

## **The Thomson Scientific Pick of 2006**

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Following the popularity of last year's Pick of 2005, we have again accessed Thomson Scientific databases, tools and technologies for insight into global research and information trends in the past twelve months. Reflecting the prolific growth in Asia Pacific innovation, we have also prepared a separate Asia Pacific Pick of 2006. Take your pick from:

### **Hot research**

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Ranking UK research

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### **The most cited journals of the past ten years**

The influence of an article or journal can be measured by the numbers of citations to it. We investigated the total numbers of citations for papers published and cited in 11,500+ Thomson Scientific-indexed journals between January 1, 1996 and August 31, 2006. This data was sourced from *Essential Science Indicators*<sup>SM</sup>, our unique and comprehensive compilation of science performance statistics and science trends data. From a survey of more than seven million papers we picked out the top ten most cited journals, and the paper with the highest citation count from each of these journals. Natural sciences top the survey, led by The Journal of Biological

Chemistry which had 1,761,650 citations for 59,061 papers. This is followed by the Proceedings of the National Academy of Sciences, Nature and Science.

See the full list of journals and papers at

[http://in-cites.com/research/2006/november\\_20\\_2006-1.html](http://in-cites.com/research/2006/november_20_2006-1.html)

### **Hot research areas and researchers**

In March 2006 we published details of the hottest research and researchers of 2004-5 in our *Science Watch* newsletter. *Science Watch* defines a “Hot Paper” as one that has been cited significantly more than others of its type and age – and a “hot” researcher as someone who has authored or co-authored a large number of hot papers. Topping the lists were:

- Osaka University’s Shizuo Akira, identified as the hottest researcher with contributions to 11 hot papers on immune-system function over these two years
- “C-reactive protein levels and outcomes after statin therapy,” by P.M. Ridker et al, published in the New England Journal of Medicine in January 2005 and identified as the hottest paper (aside from review articles) with 124 citations as of late December 2005

The field with the highest number of hot researchers in 2004-2005 is physics: of the top 21 researchers in this year’s report, 14 published in this field, far above the second place ranking of three for clinical medicine. Look out for the hottest research of 2005-6 – coming soon in *Science Watch*.

More about the hottest research of 2004-5 at

[www.sciencewatch.com/march-april2006/sw\\_march-april2006\\_page1.htm](http://www.sciencewatch.com/march-april2006/sw_march-april2006_page1.htm)

### **Highest impact U.S. universities**

In the November/December 2006 and January/February 2007 issues, *Science Watch* published rankings of the top 100 federally funded U.S. universities based on the relative citation impact of their published research in 21 major fields of science and the social sciences, using data from *Thomson Scientific University Science Indicators*. Harvard and Stanford Universities come top with the highest number of top ten rankings. Four others — MIT, Yale, Caltech and the University of California (UC), Berkeley — have also consistently been placed high in the rankings since these measurements started in 1994.

View the rankings in biological sciences, physics, chemistry and social sciences at

[scientific.thomson.com/media/newsletterpdfs/2007-01/sciencewatch0107.pdf](http://scientific.thomson.com/media/newsletterpdfs/2007-01/sciencewatch0107.pdf)

## Ranking UK research

The May-June 2006 issue of *Science Watch* focused on research in the United Kingdom, ranking UK universities both on the total number of citations of their research papers, as well as their impact (or the average number of citations per paper) during 2001 to 2005.

Predictably, the Universities of Cambridge and Oxford appear in the rankings far more frequently than any others: based on total citations the University of Cambridge ranks first in 10 of the 21 fields analyzed. However, looking at the average number of citations (impact) per paper offers a different form of assessment: tending to remove the advantage of large institutions and allowing smaller ones to demonstrate their research influence. For example, the University of Sussex, despite relatively modest paper counts, makes the top impact in both physics and space science; similarly University of Dundee shows most impact in molecular biology/genetics and biology/biochemistry.

View these rankings at [scientific.thomson.com/press/2006/8319732/](http://scientific.thomson.com/press/2006/8319732/)

## Trends in pharmaceutical research and development

The Centre for Medicines Research International Ltd (CMR) published its 2006/2007 Pharmaceutical R&D Factbook in August. CMR is the world leader in pharmaceutical R&D performance metrics knowledge management, working closely with all major pharmaceutical companies who account for approximately 80% of the industry's global R&D spend. The Factbook condenses the latest learnings from CMR's industry-wide databases, with insights that are available from no other provider, revealing for example:

- the output of new molecular entities (NME) is rising for the first time since 1999
- clinical studies took 10% longer to complete in 2004 than in 2000 – and patient enrolment took 25% longer
- drug launches by major pharmaceutical companies declined by 15-20% over a ten year period

See sample data from this publication at [scientific.thomson.com/products/cmr\\_factbook](http://scientific.thomson.com/products/cmr_factbook)

## Key drugs in the pharmaceutical pipeline

In July 2006 we started to publish quarterly review of key phase changes in the pharmaceutical pipeline, highlighting the five most promising drugs at each stage identified using *Thomson Pharma*. For example, the July report included the newly launched cervical cancer drug Gardasil<sup>TM</sup>, for which analysts are predicting US sales of \$2.10 billion by 2010. Exciting products still in the pipeline were also highlighted, such as Contrave<sup>TM</sup> from clinical neuroscience company Orexigen Therapeutics, which is now in phase III trials for obesity.

Download the first report and register to receive these free, quarterly reports at [www.thomsonpharma.com/pm/p6005-1/](http://www.thomsonpharma.com/pm/p6005-1/)

### **Which pharmaceutical companies made an impact?**

New *Thomson Pharma* quarterly reviews of the scientific literature on drugs and therapies, looking at both quantity and quality, are revealing which companies are having the most impact. For two quarters running the reviews have picked out GlaxoSmithKline (GSK) as the pharmaceutical company making the biggest impact with its publications: researchers affiliated with the firm issued 34 articles, abstracts, or scientific posters between June and August 2006, and 53 from September to November. The quality of those articles was enough to ensure GSK pole position in terms of the impact it made.

Download the first report and register to receive these free quarterly reports at [www.thomsonpharma.com/pm/p6173-1/](http://www.thomsonpharma.com/pm/p6173-1/)

### **Trends in regulatory affairs**

In May 2006 we surveyed over 400 pharmaceutical regulatory professionals to assess how they use technology today and how they plan to harness technology in the future. This benchmark of global regulatory submission trends provides exclusive insight into the emerging and future trends of regulatory product management needs for the life science market. Survey highlights include:

**Technology Usage:** almost all (92%) of the survey respondents make regulatory submissions; current usage of paper and electronic submissions has increased since 2005. 70% state that they will still be using both paper and electronic forms of submission in two years. 66% are using submission publishing software, significantly more than in 2005, and a quarter of those respondents not currently using software are very likely to implement electronic submissions software into their process.

**Document Management:** 74% of respondents currently use a document management system; 38% plan to upgrade their current version - this is significantly more than in 2005.

**Regulatory Trends:** over one third of the respondents reported that their organization plans to adopt Submission Quality Management, an eCTD Viewer and Labelling Management. Approximately 20% reported plans to adopt the HL7's Regulated Product Submission (RPS) format, EVMPD standard, SDTM standard, SPD standard, Commitment/Correspondence Management and a Regulatory Product Team/Executive Dashboard. 78% planned to migrate to the eCTD.

Learn more and request a copy of the survey results at [scientific.thomson.com/press/2006/8325640/](http://scientific.thomson.com/press/2006/8325640/)

### Countries with the most inventive activity

Patent documents published worldwide last year (i.e. all those with a publication year of 2006 appearing in *Derwent World Patents Index*® up to and including update 200704) were analyzed for priority applications by country (treating the original country of application as the priority), and by technology type. As last year, Japan continues to predominate with almost twice the number of documents of the second-placed US.

Number of patent documents published in 2006	
Japan	290,310
US	158,159
Germany	50,253
China	45,389
South Korea	44,042
Russia	16,569
France	12,150
UK	9,912
Italy	6,298
Taiwan	5,512

### Technology areas with the highest number of patent applications

Analysis of new basic patent applications in *Derwent World Patents Index (DWPI)*, using data available in December 2006, shows us the top ten technology areas, with the percentage of documents on which these designations appeared:

2006 basic patent applications by technology area	681,795	%
Digital Computers	107,630	15.79%
Telephone and Data Transmission Systems	46,672	6.85%
Electro(in)organic and Semiconductor Materials	44,532	6.53%
Computer Peripherals	41,825	6.13%
Semiconductor Fabrication	40,419	5.93%
Broadcasting, Radio & Line Transmission Systems	38,991	5.72%
Audio/Visual Recording and Systems	37,782	5.54%
Automotive Electronics	29,940	4.39%
Scientific Instrumentation	27,680	4.06%
Memories, Films, Hybrid Circuits, LCDs	26,898	3.95%

### New areas of technology growth

Manual codes are a hierarchical classification and indexing system that facilitate precise information retrieval when searching *Derwent World Patents Index (DWPI<sup>SM</sup>)*. Thomson Scientific now revises these codes annually to ensure patent searchers can retrieve details of the very

latest technologies. There are fewer changes this year than last: some of the key changes that have been introduced include:

- U11-C13 for nano-scale structure formation and deposition: we anticipate nano-scale technology will finally mature into the commercial market.
- T03-B01F1A has been introduced for multi-value data formats that are used to increase storage density on optical disks. This reflects ever increasing requirements for data storage.

All the new codes and revisions will be live in *DWPI* from update 200701.

More about manual codes and the 2007 changes at

[scientific.thomson.com/support/patents/dwpieref/reftools/classification/code-revision/](http://scientific.thomson.com/support/patents/dwpieref/reftools/classification/code-revision/)

### Media articles you may have missed

- **Information Today** reviewed this year's enhancements to *Derwent World Patents Index*:  
[www.infotoday.com/newsbreaks/nb060905-1.shtml](http://www.infotoday.com/newsbreaks/nb060905-1.shtml)
- **Information World Review** profiled Thomson Scientific's Tim Hamer in July 2006, looking at Thomson Scientific development plans  
[www.iwr.co.uk/information-world-review/features/2160141/scientific-dialogue](http://www.iwr.co.uk/information-world-review/features/2160141/scientific-dialogue)
- **Information Outlook**, the SLA journal, included an article in September from Thomson Scientific's Libby Trudell describing four steps for planning a pilot knowledge sharing project  
[scientific.thomson.com/news/newsletter/2006-11/8348728/](http://scientific.thomson.com/news/newsletter/2006-11/8348728/)
- **Zillion Business Magazine** interviewed Thomson Scientific's Mark Garlinghouse about our expansion in the Asia Pacific area.  
[scientific.thomson.com/media/tshpr/zillion0906.pdf](http://scientific.thomson.com/media/tshpr/zillion0906.pdf)

### Top KnowledgeLink newsletter articles of 2006

Our KnowledgeLink newsletter ([scientific.thomson.com/news/newsletter/](http://scientific.thomson.com/news/newsletter/)) delivers insight and practical information on hot information topics via your in-box, RSS feed and/or our website.

Our most popular articles in 2006 included:

- A quantum leap in supporting the information professional community: details of the Quantum<sup>2</sup> leadership development program that provides training and tools for information professionals  
[scientific.thomson.com/news/newsletter/2006-07/8329424/](http://scientific.thomson.com/news/newsletter/2006-07/8329424/)
- Scientist, Inventor, Visionary: Chatting with Dr. Garfield: an interview with Dr. Eugene Garfield, citation indexing pioneer, on the 50th anniversary of this groundbreaking accomplishment  
[scientific.thomson.com/news/newsletter/2006-03/8318091/](http://scientific.thomson.com/news/newsletter/2006-03/8318091/)

- Thomson Pharma: a modular approach: an interview with Jon Brett Harris, executive vice president of Pharmaceutical and Chemical Markets at Thomson Scientific  
<http://scientific.thomson.com/news/newsletter/2006-07/8330587/>
- Thomson Scientific predicts the 2006 Nobel Prizes:  
[scientific.thomson.com/nobel/](http://scientific.thomson.com/nobel/)