August 2012 newsletter Illinois Innovation Index

In the numbers

Spotlight

Innovation news and metrics for metropolitan Chicago and the state of Illinois

In the numbers

Focus on technology transfer accelerates research activity at Illinois universities

Academic institutions have become increasingly central to driving innovation and contributing to economic development. Over the past decade, the transfer and commercialization of research (tech transfer) at Illinois universities have intensified: the state ranked among the nation's leaders in tech transfer and in 2011 saw an unprecedented number of start-ups based on technology developed at Illinois' universities.¹ However, other states' academic institutions continue to outperform Illinois,' indicating more must be done to spur innovation.

Patent output at Illinois universities

Both invention disclosures² and patents awarded to Illinois' universities have increased significantly over the past decade. The volume of invention disclosures has climbed steadily from approximately 500 each year in the early 2000s to 700 per year by the end of the decade.³ Similarly, the number of patents awarded per year to Illinois academic institutions nearly doubled, growing from 109 in 2001 to 200 in 2011.⁴

In 2008, the most recent year for which data on patents per science and engineering (S&E) doctorate holder in academia is available, Illinois' S&E academic researchers had the eighth highest patent output in the nation at 11.4 patents for every 1,000 S&E doctorate holders in academia, compared with the national average of 9.7.⁵ This represents a 54 percent jump from 1997 to 2008, the largest among the top ten states.

Academic patents per 1,000 science and engineering doctorate holders in academia, top 8 states (2008), select calendar years (1997, 2001, 2003, 2006, 2008)



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Tech transfer data generously provided by the Association of University Technology Managers (AUTM)

Spotlight

Ocean Tomo

Established in 2003, Ocean Tomo, LLC, provides financial products and services related to intellectual property (IP), including expert testimony, valuation, research, ratings, investments, risk management, and transactions. Ocean Tomo assists clients-corporations, law firms, governments and institutional investors—in realizing value from their intellectual capital.

From its inception, Ocean Tomo has dedicated itself to providing a truly global platform for value and wealth creation in the intellectual property world. Most recently, the company entered into a joint Technology Transfer Service Center with the Shenzhen United Property and Share Rights Exchange (UPEX) in China.

Based in both Chicago and Shenzhen, the Technology Exchange Center supports IP-driven businesses in the United States seeking entry into the Chinese market and provides similar services to Chinese companies seeking to expand into the United States. By serving as a bridge for easier technological and entrepreneurial transfer, Ocean Tomo's alliance with UPEX facilitates the exchange of innovation across country borders and provides companies with capital and opportunities to build international businesses through IP joint ventures.



Source: National Science Foundation

Technology licensing and commercialization

A university's success in producing and marketing in-demand technology can be measured by its licensing of patented technologies to companies. From 2007 to 2011, Illinois universities licensed a total of approximately 130 technologies per year compared with less than 120 per year in the early part of the decade. Illinois hit a decade-high in 2011, with 142 executed licenses and options.

Technology licenses and options by source, top U.S. states,

2007–2010 (fiscal years))
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	2007	2008	2009	2010
California	432	466	417	461
Florida	133	133	162	177
Illinois	130	138	111	142
Massachusetts	527	476	528	494
Minnesota	145	128	131	146
North Carolina	299	243	290	237
New York	230	253	242	278
Pennsylvania	185	217	221	279
Texas	291	312	296	296

Source: AUTM, U.S. Licensing Activity Survey, and university-reported data for Illinois

In spite of the higher volume, Illinois universities and research hospitals executed relatively few licenses and options compared with other innovative states of a similar population, such as North Carolina and Pennsylvania. Licenses and options executed by performer (private and public universities, non-university research hospitals, and medical centers) have remained relatively constant from 2007 to 2010, the most recent period for which comparative data are available. The following exhibit shows the breakdown for 2010, a representative year.

Technology licenses and options by performer, top U.S. states, 2010 (fiscal year)



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Chicago Innovation Pipeline

The Chicago Innovation Pipeline is an interactive database of licensable technologies developed by several of Chicago's leading universities and research institutions. The pipeline offers a single, searchable portal for a broad range of technologies, from pharmaceuticals, diagnostics and medical devices to nanotechnology and biofuels. It is a tool that enables industry members to view more than 120 licensable technologies in a single database and shop for technologies of interest.

Argonne National Laboratory, Children's Memorial Research Center, Loyola University, University of Chicago and University of Illinois at Chicago premiered the Pipeline at the 2010 Biotechnology Industry Organization (BIO) International Convention in Chicago. Designed to be "industryfriendly," the pipeline groups technologies by product type, therapeutic area, and development stage. The development stage of each technology is represented graphically, allowing users to rapidly assess the potential use and status of each technology. Users can view products of interest, click on one-page summaries of the products in the pipeline, and add them into a shopping cart

Its potential for forming productive partnerships between industry and universities represents an exciting opportunity for the Chicago area.

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Did you miss last month's newsletter job demand by industry? \rightarrow

*University figures include medical schools affiliated with those universities. For instance, licensing and options for Duke University include Duke's medical school. Source: AUTM, U.S. Licensing Activity Survey and University reported data for this issue

University start-ups

From 2006 to 2011, at least 122 university start-ups⁶ were founded in Illinois, with 27 established in 2011, a new record.⁷ This growth was driven primarily by increased commercialization of research over the past decade at the University of Illinois, Northwestern University, the University of Chicago, and Southern Illinois University. Of the 115 start-ups (out of 122) for which detailed information is available, 86 companies (75 percent) are still active, and 84 percent of these are based in Illinois (with concentrations in Champaign and northern Cook County).

More than 40 percent of the active start-ups are in biomedical applications, ranging from therapeutic and diagnostic methods to new drugs. The majority of federal funding for university-based research is in the biological sciences; biotechnology patents make up the majority of patents granted to universities. Large federal investments in super computing and the mathematical sciences at the University of Illinois have also led to several software and IT-based start-ups. Imaging technology, an often overlooked field with potential applications in multiple industries, accounts for eleven start-ups in our sample. In addition, seven start-ups use nanotechnology for applications in clean technology, advanced manufacturing, and biomedicine.

Industry focus of active university start-ups created from 2006 to 2011

100% = 86 active companies



Source: Companies in this sample include all active startups to emerge from Northwestern, University of Champaign-Urbana, University of Illinois Chicago, Illinois Institute of Technology, and Southern Illinois University. Due to incomplete information on operational status, sample does not include startups from University of Chicago

Maintaining momentum in tech transfer

Invention disclosures and academic patenting are at an all-time high, and more high-tech start-ups based on university research are being created in Illinois than ever before. Progress can be sustained and further encouraged by increasing support for publicly funded universities and research hospitals, and introducing policies that promote the geographical concentration of high-tech companies. These efforts are essential to create a cluster of high-tech start-ups that will accelerate innovation, facilitate tech transfer and commercialization, and spur economic growth in Illinois. 8

Methodology

Figures for invention disclosures, licenses and options executed, and start-ups in Illinois are primarily based on data provided by AUTM through the STATT 3.1 database. This information was supplemented by survey data on Illinois universities for which tech transfer data wasn't available for each of the years discussed in this study (2006-2010).

The Illinois Science & Technology Coalition (ISTC) surveyed tech transfer offices at Southern Illinois University, Northern Illinois University, Illinois Institute of Technology, Loyola University of Chicago, and Rush University Medical Center. To make the supplemental data comparable and consistent with AUTM data, universities were asked to provide information only for financial years only and on metrics included in AUTM's STATT 3.1 database.

Since the AUTM survey offers a more comprehensive list of research institutions for other states, we included supplemental data on all major research universities and institutions with a TTO to provide the most complete picture of tech transfer activity in Illinois.

- 1 AUTM data vary from year to year because the number of university respondents fluctuates. However, the major institutions that account for the majority of technology transfer activity in each state are consistently represented in the survey for the period of time we examined.
- 2 An invention disclosure occurs when a researcher officially announces a potential discovery to a technology transfer office (TTO) and establishes for the legal record the time of the invention's conception.
- 3 Association of University Technology Managers (AUTM), U.S. Licensing Activity Survey.
- 4 United States Patent and Trademark Office (USPTO).
- 5 National Science Foundation, Science & Engineering Indicators, 2012.
- 6 University start-ups are defined as companies that are established based on technologies licensed by university TTOs.
- 7 Figures come from AUTM and are supplemented by additional data reported by universities. Data on start-ups created out of the University of Chicago in 2011 was not available.
- 8 Alan Thomas, "Start-up Efficiency Benchmarking," extract from internal white paper presented at UChicagoTech. University of Chicago, 2007.

Access all of the data \rightarrow

The Illinois Innovation Index will publish an annual report this fall and then move to a quarterly format for 2013. More details coming soon.

The Illinois Innovation Index is a monthly newsletter highlighting data and metrics on investment and innovation activity in Illinois.

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