

Patent powerhouses: a guide to patenting by research institutions worldwide

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Academic institutions across the world have been building up their technology transfer capabilities in recent years, to help ensure that new research knowledge realizes its full commercial potential and is made available for public use. Patenting is a key component of the technology transfer process, securing the intellectual property to make it suitable for licensing to a third party, or to form the basis of a start-up company. We took a region-by-region look at academic patenting to see who led the field from 2000 to 2005.

We searched *Derwent World Patents Index*[®] data from 2000 to 2005 on Dialog, using patent assignee fields for institutions (INST), universities (UNIV) and colleges (college). The total number of unique inventions (rather than individual patent records) from each academic institution was recorded, and institutions were then grouped using the priority country of the invention. It should be noted that technology transfer offices do not always share the name of the academic institution they serve, so when searching for institutions by name (or using the patent assignee fields described above) some patent applications may be missed.

Rising numbers of academic patent applications

Despite more than doubling in number over the six year period studied, academic inventions still represent only 5% of total inventions worldwide (Table 1). Their numbers are, however, increasing at a much faster rate: with 130% growth over six years compared to only 28% growth in total numbers of inventions.

	Number of inventions by academic institutions worldwide	Total number of worldwide inventions	% of academic inventions to total
2000	18,414	660,328	2.79%
2001	21,175	710,241	2.98%
2002	23,843	768,159	3.10%
2003	30,547	769,363	3.97%
2004	32,057	800,350	4.01%
2005	42,368	842,744	5.03%
Growth	130.09%	27.63%	

Table 1: Total numbers of inventions recorded in *Derwent World Patents Index* for academic institutions, compared to the global total, from 2000 to 2005.

Regional variations in academic patenting

A closer look at academic patenting in the USA, Asia, Russia and European Union reveals the top institutions per region, and an interesting variation in patenting growth.

The United States

The United States has seen a 21% growth in academic inventions from 2000 to 2005, with the University of California way ahead in terms of total numbers. Technology transfer here is managed by a central Office of Technology Transfer, with campus-based technology transfer offices. The inventions they lay claim to include nicotine patches, cochlear implants and atomic force microscopes.

The University of Columbia New York set up Science and Technology Ventures (STV) in 1982 to manage its technology transfer. This was one of the first university technology transfer offices set up after implementation of the Bayh-Dole law in 1980, which gave US universities the right to license patented technologies to industry.

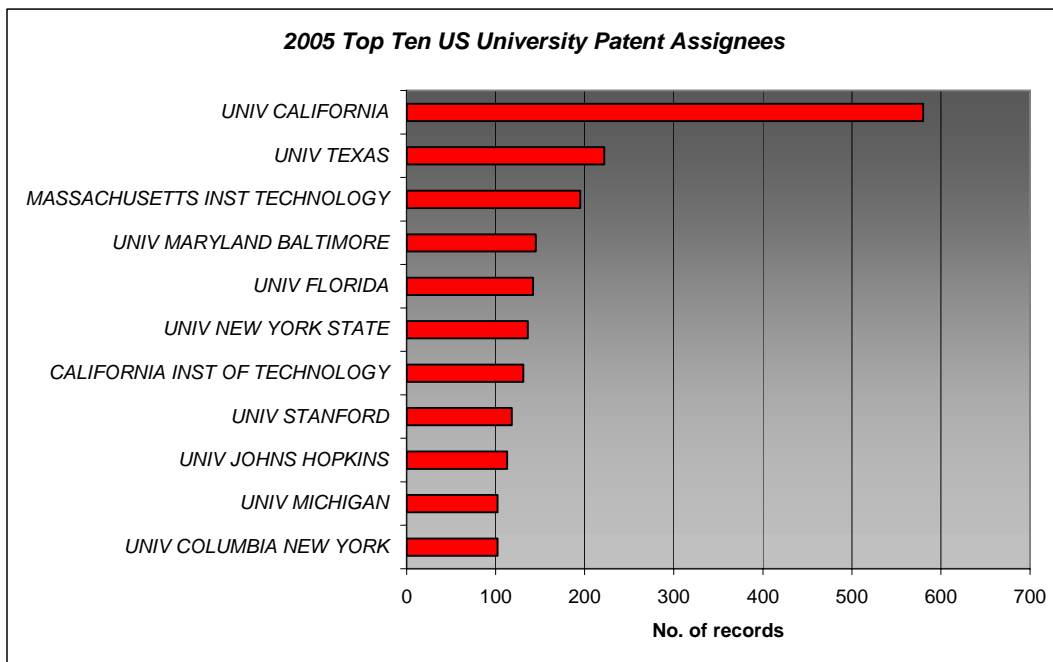


Figure 1: Total number of inventions for ten US academic institutions in 2005

Russia

The profile of the top ten Russian Academic Patent Assignees in 2005 is similar numerically to the USA. The Kuban State University – a complex of 16 branches and over 40 educational and research centers – just takes the lead with over 400 inventions.

Academic inventions across Russia showed a 36% growth from 2000 to 2005. In 2003 the Ministry of Industrial Science set out to establish a framework of six technology transfer sectors in Russia to promote interaction between industry and academia, one of which is based at Kuban State University.

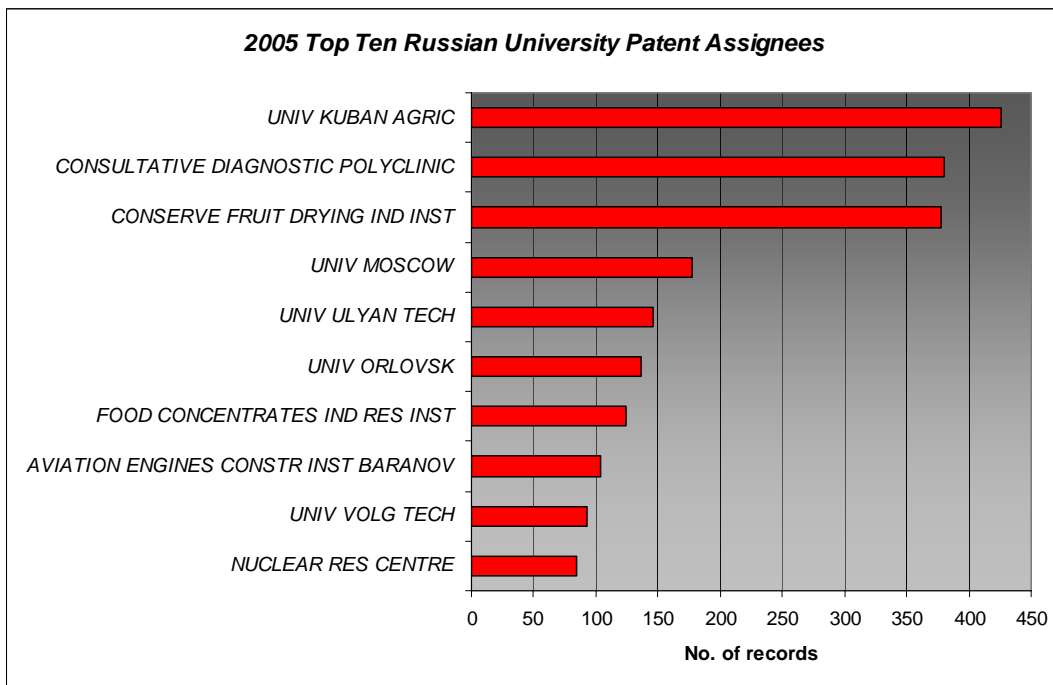


Figure 2: Total number of inventions for ten Russian academic institutions in 2005

Asia

Academic inventions have grown by over 300 percent in Asia from 2000 to 2005, primarily due to high academic patent output from China, where six out of the top ten overall patent assignees are academic institutes. Although China is a relative latecomer to intellectual property law it has been making up for lost time since it joined the World Trade Organization in 2001. An entire section of the 11th 5-year plan is devoted to promoting independent innovation and strengthening intellectual property rights, and the number of patent applications filed in China is growing on average by 25% each year. Thomson Scientific is sponsoring a contest initiated by China's State Intellectual

Property Office to improve Chinese public awareness of Intellectual Property rights and to enhance the ability of innovation for Chinese enterprises. Thomson Scientific has also established a joint laboratory for Intellectual Property Development with China's Ministry of Information Industry. This will equip Chinese researchers with powerful tools for patent and literature search and analysis.

In 2001 Qinghua University, an institute of science and engineering, became one of the first locations for China's national Technology Transfer Centers, established by the Ministry of Education and the National Economic and Trade Committee. Two other Chinese universities in this top ten – Shanghai Jiaotong and Xi'an Jiaotong – also house these Technology Transfer Centers.

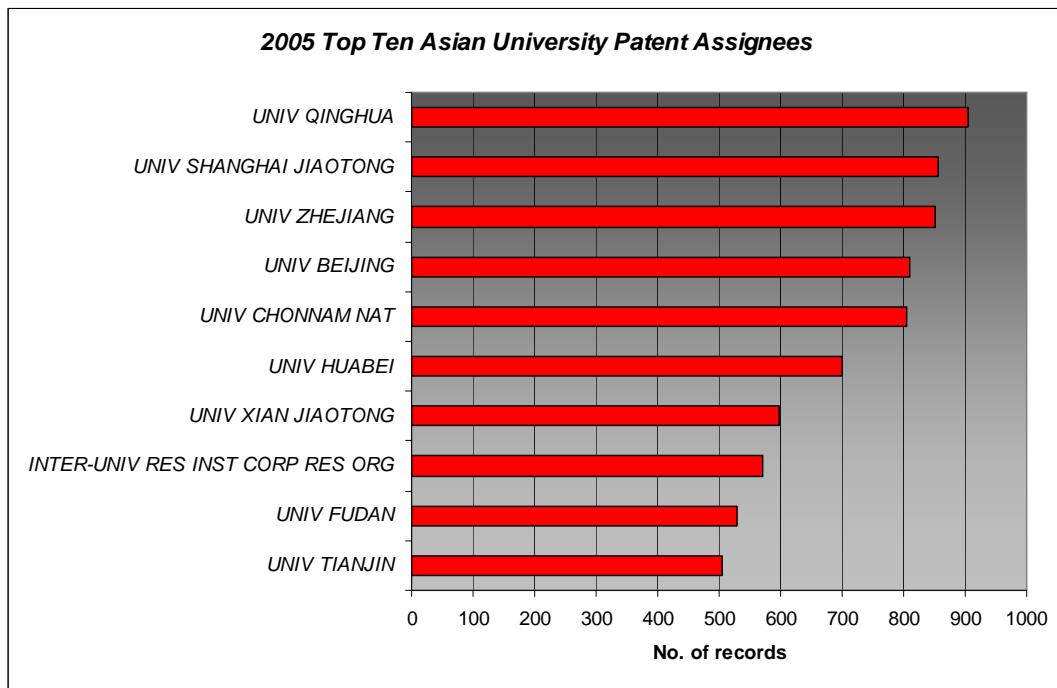


Figure 3: Total number of inventions for ten Asian academic institutions in 2005

Europe

Academic patents grew by 26 percent in the European Union from 2000 to 2005. France's Centre National de la Recherche Scientifique (CNRS) takes the lead with over 130 inventions in 2005. CNRS is the largest fundamental research organization in Europe, with research units spread throughout France. Their inventions are handled by FIST S.A., a private independent subsidiary in which CNRS has a 66% stake. Earlier this year a consortium of leading French research organizations, led by CNRS, signed a \$7.2 million contract with Thomson Scientific to enhance their research knowledge via access to global scholarly research information in *ISI Web of Knowledge*SM.

At the other end of Europe's top ten is London's Imperial College, which established Imperial Innovations in 1986 to manage its patent applications and technology transfer. In July 2006 Imperial Innovations became the first majority university-owned technology transfer company to trade on the AIM Market of London's Stock Exchange, raising £25 million which it plans to invest in technology development and its portfolio of spin-out companies.

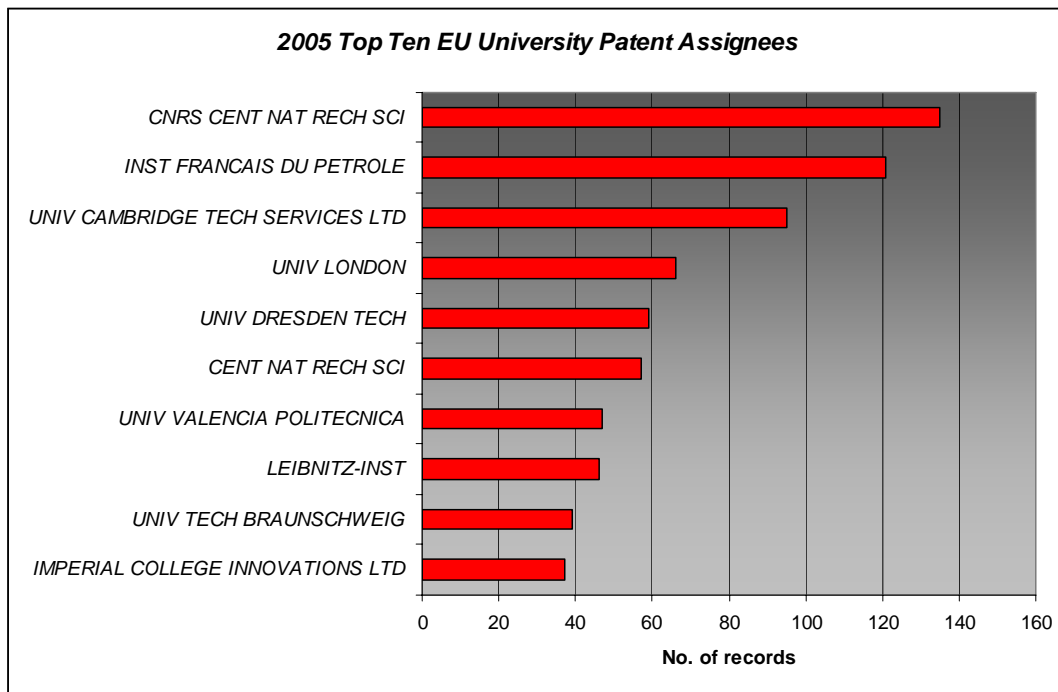


Figure 4: Total number of inventions for ten European academic institutions in 2005

Summary

Patents alone do not make for successful technology transfer by academic institutions – future commercial success depends on significant financial investment and nurturing of the technology to a point where it has commercial viability. The subject is not without controversy, as much of the initial academic research is publicly funded yet may ultimately be licensed for commercial gain, and patent protection requires up-front investment for often unproved technology. It will be interesting to see if the growth we have reported in academic patenting during the first half of this decade will be matched by a similar growth in licensing and commercial development in the future.