacs. For the smartest of the bunch, those revenue streams mean big money.

Which universities get the most bang for their research buck? We assembled a list of the top 15, based on a 2006 survey (the most recent data) of 189 schools by the Association of University Technology Managers, which tracks university-born patents and licensing revenues. (Stevens came in at number three; Stanford, number nine.) Total research-related income generated by all 189 schools: \$1.5 billion.

In Pictures: Top Patent-Revenue-Generating Universities



No. 3: Stevens Institute of Technology

2006 Research Expenditures: \$28 million

2006 Research-Related Income: \$4.56 million

Yield: 16%

You might expect a school named after Colonel John Stevens III, founder of the U.S. Patent and Trademark Office, to boast an impressive yield on its research. Now Stevens wants to trademark its education process--called "Technogenesis"--in which students and professors work through the research and commercialization issues concurrently, rather than concentrating on research and letting someone else worry about how to make money from it. Stevens spin-out PlasmaSol, which developed a way to decontaminate buildings after a chemical or biological attack, recently sold for \$17.5 million in 2006. HydroGlobe, which patented a way to remove lead and arsenic from water, sold to Graver Technologies, a filtration manufacturer. The school hopes to generate a startling \$50 million in royalty revenue next year, up from just \$4.5 million two years ago.

In many cases, a few big hits went a long way. New York University--which pulled in \$157 million in research-related income on \$210 million in research and development (R&D) expenditures--tops the list with a 75% yield. Credit NYU's serious return in great part to smash-hit Remicade, a rheumatoid arthritis drug developed along with Centacor and Johnson & Johnson.

While Remicade has generated the bulk of NYU's licensing income in the last decade, some 20 other biomedical technologies kick off royalties as well--and 15 more are in clinical trials, says Abram M. Goldfinger, executive director of the school's technology transfer office. Other hot areas include computer science, agriculture and nanotechnology. NYU also takes stakes in start-ups, including Perceptive Pixel, developer of the touch-screen map that CNN uses in its election coverage.

Commercial potential is definitely top of mind among researchers at Wake Forest University in Winston Salem, N.C., No. 2 on our list, with a 41% ROI on its R&D. Several of the university's patents generated more than \$1 million in licensing revenue in 2006. Among its lucrative discoveries: The V.A.C. System, a mechanical vacuum technology that promotes wound-healing, licensed to San Antonio-based Kinetic Technologies, and a virtual endoscopy machine licensed to GE Medical, a unit of General Electric.

Ohio University came in fourth (ROI: 13%), thanks to research on Somavert, a drug marketed by Pfizer to counteract the effect of the body's overproduction of growth hormones, that has been generating more than 90% of the school's royalty income. Last year, those related patents pulled in nearly \$6 million, up from \$3.3 million in 2006.

The University of California, No. 14 on our list, generates significantly more revenue from its research than all other U.S. universities--but that's because it lumps its 10 campuses under one umbrella. The school system's 40-year old technology transfer program generated about half of its \$48 million in licensing revenues last year from five patents. Among the hits: a Hepatitis B vaccine, a treatment for inter-cranial aneurysms and a bovine growth hormone.

Most schools set up a technology transfer office to help bring new discoveries to market, which mainly involves searching patent databases and chasing lots of paperwork. If the research is indeed protectable, the school then decides whether to simply license the discovery or try to launch a full-fledged start-up based on it.

Most schools opt for the licensing route. "We market, market, market," says David Day, director of technology licensing at the University of Florida, No. 8 on our list. For most inventions, Day says the university will contact more than 100 companies.

"It used to be more taboo, and there were some questions of business getting in the way of pure science," says Marjorie Hunter, director of the University of Rochester's Office of Technology Transfer. "Scientists find it really satisfying to see patients benefit from basic research."

The money's not bad, either. The big brains behind these discoveries typically bag one-third of the licensing revenues, which can range from .05% to 15% of the revenues that licensees generate from the patent. The royalty rate depends on the industry and how much additional research is needed to commercialize the product.

But the game's not over when the patent goes out the door--getting a decent yield requires additional vigilance. Says Day: "If [companies] are not putting money into [commercializing the technology], we retain the right to pull that license back to the university."

One problem with patents is that they expire. That's why universities play the venture capital game, too.

A few years ago, Actiq, a drug delivery technology licensed by Cephalon, accounted for a vast slug of the University of Utah's research-related income. While the patent expired in 2006, Utah (No. 13 on our list) had placed other bets to fill the gap. According to tech transfer director Brian Cummings, the school has stakes in 27 start-ups, hoping to commercialize its research and even recruits part-time CEOs from neighborhood ski resort communities to run them.

"We wanted to make sure we didn't have a one-hit wonder situation, says Cummings."