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THOMSON REUTERS

China to lead global innovation by 2012?

Eve Y. Zhou, Bob Stembridge

The Thomson Reuters World IP Today report: "Patented in China—The Present and Future State of Innovation in China" predicts that China will overtake Japan and the United States to be the world's leading innovator by 2012.

The World IP Today report, published in December 2008, looks at current patent trends and speculates how the world of patent information will look in five years. Patent volumes and trends are explored, as well as the underlying causes of increased innovation in China, including economic and government policy factors.

"Findings from the report indicate that China's economy has shifted focus, moving away from traditional agriculture and manufacturing toward innovation-oriented activities," said Bob Stembridge, co-author of World IP Today and manager, customer relations, the Scientific business of Thomson Reuters. "In essence, China has increased its overall research and development budget for the country, introduced tax breaks and monetary incentives to increase indigenous innovation and continued investing in the nation's academic institutions, which have become a driving force behind Chinese patenting."

Download the full report at scientific.thomsonreuters.com/press/pdf/tl/WIPTChina08.pdf

Listen to Bob Stembridge present the report results at:

scientific.thomsonreuters.com/scientific/m/mp3/Patented_In_China.mp3



THOMSON REUTERS

Finding meaningful performance measures for higher education

Discover how higher education administrators worldwide approach research performance measurement

Higher education administrators worldwide face a constant need to measure and quantify research performance to support their compliance with government mandates, compete globally for researchers and students, make strategic research decisions and more.

We surveyed college and university administrators to discover what measurements they track, and how they organize, manage and integrate this data.

You can read our report on meaningful performance measures for higher education at:

scientific.thomsonreuters.com/m/pdfs/exec_report_provosts.pdf



Objectively measuring people, programs, and peers

When it comes to making important plans about the future direction of an institution, decision-makers need objective, meaningful data that helps them truly assess their institution's research performance. And for benchmarking purposes, valid comparisons to peer institutions are a necessity, as is the ability to capture the overall picture of research output and impact.

Introduced at ALA Midwinter 2009, and available later this year, *InCites*[™] is a new, citation-based evaluation tool that delivers all these capabilities in one comprehensive resource, right on the Web. *InCites* supplies all the data and tools needed to produce targeted, customized reports. Users can conduct in-depth analyses or produce focused snapshots, using:

- Citation analytic reports and benchmark data derived from the multidisciplinary *Web of Science*[®]
- Customer-specific datasets and metrics
- Reporting functionality and visualization

InCites delivers the tools to:

- Track research performance by individual, department, and institution
- Compare performance against other institutions and against world and field benchmarks
- Monitor collaboration partners and frequency; track new collaboration opportunities
- Pinpoint influential and emerging researchers and departments
- Allocate funds accurately and intelligently
- Attract top faculty and funding sources
- Support accreditation activity with quantitative evidence

For more information visit isiwebofknowledge.com/incites



Beyond the Impact Factor: a new, multifaceted view of journal performance

The Impact Factor can be a very valuable metric—but it can also be misused and viewed in the wrong context. A significant enhancement to Journal Citation Reports® (JCR®) on the Web offers new metrics and data that complement the Impact Factor, and helps users more fully understand their journals' place in the scholarly world.

Librarians have long relied on *Journal Citation Reports* (JCR) to evaluate their journal collections. JCR now delivers a wider context for this evaluation—and assures that the Impact Factor is not used in isolation from other metrics, resulting in a limited picture of journal performance. New metrics depict a more precise view of journal citation results, from a broader range of scholarly disciplines in farther-reaching contexts. Expanded analytical capabilities include:

- Five-year Impact Factor Trend Graph: View a longer time span to see a broader range of citation activity and get a more informative snapshot over time. For journals in subjects where citation activity continues to rise through several years, this allows more of their total citation activity to be included in a critical performance metric
- *Eigenfactor*[™]: Discover the metric that uses citing journal data from the entire JCR file to reflect the prestige and citation influence of a journal by considering scholarly literature as a network of journal-to-journal relationships
- Impact Factor boxplots: Visualize Impact Factor by journal category
- Rank-in-Category Tables: Evaluate journals in the context of multiple categories.
- Journal Self-Citations: See how self-citations affect Impact Factor

For more information on the Impact Factor and *Eigenfactor*, see pubs.acs.org/cen/science/86/8621sci1.html

For more information on JCR, visit isiwebofknowledge.com



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Top tips for enhancing your knowledge

Enhance your ISI Web of KnowledgeSM searches by equipping yourself with the latest training and reference materials.

Whether you are just getting started on *ISI Web of Knowledge*, or an information professional in need of admin tools and training aids, you can access reference information in up to eight languages via the *ISI Web of Knowledge* training page on our website.

For a summary of the latest content and collaboration tools, you can also access the 2008 Enhancement Guide. This interactive PDF provides quick descriptions of all updates and additions, plus links to more information and training sessions.

Access the *ISI Web of Knowledge* training page at:

scientific.thomsonreuters.com/training/wok

View the 2008 Enhancement Guide at:

isiwebofknowledge.com/media/pdf/2008enhancementguide.pdf



THOMSON REUTERS

Solving local problems with global information

As international travel and migration makes the world seem smaller and more connected, it also poses a challenge: the global spread of disease.

The newest addition to *ISI Web of Knowledge*SM, Global Health from CABI, was created with this global environment in mind. This definitive, comprehensive public health database completes the picture of international medical and health research by capturing key literature not covered by other databases.

By providing far more than just research published in the main academic journals, this resource delivers unique information on a wide range of biomedical topics. Subject specialists have chosen content from over 5,000 journals from 158 countries, plus coverage from books, reports, conference, patents and more. Content includes relevant information on occupational health, travel medicine, toxicology, health policy and planning, bioterrorism, food safety and hygiene, rural health, infectious disease and parasitology, and many other relevant topics.

In accessing Global Health through *ISI Web of Knowledge*, users can take full advantage of this unique content by:

- Searching complementary databases, such as MEDLINE[®], *Web of Science*[®], and CAB Abstracts[®], simultaneously via one platform – with the *ISI Web of Knowledge* all-database search
- Accessing valuable citation information such as Times Cited and Related Records[®] (available to *Web of Science* subscribers)
- Finding hidden and emerging trends, and identify leading researchers, journals and institutions in public health with the Analyze Tool
- Keeping up to date with the newest developments with alerting and RSS feeds
- Creating bibliographies while they search, with *EndNote*[®] *Web*, fully integrated into *ISI Web of Knowledge*

For more information, visit isiwebofknowledge.com



Thomson Reuters Patent Focus Report 2009

Joff Wild, Editor, IAM Magazine

In our annual report on patenting issues at the world's major issuing authorities, we take a look at the stories behind the statistics.

CHINA

In 2008, for the first time ever, a Chinese company topped the list of Patent Co-operation Treaty (PCT) applicants. According to a report issued by the World Intellectual Property Organization, Huawei Technologies Co Ltd, a telecoms company based in Shenzhen, filed 1,737 PCT applications during 2008, to finish in top spot above Panasonic (1,729) and Philips (1,551). Overall, Chinese companies accounted for 6,089 applications via the PCT, a rise of over 11 per cent on the previous year. Meanwhile, in China itself, the State Intellectual Property Office (SIPO) received 716,377 patent applications between January and the end of November 2008, 613,922 of which came from Chinese entities.

When looking at patent filing statistics in China the headline figure is always huge, but it is important to remember that the vast majority of applications received by SIPO relate to non-examined utility model and design patent applications. Invention patent applications, which are examined, came in at 255,797 for the first 11 months of 2008. By contrast, during 2007, a total of 245,161 invention patent applications were submitted. Applications from Chinese entities for the first 11 months of 2008 already exceed the total for 2007 by close to 15,000.

It is a similar story when it comes to patent grants. Between January and November 2008, Chinese applicants received 40,639 patents, compared to 31,945 for the whole of 2008. Although foreign companies look likely to get more grants during 2008 (to the end of November they had 41,569), the likelihood is that Chinese entities will overtake those from abroad for the first time in 2009.

All of this bears testament to the remarkable advances China has made since the country's first patent law came into force in 1985. Indeed, research published by Thomson Reuters in December 2008 indicates that by 2012 the country will be the world's leader in terms of the number of patent applications it generates, accounting for 34 per cent of the global total.

The most important legislative development of 2008 in China were amendments to the patent law, which were approved by the standing committee of the National People's Congress on December 27. This was after an extensive and—by most accounts—transparent consultation process in which views from all interested parties were canvassed, including foreign entities. The amendments will come into force on 1 October 2009 and will bring about a number of changes. Among the most significant of these are



provisions that the absolute novelty standard will be applied to all patent applications, as opposed to the relative novelty principle that is applied now. In addition Chinese entities will no longer have to apply for a Chinese patent before seeking protection overseas—although they will have to get a license from the government to patent outside of China first.

With regard to patent litigation, another foreign company found itself on the wrong end of a large (by Chinese standards) damages award as the losing defendant in a patent case during 2008. Although nowhere near the size of the USD40 million awarded against French company Schneider in 2007 (a decision that is still under appeal) Samsung was ordered to pay the equivalent of nearly USD7.5 million to a company in the eastern province of Zhejiang after being found to have infringed its dual-mode cell phone patent. There are now thought to be more patent disputes in China each year than in the United States, and although most patent litigation in China is between local businesses, foreign companies are increasingly involved in disputes. In 2005, for example, 268 non-Chinese companies were involved in Chinese patent litigation, a jump of over 75 per cent on the 2004 figure.

In short, China is emerging as a sophisticated patent jurisdiction. Businesses with any kind of patent-based output, wherever in the world they are based, should now be factoring the country into their strategic considerations – even if they are not yet operating there.

EUROPE

The European Patent Office is dealing with more applications than ever before. According to its most recent annual report—released in the middle of 2008—the EPO received 140,700 applications during 2007, up just over 3 per cent on the year before. By contrast, the number of patents granted fell from 62,800 in 2006 to 54,700. This equates to an allowance rate of around 51 per cent. In 2004, 59 per cent of examined patent applications were granted. As with the other two offices of the Trilateral Authorities (the Japan Patent Office and the US Patent and Trademark Office), statistically it is harder to get a patent from the EPO than it has ever been before.

At the beginning of 2008, the EPO published a study that had been approved by the Administrative Council in December 2007. Entitled Future Workload, the study was commissioned to look at the ways in which the EPO should deal with the expected increase in the number of patent applications that it will receive over coming years and the consequent strain this demand will place on the office's functioning. The study made five principal recommendations:

- Exploring the possibility of making greater use of work done by other bodies, such as other patent offices in Europe or outside Europe, applicants and third parties.
- Making it harder to obtain patent rights by “raising the bar”. This was defined as: “granting exclusive rights only for technical innovations with sufficient inventive merit.”



- Improving the examination process by developing new measures to deal with the workload in an efficient way
- Enhancing co-operation efforts in Europe by, for example, building the European Patent Network, to consist of the EPO and national patent offices.
- Making the European Patent Organization and the EPO fit for the future by enhancing their capabilities to meet new challenges, reviewing governance and finance

With regard to the second point, relating to making it more difficult to obtain a patent, the Head of the Controlling Office at the EPO, Ciáran McGinley, published an article in IAM magazine in June 2008 in which he explained in further detail what this would mean in practical terms:

- "First, create a better status quo by establishing quality standards across all European patent offices and by tightening up current practice."
- "Second, it is the intention of the EPO to fine-tune certain entry and process rules, and to remove (or limit) opportunities for abuse such that sharper boundaries are established earlier on in the procedure."
- "Third, and this may take longer, it is the intention of the EPO to raise the bar itself by making the man skilled in the art somewhat more modern, having greater immediate access to knowledge, more used to working in multi-disciplinary teams and endowed with a little bit more common sense."

One area that has proved perennially controversial in Europe is the patentability of computer programs. In the autumn of 2008, the EPO's president Alison Brimelow referred a series of questions to the EPO's Enlarged Board of Appeal with the aim of providing clarity as to what can and cannot be patented in this area. The board is expected to respond sometime during 2009.

Away from the EPO, in May 2008 the London Agreement on Translations entered into force, so making the translation requirements relating to an application through the EPO less onerous. However, any hopes that this may have heralded a major breakthrough in talks relating to the Community patent and a single patent court for Europe were dashed when it became clear that the French presidency of the EU, which took place between July and December 2008, had failed to persuade member states to find compromises relating to language issues and the distribution of revenue to national patent offices. Many are wondering if there will ever be the political will to see either of these projects become reality.



INDIA

The most recent annual report available from the Indian Intellectual Property Office covers the fiscal year 2006/07. The report shows that during 06/07, the office received 28,940 patent applications; while 14,119 were examined and 7,539 were granted. On the face of it, the only really noteworthy thing about these figures is that the amounts have grown so rapidly over recent times. In fiscal year 2002/03, for example, there were just 11,466 applications, 9,538 examinations and 1,379 grants. Of course, since that time there has been a change in Indian law (on January 1 2005), meaning that product patents can now be protected in the country.

However, while patent owners may welcome the WTO-inspired changes in the Indian patent regime, what may cause them some disquiet is the low number of examiners employed by the Indian Intellectual Property Office. According to the 2006/07 report, there were just 133 examiners operating across four regional offices—Calcutta, Mumbai, Chennai and Delhi. This figure becomes quite alarming when you consider the Indian IP Office's statistics for 2007/08, which have been reported in the Indian press.

According to The Hindu newspaper's Business Line website, during 07/08 15,262 patents were granted—a rise of over 100 per cent on 06/07.

Given that the number of patent examiners in India has remained relatively static, it does not take much of a mathematician to work out that during the last fiscal year examiners granted an average of well over 100 of the applications they reviewed. Of course, this raises significant questions about the quality of what is coming out of the Indian IP Office. At the end of 2008, it was announced that 414 new examiner posts would be created by 2012. But with application numbers growing rapidly (there were over 35,000 during 07/08), that still may not prove enough.

Quality is not the only issue that the new head of the IP Office, PH Kurian, will have to deal with. During 2008, questions were also raised about potentially unhealthy close relationships between some private practice attorneys and some office staff. In October, the Livemint website reported on allegations that patent examiners are employed by some firms to write applications, and that some senior officials at the office have instructed examiners not to reject applications from certain attorney firms. While there is no proof that anything illegal has taken place, applicants and broader civil society in India will need reassurance that the IP Office—which will be so crucial to India's continued development over the coming years—is operating transparently and completely ethically if confidence in the country's patent system is to be fostered and then maintained.

As things stand, it does seem as if Indian companies are reluctant to embrace the patent system at home or abroad. According to research published in May, just 20 per cent of applications at the IP Office came from Indian entities, while very few Indian Organizations seek protection outside the country. By contrast, in China, over 60 per cent of applications come from local companies. This state of affairs is something



that seems to have registered with the Indian government, which has begun to devote resources to educating Indian businesses about the benefits of intellectual property. In one concrete move, it has introduced a Bayh-Dole style bill into the country's parliament. If passed, this will allow academic institutions to patent the results of federally-funded research. Up to now, only the government has been able to do this. The proposed legislation is controversial, however, and it is not yet clear whether it will make it to the statute books.

JAPAN

The Policy Committee on Innovation and Intellectual Property (PCIIP) was established in December 2007 under the leadership of Tamotsu Nomakuchi (chairman of Mitsubishi Electric Corporation) with a brief to explore the IP policies Japan should pursue in order to foster innovation in the country. In August 2008 it delivered its report to the Japan Patent Office. New Intellectual Property Policy for Pro-Innovation - Intellectual Property System as Global Infrastructure came in at over 200 pages long in its English version and made a series of recommendations involving issues such as: closer international co-operation and further harmonisation; flexible examination; building an infrastructure to encourage innovation; and constructing a link between R&D policy and patent policy.

The committee also called for measures that would lower "uncertainty at the stages of acquisition and protection of patent rights as much as possible", and which would reduce business risks, enhance patent quality and also lead to a "a highly transparent and predictable patent examination mechanism". Interestingly, another area to come under discussion was the patent troll phenomenon. Although not widely known in Japan itself, trolls have successfully targeted a number of Japanese companies abroad, particularly in the United States. The committee recommended that there should be discussion of what it termed an "abuse of right" principle with regard to patent enforcement under Japanese law, which would discuss what such an abuse would entail so that measures can be introduced to prevent it.

Following on from the PCIIP report, at the beginning of 2009 it emerged that the JPO was in the process of constituting a new body whose remit is to study ways in which the Japanese Patent Law should be amended with a view to improving the international competitiveness of the country's companies. According to a report published in the Nikkei Shimbun newspaper (and translated into English by Edward Durney for the Bust Patents website), the new committee's brief is to explore the feasibility of:

- Revising the definition of "invention" that is protected subject matter
- Making a system for promoting innovation by terminating the "right to seek an injunction"
- Revising "employee invention provisions"
- Studying ways to resolve disputes promptly and effectively
- Speeding up examination and responding to applicants' needs



- Making the text and provisions easy to understand

The committee is due to report by the beginning of 2010. It is anticipated that changes to the law will be proposed by the government either later that year or in 2011.

In October 2008, the JPO introduced a trial of what it termed "a super accelerated examination" system. Once fully up and running this would cover internationally-filed applications that, among other things, cover inventions which are planned for early commercial application or which have a short lifecycle. The JPO currently gets around 8,500 annual applications under its accelerated program and expects that around 15 per cent of these will become applications under the super accelerated scheme. The first grant during the trial was given to Keio University for an "Electrochemical Analysis Method Using Boron Doped Electroconductive Diamond Electrode". It was made just 17 days after the application was submitted. The trial is expected to continue until March or April 2009.

According to the JPO's annual report—published in September 2008—the total number of applications submitted to the office fell during 2007 to stand at 396,291. This is the second year in a row in which applications declined and they now stand at their lowest level since the mid-1990s. In explaining the fall, the JPO identified two reasons:

- (1) a change in focus among Japanese companies to concentrate on building high quality portfolios based on core business
- (2) a tendency for more Japanese companies to seek protection abroad, resulting in more careful selection of domestic applications. The grant rate at the office rose very slightly, to stand at 48.9 per cent as compared to 48.5 per cent in 2006.

UNITED STATES

Patent approval rates at the US Patent and Trademark Office (USPTO) keep on falling. According to the USPTO's report for fiscal year 2008, which ran until the end of September 2008, the number of patent grants fell to below 50 per cent of applications examined, to stand at 47.3 per cent. This compares to 54 per cent in fiscal year 2007 and 72 per cent in 2000. Statistically, it is now harder to obtain patent protection from the USPTO than it is either from the JPO or EPO.

Other statistics from 2008 worth noting are that IBM became the first Organization ever to receive 4,000 US patent grants during one calendar year; and that for the first time ever, more US patents were granted to non-American applicants than to those from the US.

In 2008, Jon Dudas, the Director of the office completed his sixth year in charge. Initially appointed by President Bush in a temporary capacity and then confirmed in the role in 2004, Dudas was a target of much criticism from members of the US patent profession, many of whom believed that his background in



politics, rather than in IP law, did not make him sufficiently qualified to do the job. Symptomatic of this, they say, was the USPTO's decision to introduce a new claims and continuations regime, despite a consultation process that revealed widespread disquiet about the proposed rules. Just before they were due to come into force in October 2007 GlaxoSmithKline obtained an injunction that prevented it from happening. During 2008, the injunction was confirmed in a full court hearing. The USPTO appealed this decision and a judgement from the Court of Appeals for the Federal Circuit (CAFC) is expected some time in the next few months.

At the beginning of 2009, Dudas announced he would be standing down. He left his post on January 20, the day on which Barack Obama was sworn in as the new US President. Dudas has been replaced temporarily by John Doll, who was previously the USPTO's deputy director. At some stage, probably during 2009, President Obama will have to name a permanent director. It is hoped that this appointment will herald a new, more amicable relationship between the office and its user community.

Away from the USPTO, one of the most significant developments during 2008 was the failure of the Patent Reform Act to make it through Congress. Although the legislation had been approved by the House of Representatives during 2007, it got bogged down in the Senate as opposition to a number of its provisions—most notably those relating to the calculation of damages in litigation—grew more organized and vocal. In May, following the failure of last-ditch efforts to reach a compromise between the two sides in the debate, the Act was withdrawn. It remains to be seen whether it will reappear in the new Congress. The signs are that it may well do so.

After several years of relatively frenetic patent-related activity, the Supreme Court chose to take a back seat during 2008. This left the biggest case of the year to be decided by the CAFC. Sitting en banc, a relatively rare event, in *In re Bilski* the court took a look at the extent to which business methods and computer software could be granted patent protection. The full implications of the majority decision the CAFC handed down in October have yet to be worked through, but in broad terms it seems as if the relatively liberal (in comparison to other jurisdictions) business method patent regime that has existed in the US since the 1998 *State Street* decision is no more.

Staying with the courts, one final development of note during 2008 was a sharp decline in the number of patent suits filed in the last part of the year. It is possible that this is just a one-off, but it could be an indication that companies are more reluctant to spend money on expensive litigation as the full effects of the economic downturn begin to bite.

About the author: Joff Wild is editor of IAM magazine and writes a regular blog at www.iam-blog.com

Look out for IP Matters—our new IP newsletter



THOMSON REUTERS

Thomson Reuters is launching IP Matters—a newsletter delivering intellectual property insight.

Readers of the Intellectual Property section of *KnowledgeLink* will soon receive a separate newsletter: IP Matters.

Subscribers to the Intellectual Property section of KnowledgeLink will automatically receive IP Matters. We trust that you will find the content informative and useful, but as with all our communications you will have the option to unsubscribe.

You can update your newsletter and communication preferences by clicking on the Profile Center link at the foot of the KnowledgeLink newsletter email.



Intelligent patent information to guide your research and analysis

Struggling to make sense of patent data? If so, discover why leading researchers and IP professionals are drawn to Thomson InnovationSM, the premier IP research and analysis solution from Thomson Reuters.

Thomson Innovation 2.0 was successfully launched in December 2008 at the Online Information Conference (London), concluding a year of aggressive development that culminated with powerful analysis and visualization capabilities, additional Asian patent data in English and enhanced administration functionality.

David Brown, executive vice president of the Scientific business of Thomson Reuters, summarizes the solution saying, "Time and again we hear how important it is for customers to not only be able to search complete, reliable information, but to also make it actionable. *Thomson Innovation 2.0* directly addresses this need and further cements the product's position as the world's leading IP research and analysis solution," enabling corporations to save time and increase productivity.

Analyzing volumes of patent data into meaningful, actionable intelligence is now only a mouse click away. *Thomson Innovation 2.0* enables users to identify key competitors, technologies and trends with its new ThemeScope mapping functionality. This can transform a seemingly complex set of patent and non-patent documents into a hierarchy of common themes, and display them in a topographical landscape to easily spot predominant concepts and pinpoint areas of opportunity and risk. Users are thrilled with the ability to analyze everything from *Derwent World Patents Index (DWPI)* content to scientific literature, bringing clarity to otherwise complicated document sets.

Another valuable timesaver is the clustering tool. This automatically groups patent and literature documents through the linguistic analysis of text found in user-selected fields, and establishes document relationships that enable the refinement of search strategies and the identification of new links between subject matter, authors and organizations. Similarly, powerful charting features turn records from search results into ranked lists or charts, while citation maps display all backwards and forward references of selected records in an interactive and graphical map, enabling users to trace the evolution or dependencies of technology through time.

Beyond these enhancements and new capabilities, *Thomson Innovation 2.0* provides even deeper coverage of Asian patent data, including English translations of the titles, abstracts and all claims for Chinese utility models and Chinese applications, from 2007 to present. This is in addition to the already robust Asian patent coverage, and other global patent data, in *Thomson Innovation*, including the 41 patent authorities in *DWPI*.



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Thomson Innovation is a recipient of the 2008 R&D 100 award, which recognizes the most technologically significant products of the past year, and the 2008 InfoWorld 100 award, which acknowledges the achievements of IT projects that exemplify intelligent, creative uses of technology to meet business and technical objectives.

For more information, go to thomsoninnovation.com



THOMSON REUTERS

Who shaped professional opinions on drugs and therapies in 2008?

The latest Pharma Matters report reveals the organizations that had the biggest impact in the leading sources of information on medical research during 2008.

The international pharmaceutical industry is among the most important sponsors of scientific research, so it is understandable that some of the most widely published authors of scientific articles are affiliated with, or sponsored by, pharmaceutical companies.

Who's Making the Biggest Splash, a free quarterly review from Thomson Reuters, assesses the quantity and quality of the materials published by pharmaceutical companies, research institutions and other non-commercial bodies to identify which organization has made the biggest impact.

This latest review of publications from October to December 2008 reveals that publications from Novartis continue to have the biggest impact, with Novo Nordisk leaping up the rankings compared to the previous quarter. It also includes a comparison of publication impact for the whole of 2008.

Download Who's Making the Biggest Splash October-December 2008 at:

thomsonreuters.com/content/PDF/scientific/pharma/2008wmtbs_q4.pdf

You can sign up to receive this free quarterly review at:

scientific.thomsonreuters.com/info/matters



Everybody wins: realizing the promise of biomarkers in drug research

Biomarkers are becoming an essential part of clinical development. In an exclusive new white paper—Biomarkers: an indispensable addition to the drug development toolkit—Thomson Reuters interviewed a number of the world's leading pharmaceutical researchers to explore the role of biomarkers in improving decision-making, accelerating drug development and reducing development costs.

According to Dr Jeffrey Ross, Head of Pathology at the Albany Medical Center in New York, today you “would not even conceive” of developing a new drug without simultaneously looking for biomarkers for efficacy, safety, and to measure its pharmacodynamics. Dr Ross cited circulating tumor cells (CTCs) as an example of a biomarker at the front line of the battle against cancer. “It can give a pharmaceutical company a very early signal of efficacy,” he told Thomson Reuters. “If you’re not knocking down the circulating tumor cells early in the trials, you may say, let’s save our money for the next agent.”

This use of biomarkers as alternatives to clinical endpoints in drug development has helped oncology to beat the downturn in drug development experienced by other therapeutic areas. In particular, genetic and proteomic biomarkers are being used to predict an individual’s response to cancer treatment. “If we can select a population with the particular gene which we believe to be important for response to a novel therapeutic,” said David Roblin, Pfizer, “then we can run a smaller clinical trial to see whether it works or not.” This view was echoed by James Weatherall, AstraZeneca. “If we can start to [use] genetic or protein markers in a rigorous way, then that’s an incredibly powerful way to target the medication,” he said.

And it’s not just oncology. Thomson Reuters also spoke to Dr Juan Carlos Kaski, Professor of Cardiovascular Science and Director of the Cardiovascular Biology Research Centre at St George’s University of London. Dr Kaski explained how the inflammatory biomarker C-reactive-protein (CRP) offers a new way of measuring the efficacy of statins. Dr Trevor Hansel, Medical Director of the National Heart & Lung Institute Clinical Studies Unit in London, highlighted the need for biomarkers in diseases like chronic obstructive pulmonary disease. “Finding biomarkers to improve our assessment of efficacy and safety in small numbers of patients is where all the initiatives are directed at,” he told Thomson Reuters.

All these researchers highlighted how biomarkers are changing the way drugs are developed. The ultimate vision is to have access to biomarkers in all therapeutic fields, which means that industry, academia and clinicians need to work together to pool information. “Biomarkers could have such a huge impact, because you could reduce the time of your trials and improve internal decision-making,” commented James Weatherall. “That means that everybody wins.”

Read the full white paper at [thomsonreuters.com/content/PDF/scientific/pharma/biomarkers2.pdf](https://www.thomsonreuters.com/content/PDF/scientific/pharma/biomarkers2.pdf)



THOMSON REUTERS

Revealing the most promising drugs

The newly published Pharma Matters report—Ones to Watch October-December 2008—reveals the most promising drugs changing clinical phase, receiving approval and launched this quarter.

Pharmaceutical innovators remain committed to their pipelines, no matter what the economic climate. Our lists of promising drugs this quarter include potential large-population treatments for cancer, HIV infection, asthma and osteoporosis, among others. But we also continue to see a number of promising niche, 'specialty' pharmaceuticals for small patient populations.

MGI Pharma, Genzyme, Eli Lilly, GlaxoSmithKline and Abbott/Solvay are responsible for the five most promising drugs launched or receiving approval.

The five most promising drugs entering Phase 3 trials are from Gene Signal, Daiichi Sankyo, TopoTarget, Indevus and Renovio.

Download The Ones To Watch October-December 2008 (PDF) at:

thomsonreuters.com/content/PDF/scientific/pharma/2008totw_q4.pdf

You can discover which other companies – and which drugs – made the top five in each category by subscribing to receive the latest and future editions of the Pharma Matters reports free every quarter at scientific.thomsonreuters.com/info/matters



The most cited science of 2008

David Pendlebury, citation analyst at Thomson Reuters, spoke to National Public Radio in the USA about the most-cited science of 2008.

Every published scientific paper cites the papers that it is connected to or builds on, and citations are carefully tracked as a measure of research success. In this interview, David was quizzed about the most-cited scientific research of 2008, and he highlighted four hot topics identified by citation analysis:

In biology, cellular autophagy (self digestion), has risen from being the subject about 200 papers in 2004, to almost 1000 papers in 2008, with researchers investigating its role in both disease protection and progression.

In medicine, induced pluripotent stem cells show strong research growth. These cells, first produced in 2006, are seen an important advancement that may enable researchers to obtain pluripotent stem cells for research without using embryos.

In physics/chemistry, graphene - the thinnest material known - is a hot area of research. Graphene consists of a single molecular layer of carbon atoms, and has been used by IBM to create field-effect transistors (FETs).

In chemistry, papers published in 2008 on iron-based superconductors revealed a new family of superconducting compounds that could eventually increase the efficiency of transferring and storing electricity.

David also discussed the Thomson Reuters Nobel Prize predictions, and journal articles that have risen to the ranks of the 'modern classics,' becoming some of the most-cited of all time.

David drew on mostly *Essential Science Indicators* for his analysis - both Hot Papers and Research fronts in Medicine, Molecular Biology, Physics and Chemistry.

Listen to David Pendlebury's interview at:

http://podcastdownload.npr.org/anon.npr-podcasts/podcast/510221/98540319/npr_98540319.mp3

Listen to other Science Watch podcasts at:

sciencewatch.com/inter/pod/



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Top 20 countries in all fields, 1998-2008

Christopher King

Thomson Reuters

ScienceWatch.com recently unveiled its annual ranking of the Top 20 countries according to research output and citation performance—and China has broken into the top five.

In this seventh annual ranking from ScienceWatch.com, countries are ranked according to research output and citation performance using data from *Essential Science Indicators*. The analysis, reflecting all fields of science, is based on papers published and cited between January 1998 and August 31, 2008.

As in the previous Top 20 rankings, the United States shows dominance according to the measures of total citations and number of published papers, with Germany, England, and Japan also making their customary strong showings in these categories. Significantly, China makes its first appearance in the top five of nations according to paper output.

And in the citations-per-paper ranking, Switzerland maintains the top position it established in previous rankings. While the nation produced a comparatively modest quantity of papers over the decade, its scientists displayed a knack for participation in high-impact work, notably a highly cited paper on protein modeling, along with several international collaborations reviewing particle physics, and a report detailing the sequence of the mouse genome.

Top 20 countries in all fields: see the rankings at:

sciencewatch.com/dr/cou/2008/08decALL

US research slips, but holds its impact

Despite continuing erosion of the US share of world science, the citation impact of its scientific papers still surpasses the world average in major scientific fields.

Share in world science

Science Watch used the Thomson Reuters *National Science Indicators* database to examine global publication and citation statistics in science and the social sciences. Analysis of scientific output in all fields by over 170 countries shows a steady decline in the U.S. percent share from 1993 to 2007, compared to aggregate figures the Asia Pacific and European Union. Since the last comparison of this type in 2005, the Asia Pacific percentage has increased from 25.9 per cent to 28.2 per cent, while the U.S. share has slipped from 32.8 per cent to 31.5 per cent in 2007. Research share by the European Union is also trending downward, dropping from 38.0 per cent to 37.3 per cent in 2007.

Increasing scientific output by the nations of Asia, combined with increasing international collaboration and co-authorship on scholarly papers, accounts significantly for the Asia Pacific group exhibiting a greater presence in world science. But it should be noted the absolute number of Thomson Reuters-indexed scientific papers from the U.S. has edged downward: from a high of roughly 291,500 in 2005 to approximately 286,000 in both 2006 and 2007.

Citation impact

Measured by citation impact, U.S. science still appears quite healthy. Science Watch examined U.S. world share and citation impact in 21 main fields of science, ranked according to those fields in which U.S. "relative impact" is well above the world average over a recent five-year period. Physics tops the list with a U.S. impact mark of 6.15 cites per paper—surpassing the world mark of 3.96 cites by 55 per cent.

Research fronts

For another snapshot of current U.S. science, *Science Watch* turned to the Thomson Reuters unique store of Research Fronts—emerging areas of research that are identified by a foundational "core" of papers that are frequently cited together. A sampling of eight Research Fronts shows U.S.-based institutions listed among the collective author addresses for each grouping of core papers. Thus, the list constitutes a small selection of U.S. concentration in recent research, featuring subjects including:

- genome-wide mapping of chromatin state in the cell
- processes for creating zirconium diboride and silicon carbide ceramics
- phase 0 trials in cancer therapy

See the full Science Watch analysis at sciencewatch.com/ana/fea/09janfebFea/



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Getting the word out about research achievements: taking author identification to a new level

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Intelligent information in Asia

Vin Caraher

Thomson Reuters

Intelligent information goes beyond just aggregated data or a federated search – it is comprised of the right data with the right analysis and visualizations to deliver just what is needed, when it is needed and no more. Vin Caraher recently contributed an article on intelligent information to Japan’s Journal of Information Processing and Management (Joho Kanri).

Joho Kanri is a major information industry magazine in Japan, published by the Japan Information Center of Science and Technology. The magazine targets a wide spectrum of key opinion leaders, corporations, universities and libraries in Japan. The text below is an extract of Vin Caraher’s article, “The Future is Intelligent Information” which was published in the magazine in January 2009.

Information is what drives our economies today, which are becoming increasingly knowledge-driven. As knowledge workers, we require intelligent information that goes beyond just aggregated data or federated search. Intelligent information is comprised of the right data with the right analysis and visualizations to deliver just what is needed, when it is needed and no more. Simply put, less is more.

There is a general trend towards decentralization of knowledge functions, with an increasing need for collaboration and the sharing of information across the workflow.

The globalization of information and the rising importance of Asia have led to an increased need and demand for translated information across diverse markets. According to the Thomson Reuters World Intellectual Property Today Report 2008, three out of the four top patenting countries in 2007 were from Asia Pacific, with Japan leading the way ahead of the US, China and South Korea. More than 26 per cent of the world’s scholarly research published between 2001 and 2006 originated from Asia-Pacific countries.

The rapid rate of growth of information available on the Internet, and compressed time for decision-making, is putting more demands than ever on our time. This poses certain challenges as we face information overload from various sources. While English continues to be the lingua franca of the business and research world, different languages are the reality. Over 50 per cent of patents published each year are now in the non-Roman character sets of the Japanese, Korean and Chinese languages.

Global collaboration has increased dramatically in recent years. Thirty per cent of papers published in 2006 had five or more authors compared to less than 20 per cent a decade ago. Today, having a global



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view is essential to success – research teams are now international, corporations operate globally and innovation is global.

To address these challenges, information providers are turning to new ways of information delivery. At Scientific, we are developing intelligent information solutions to help our customers make the most effective use of information in their workflow to achieve success and enhance global collaboration. We help our customers make sense of what is important and timely through powerful analytic and visualization tools such as charting, citation mapping and technology landscape mapping on a single robust platform such as *Thomson Innovation*SM, *Thomson Pharma*[®] and *ISI Web of Knowledge*SM. Similarly, through these integrated platforms, we integrate information from disparate sources to provide information professionals deeper insight beyond the sum of information elements.

To make information more accessible for a global audience, Scientific developed machine-assisted translation capabilities to help deliver full text Japanese patent information in English to non-Japanese speaking customers such as researchers, information professionals, patent attorneys and analysts.

Understanding our customers' intellectual property (IP) needs, and the business and cultural context within Japan, is the key for us to help them succeed. In November 2008 we launched a Japanese *Thomson Innovation* user interface to help Japanese companies and professionals search and analyze IP more effectively. In 2009, we will develop a Japanese *ISI Web of Knowledge* user interface to deliver easy access to high quality, diversified scholarly information to our Japanese users. To enable customers to fully appreciate the key feature benefits of *Thomson Innovation*, we will also be making the Japanese patent search available in the Japanese language.

In order to achieve these intelligent information solutions, much organization and interpretation of information has to take place and this is where Thomson Reuters excels at building the intelligence into intelligent information. Professionals fully appreciate having the right information seamlessly delivered at just the right time and place in their workflow to help them make better decisions, faster.

The future is Intelligent Information.

View the original article in Japanese:

http://www.jstage.jst.go.jp/article/johokanri/51/10/51_727/article



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Scientometrics in China

Science policy and decision making in China has been boosted by the establishment of its first scientometrics research laboratory.

Scientometrics—the measurement and analysis of science—has a key role to play in science policy and decision making. The new research laboratory, co-funded by Thomson Reuters and the Institute of Scientific and Technical Information of China (ISTIC), will focus on fostering and strengthening China's academic exchange with the international scientometrics community. It will provide a platform for enhancing scholarly communication and research collaboration in China using scientific literature resources and data analysis tools

The ISTIC-Thomson Reuters Joint Lab for Scientometrics Research is located within ISTIC, and will organize regular seminars to which internationally renowned scientometricians and experts will be invited. Dr. Henry Small, Chief Scientist of the Scientific business of Thomson Reuters and ex-president of the International Society for Scientometrics and Informetrics (ISSI), is a founding member of the laboratory.

Read more about the laboratory's launch at:

scientific.thomsonreuters.com/press/2008/8495759/

China's science surge rolls on:

scientific.thomsonreuters.com/news/2008-10/8482288/

Browse our bibliometrics essays:

scientific.thomsonreuters.com/free/essays/



Raising research output and evaluation standards in Taiwan

The Higher Education Evaluation and Accreditation Council of Taiwan is striving for excellence by monitoring research output of universities.

The Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT) is the main institution authorized to conduct university evaluation in Taiwan. Its primary mission is to establish a fully integrated university evaluation system, and its annual Performance Ranking of Scientific Papers for World Universities provides objective indicator measures of both long-term and short-term research performance of institutions in Taiwan.

HEEACT's performance rankings consider journal articles and their citations from Thomson Reuters science and social sciences citation indexes. The rankings aim to serve as a benchmark for universities in Taiwan and worldwide to map their relative position among peer institutions, and to enable each research university to track its annual progress in terms of scientific paper output.

In December 2008, HEEACT signed a Memorandum of Understanding (MOU) with Thomson Reuters on collaborative efforts to support the university evaluation system and raise research output and evaluation standards in Taiwan. Under the MOU, Thomson Reuters will provide bibliometric expertise, databases and professional support to help the HEEACT develop methodologies for measuring research output that are in keeping with evaluation standards used by the international research community. The HEEACT will promote public awareness and exchanges with both local and international academia and research communities on critical issues and feedback, to continue to raise the higher education and research output standards in Taiwan.

Read more about this collaboration:

scientific.thomsonreuters.com/press/2008/8494510/

More about science in Taiwan:

scientific.thomsonreuters.com/news/2008-07/8448323/