

The recession hits science

January 8 2010, by Peter Dizikes



The lagging economy is hurting Massachusetts' vaunted life-sciences industry, and might especially hinder the development of new drugs, according to a report released today by MIT researchers.

While the federal stimulus bill gave a temporary boost to academic scientists in 2009, the recession is taking a major toll on investors in science — including the venture capitalists whose dollars help move promising ideas from universities into the commercial sector. That means start-up biotech firms are now struggling to find funding.

“The generation of ideas still seems to be strong, but the mingling of ideas and people and money just isn’t happening at the same rate,” says Fiona Murray, a professor at the MIT Sloan School of Management, who

helped direct the research report, “Analyzing Innovation and Venture Formation in the Massachusetts Life Sciences Cluster.” Seeing research innovations languish unfunded, Murray thinks, is a real and “alarming” prospect.

The part of Massachusetts’ life-science sector hit hardest by the downturn is the state’s prominent biotech-based [drug discovery](#) sector, whose firms pour hundreds of millions of dollars over many years to create new drugs. “It’s a very costly, high-risk business to bring a new molecule all the way from conception into the clinic,” notes Murray, “and investors are looking for less expensive ideas where they can imagine getting a product into the market more quickly.” That means much of the remaining funding is going to firms producing medical devices or research tools: Surgical tools, pacemakers, cardiac stents, and more.

The status of Massachusetts’ life-sciences industry is of national significance, since around 20 percent of all U.S. biotechnology venture capital is invested in the region. The regional trends also mirror the national picture. The average venture-capital investment in a life-science start-up, nationally, has dropped from about \$12 million in 2007 to \$9 million in 2009, and in Massachusetts from around \$12 million to \$10 million over the same time.

Losing diversity in the research system

In researching the report, Murray and Edward Roberts, another MIT professor, directed a team of 30 MIT Sloan students who conducted extensive interviews with dozens of executives and investors in the Boston area throughout 2009, inquiring about their financial and strategic concerns; the researchers then systematically analyzed to identify significant themes and trends. Additionally, they worked with the consulting and accounting firm PriceWaterhouseCoopers, which

examined financial data on the life sciences. Jonathan Fleming, a managing partner at the local venture capital firm Oxford Bioscience Partners, also helped produce the report together with MLSC staff.

The report was prepared for the Massachusetts Life Sciences Collaborative (MLSC), an organization composed of area universities (including MIT), technology firms, hospitals, and trade groups. Murray is presenting the report today to the MLSC's Leadership Council, which includes MIT President Susan Hockfield.

In broad outline, publicly-owned biosciences companies have not fared worse than those in other economic sectors. But the money directed at life-sciences start-up companies has diminished, from almost 20 percent of all venture capital in 2007, to under 10 percent in 2009.

And while venture capitalists invest money in early-stage firms in hopes of getting a big payoff, often through an Initial Public Offering (IPO), that route to profit has been closing lately. In 2008, 21 life-sciences firms nationally postponed or withdrew IPO offerings, and only one biotech start up, Bioheart, Inc., which focuses on cardiac therapies, enjoyed a public offering; there were no such IPOs in 2009.

The MIT interviews with leaders in the regional biotech ecosystem also indicate that investors now expect small companies to focus on a single core project. Murray regards that as a disconcerting development, since it can be very hard to tell which early-stage research projects will pay off — which molecule being created in a lab, for instance, will become a viable drug. Thus cultivating a variety of research projects makes success more likely, both for companies and the industry as a whole.

“The economic crisis is forcing diversity out of the research system, both at the level of companies, and of investors’ portfolios,” says Murray. “And that is potentially alarming over the long term.” In Massachusetts,

the number of venture-capital deals in the area of drug discovery dropped from about 70 and 80 in 2007 and 2008, respectively, to under 60 in 2009. “If the whole drug-discovery engine were to dry up, that would be very problematic in the long run,” adds Murray.

“The investment level we saw before the recession might never come back,” says Glen Comiso, director of life sciences and health at the Massachusetts Technology Collaborative, a public agency that supports innovation in the state (and helped found the MLSC). “Others might say investment is cyclical in nature. But this report is important because it examines the question of how we should manage this type of innovation in this economic climate.”

Incubating new ideas

The report suggests multiple remedies to spur innovation, like a state-wide clearinghouse to better connect investors with scientists looking to found start-up firms. Such a clearinghouse might allow non-profit foundations that target certain diseases to locate and fund promising research that applies to their causes, too. “We need to channel the non-VC funding in a better way,” says Murray. “The [venture capitalists](#) are well-connected to the ideas and the people. Other people are less efficiently connected.” It is precisely in economically difficult times, Comiso adds, when overall investment levels drop, that states should look to “improve efficiencies of funding systems, and ask how to pull together non-traditional sources of funding, from [private] angel investors to the disease foundations.”

Murray suggests that university-based programs, including MIT’s Deshpande Center for Technological Innovation, which funds research and connects scientists to investors, can also help allocate money to promising projects. In this economic climate, she adds, universities might consider grants to extend the time graduate students have in the

lab before they take research ideas into the commercial world. Such funding, she says, would let scientists aiming to start companies “nurture ideas a little longer before they go out into this pretty harsh environment.”

Provided by Massachusetts Institute of Technology

Citation: The recession hits science (2010, January 8) retrieved 6 May 2024 from <https://phys.org/news/2010-01-recession-science.html>

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