

Patent literature trends in Medline throughout 1965-2005

Tendencias de la literatura de patentes en Medline entre 1965 y 2005

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One of the most reliable ways to track science and technology activities is the study of scientific literature (journal articles, news, reviews, comments, letters, editorials, newspaper articles, etc.): co-authorship, citations, co-citations. Examining scientific literature underpins analysis of the scientific community and its structure in a given society, as well the motivations and networks of researchers.

The methods for the measurement of patent and research activities are many; among them, Metrics has earned its place as an important tool in evaluating research activities and scientific output by counting the number and the impact of papers on scientific disciplines and by counting the number of citations, patents...

Tracing of scientific literature cited in patents goes back many years. This kind of analysis was pioneered by Francis Narin and his colleagues. Very few studies about tracing patents in the scientific publications, Glänzel W and Meyer N. emphasized in their study that even specialists in the area of patent citations appear not to have studied this type of citation link.¹

In this paper, the author is interested in attempting to study the linkage between patents and scientific publications in medical fields, indexed in Medline. To achieve this aim all publications indexed as a term of *Patents* in Medline based on the *Major Topic* of MeSH thesaurus were extracted and analysed.

All data was extracted from PubMed online. Extracting of data in PubMed was limited to Medline by selecting *Medline* from the *Subsets* menu on the *Limits* screen. The delimitation of the patent literature was made as all publications indexed as a main heading of *Patents* limited to the field of *MeSH Major Topic* (MJME) in Medline for a period of 40 years (1965-2005).

QUANTITATIVE TRENDS OF PATENT LITERATURE IN MEDLINE THROUGHOUT 1965-2005

[Figure 1](#) shows the trend of publications indexed in Medline from 1965 to 2005. As the figure indicates the number of total publications processes in Medline has doubled in 22,5 years. The rate of annual growth is 3.1%. It is clear that the number of total publications in Medline in this period shows relatively slight growth. From 1986 to 2005 the number of total publications in Medline shows exponential increase. The exponential increase of published documents indexed in Medline is not surprising for this happening was simultaneous with the rapid spread of microcomputers and the influence of core journals in Medline.

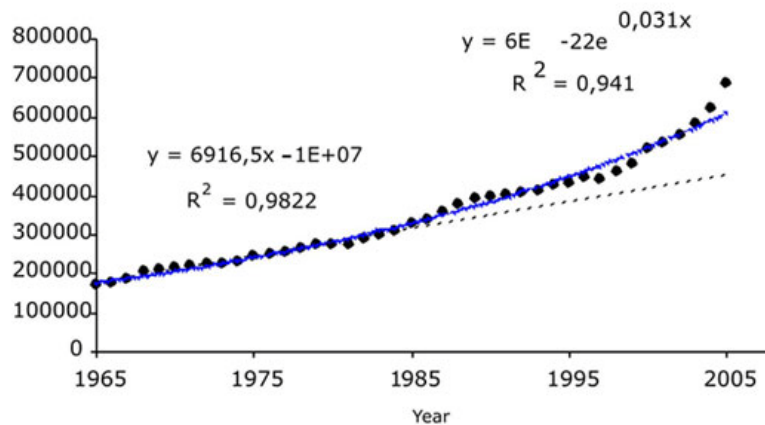


Fig. 1. Growth of total publications indexed in Medline 1965-2005.

As [figure 2](#) illustrates, that the number of publications indexed as patents in the field of MJME in Medline from 1965 to 1985 increased slightly. From 1985 on, it shows relatively sharp growth, having its peak in 2002.

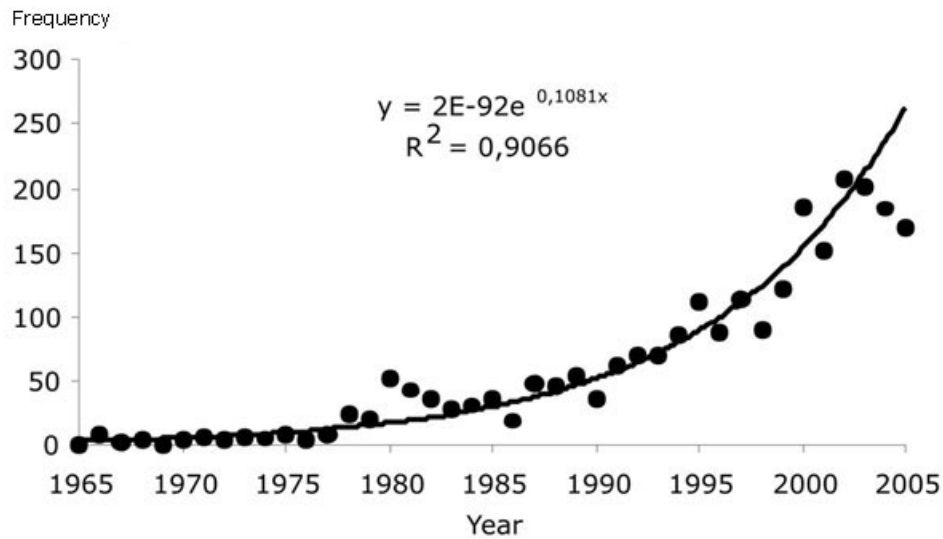


Fig. 2. Number of publications indexed as patents in Medline 1965-2005.

The $R^2 = 0,9066$ indicates that there is a high correlation ($R = 0,95$) between the number of patent literature in Medline and the period covered in this study. The patent literature throughout the period of study has doubled in 6,4 years.

A comparison of graphics 1 and 2, indicates that the growth of publications indexed as patents in the field of MJME in Medline with an annual increase of 11,4 % is 3,6 times higher than the annual growth of total documents in Medline (3,1 %). This means that patents in medicine have an increasing influence.

[Table 1.](#) shows the distribution of languages for publications indexed as patents in Medline in the period 1965-2005. It is clear that the use of English was about 2,000 times more frequent than the rest of the languages. Russian was the second more published language, about 100 times more than the rest. The most frequented languages of patent literature in Medline were English followed by Russian, French, and German.

Table 1. More frequent languages for patent literature in Medline 1965-2005

Language	Frequency	%
English	2 253	90,16
Russian	103	4,12
French	34	1,36
German	30	1,20

Total: 2 499.

[Figure 3](#) shows that the number of publications in English from Germany had a steady increased in the period of study. The proportion of publications in this language increased from 6% of all publications from Germany in 1965 to 81% in

2005; that is, an increase of more than 29 times. The number of publications in German shows steady decrease in the same period; the use of this language dropped from 93 % of total publications from Germany in 1965 to 19% in 2005.

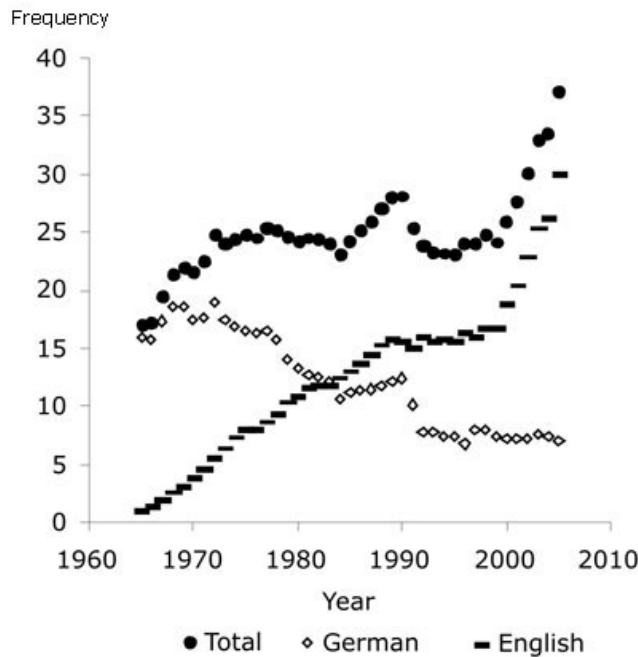


Fig. 3. Number of publications from Germany indexed as patents in Medline 1965-2005.

Figure 4 shows the distribution of MJME for publications indexed as patents in Medline through 1965-2005. The Figure is restricted to the MJME with frequency above 70 times.

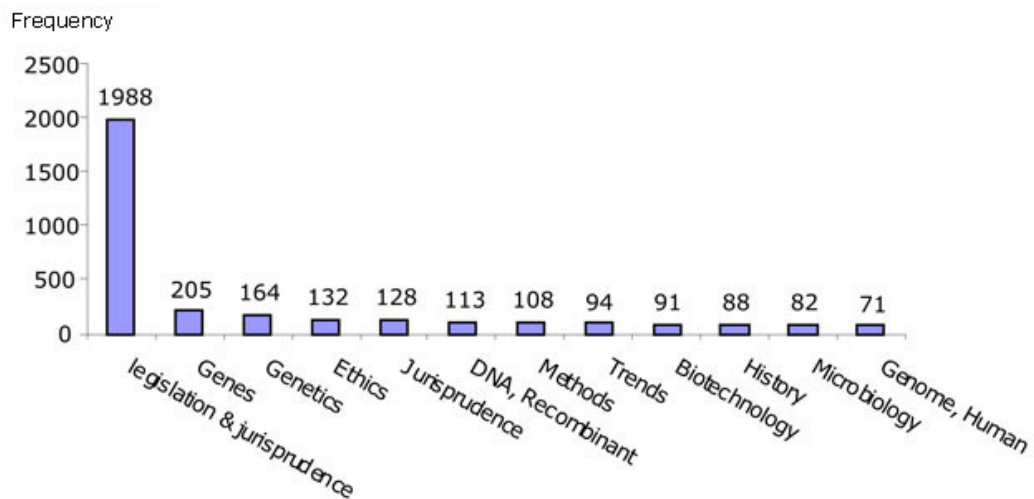


Fig. 4. Distribution of MJME descriptors > 70 for publications indexed as patents in Medline 1965 -2005.

From a total of 6 869 Major MeSH Descriptors, the most frequently used show such a distribution. The graphic indicates that after legislation-and-jurisprudence the most frequented major main heading in Medline were *Genes* with 2.98% and *Genetics* with 2,39 % respectively.

[Figure 5](#) shows the frequency of most prolific countries, with regards to the publications, indexed as patents in the field of MJME in Medline in the period studied. The graph is restricted to the countries with a frequency equal or higher to ten times. The USA with 55% was the most prolific country, followed by England, 27 %; the USSR, 4 %; Canada, 2 % and the Netherlands and Germany, 1 % each. The rest of all publications (4 %) were from Italy, Australia, Switzerland, France, Spain, Japan, India, Sweden, Russia, Poland, Denmark, Ireland, New Zealand, Ukraine, Brazil, Czechoslovakia, Norway, Scotland, South Africa, Argentina, Bulgaria, Chile, China, Colombia, Czech republic, Finland, Hungary, Kyrgyzstan, Mexico, Russia (Federation), Slovakia, and Sri Lanka.

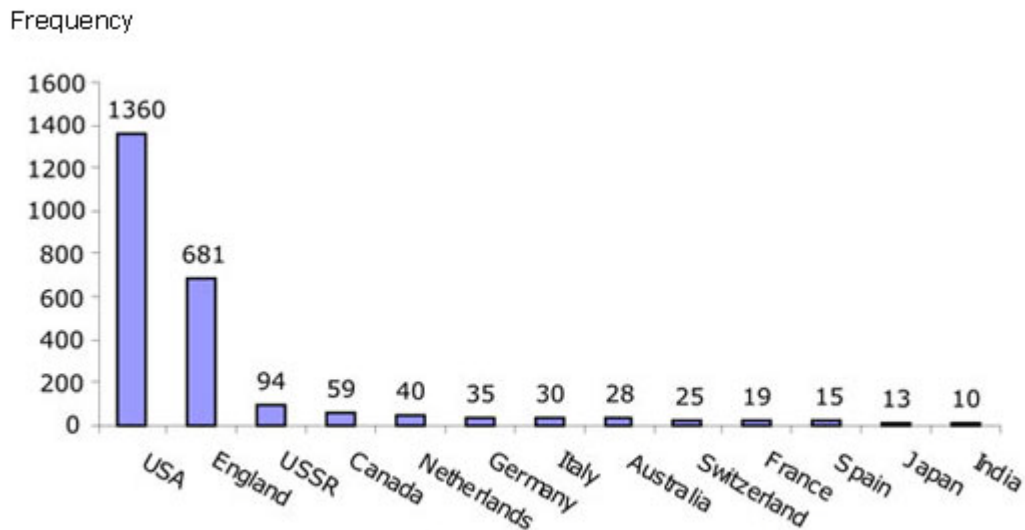


Fig. 5. Distribution of publication countries for documents indexed as patents in Medline 1965-2005.

[Figure 6](#) shows the frequency of most prolific journals regarding to the publications indexed as patents in the field of MJME in Medline in the period studied. The graph is restricted to the journals with a frequency of higher than forty times.

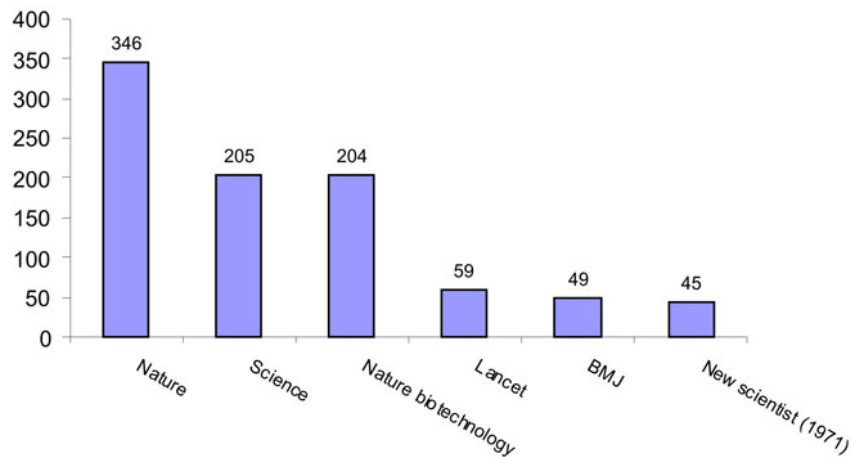


Fig. 6. Distribution of journals regarding to the publications, indexed as patents in Medline 1965-2005.

From a total of 671 periodical with a total frequency of 2 482 titles, only six journals showed a frequency higher than forty. *Nature* with publishing 14 % of all documents, indexed as patents in Medline was the most prolific periodical, followed by *Science* and *Nature-biotechnology* with 8 %, *Lancet*, *BMJ (Clinical research ed.)* and *New Scientist* with 2 %, and *Food and Drug Law* with 1 % respectively. [Table 2](#) maps the distribution of more frequent publication types, indexed as patents in Medline through 1965-2005.

Table 2. More frequent publication type regarding to the documents indexed as patents in Medline 1965-2005

No.	Publication type	Frequency	%
1	Journal article	1 460	46
2	News	701	22
3	Letter	170	5
4	Comment	147	5
5	Review	141	4
6	Editorial	112	3
7	Newspaper article	76	2
8	Research support	74	2
9	Historical article	71	2
10	English abstract	55	2

Total: 3 207.

From a total of 31 publications kinds with a total frequencies of 3 207 titles; out of which 46 % of all publications were in the form of Journal articles; 22 % in the form of News; 5 %, Letters; 5 %, Comments; 4 %, Reviews; 3 %, Editorial and 2 %, Newspaper article, Research support, historical article and English abstracts. The rest were lower than 2 %.

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Terms suggested for the indexation

According to DeCS¹

MEDLINE; PATENTS; BIBLIOMETRICS.

MEDLINE; PATENTES; BIBLIOMETRÍA.

According to DeCI²

MEDLINE; PATENTS; INFORMETRICS; SCIENTIFIC ARTICLES/analysis;

BIBLIOGRAPHY OF MEDICINE; BIBLIOGRAPHIC DATABASE.

MEDLINE; PATENTES; INFORMETRÍA; ARTÍCULOS CIENTÍFICOS/análisis;

BIBLIOGRAFÍA DE MEDICINA; BASES DE DATOS BIBLIOGRÁFICAS.

¹BIREME. Descriptores en Ciencias de la Salud (DeCS). Sao Paulo: BIREME, 2004.

Disponible en: <http://decs.bvs.br/E/homepagee.htm>

²Díaz del Campo S. Propuesta de términos para la indización en Ciencias de la Información. Descriptores en Ciencias de la Información (DeCI). Disponible en:

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