



# **Journals and citations:**

## **How citation analysis can help your publishing strategy?**

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# Agenda

- Citation Indexes for Science
  - Objectives & Utilities
- Journal selection process
  - Capture the holistic picture of the world of science
  - 4 basic standards
- Citation analysis
  - How it can help your publishing strategy?

# Citation Indexes for Science

- Traditional ways to search literature
  - Keyword search
  - Category by discipline
- Utility of “cited references”
  - Descriptors assigned by authors
  - New approach to subject control of scientific literature
- Citation behaviors of scientists
  - Small number of literature gain the majority of citations
  - Indicators to its “impact”

## Citation Indexes for Science

A New Dimension in Documentation  
through Association of Ideas

Eugene Garfield, Ph. D.

“The uncritical citation of disputed data by a writer, whether it be deliberate or not, is a serious matter. Of course, knowingly propagandizing unsubstantiated claims is particularly abhorrent, but just as many naive students may be swayed by unfounded assertions presented by a writer who is unaware of the criticisms. Buried in scholarly journals, critical notes are increasingly likely to be overlooked with the passage of time, while the studies to which they pertain, having been reported more widely, are apt to be rediscovered.” (1)

In this paper I propose a bibliographic system for science literature that can eliminate the uncritical citation of fraudulent, incomplete, or obsolete data by making it possible for the conscientious scholar to be aware of criticisms of earlier papers. It is too much to expect a research worker to spend an inordinate amount of time searching for the bibliographic descendants of antecedent papers. It would not be excessive to demand that the thorough scholar check all papers that have cited or criticized such papers, if they could be located quickly. The citation index makes this check practicable. Even if there were no other use for a citation index than that of minimizing the citation of poor data, the index would be well worth the effort required to compile it.

This paper considers the possible utility of a citation index that offers a new

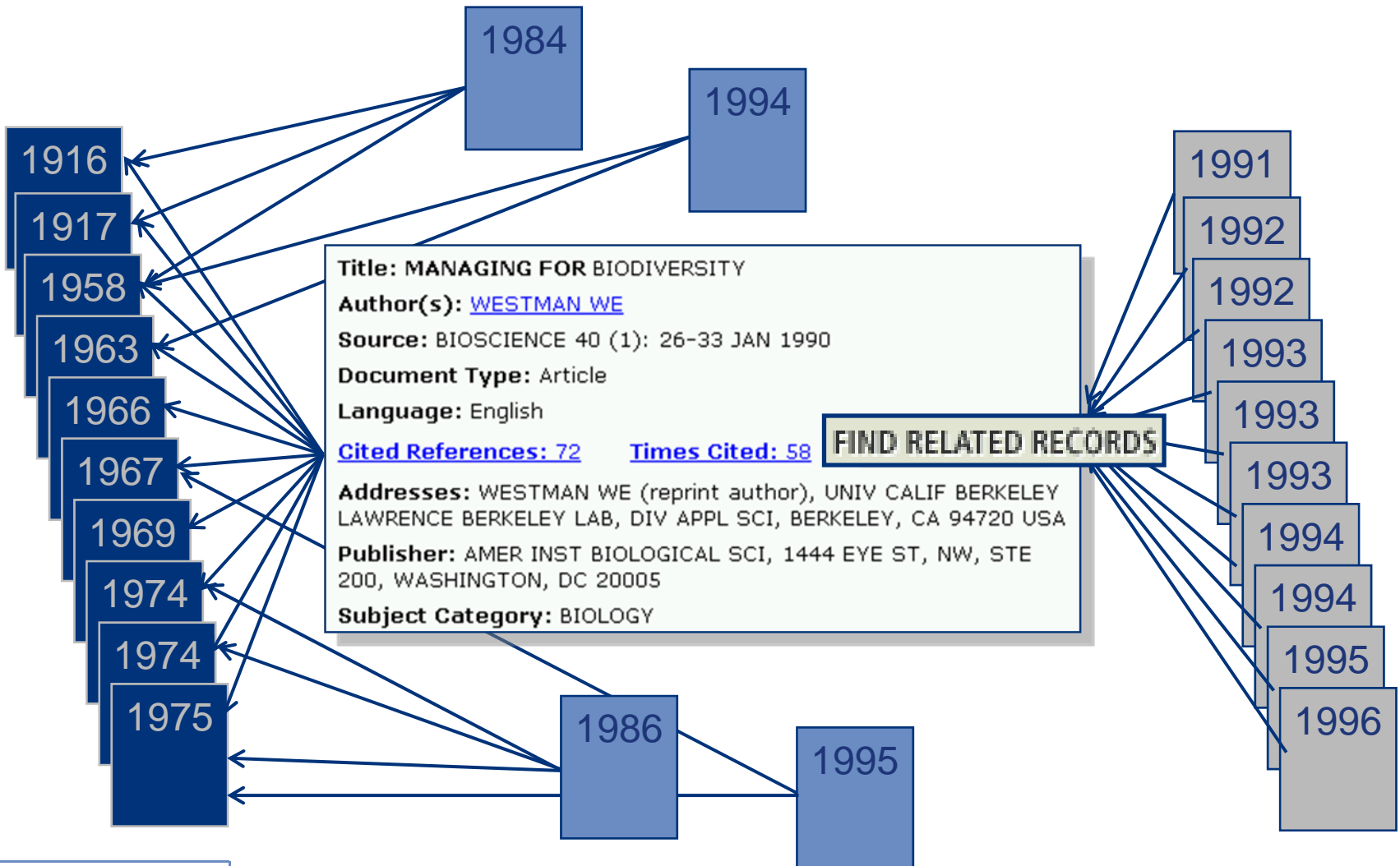
approach to subject control of the literature of science. By virtue of its different construction, it tends to bring together material that would never be collated by the usual subject indexing. It is best described as an association-of-ideas index, and it gives the reader as much leeway as he requires. Suggestiveness through association-of-ideas is offered by conventional subject indexes but only within the limits of a particular subject heading.

If one considers the book as the macro unit of thought and the periodical article the micro unit of thought, then the citation index in some respects deals in the submicro or molecular unit of thought. It is here that most indexes are inadequate, because the scientist is quite often concerned with a particular idea rather than with a complete concept. “Thought” indexes can be extremely useful if they are properly conceived and developed.

In the literature-searching process, indexes play only a small, although significant, part. Those who seek comprehensive indexes to the literature of science fail to point out that such indexes, although they may be desirable, will provide only a better starting point than the one provided in the selective indexes at present available. One of the basic difficulties is to build subject indexes that can anticipate the infinite number of possible approaches the scientist may require. Proponents of classified indexes may suggest that classification is the solution to this problem, but this is by no means the

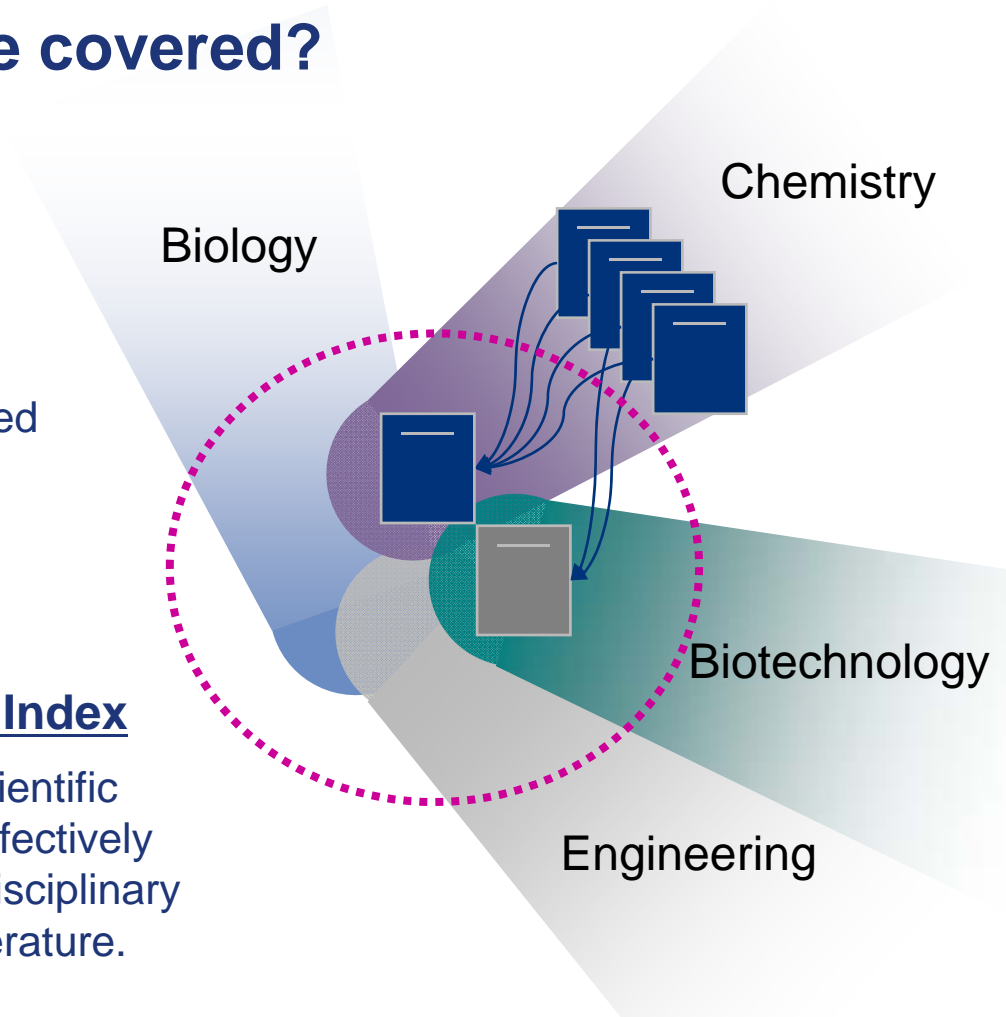
Garfield, E. "Citation Indexes for Science - New Dimension in Documentation through Association of Ideas." *Science* 122, no. 3159 (1955): 108-111.

# Utility of Citation Indexing



# How many journals to be covered?

- **Garfield's Law of Concentration**
  - There exists a large overlap between disciplines
  - A journal only tangentially related to a particular discipline often comprises the core of another discipline.
- **Source selection for Citation Index**
  - By focusing on the “core” of scientific literature, Citation Index can effectively and efficiently provide a multidisciplinary coverage of most important literature.



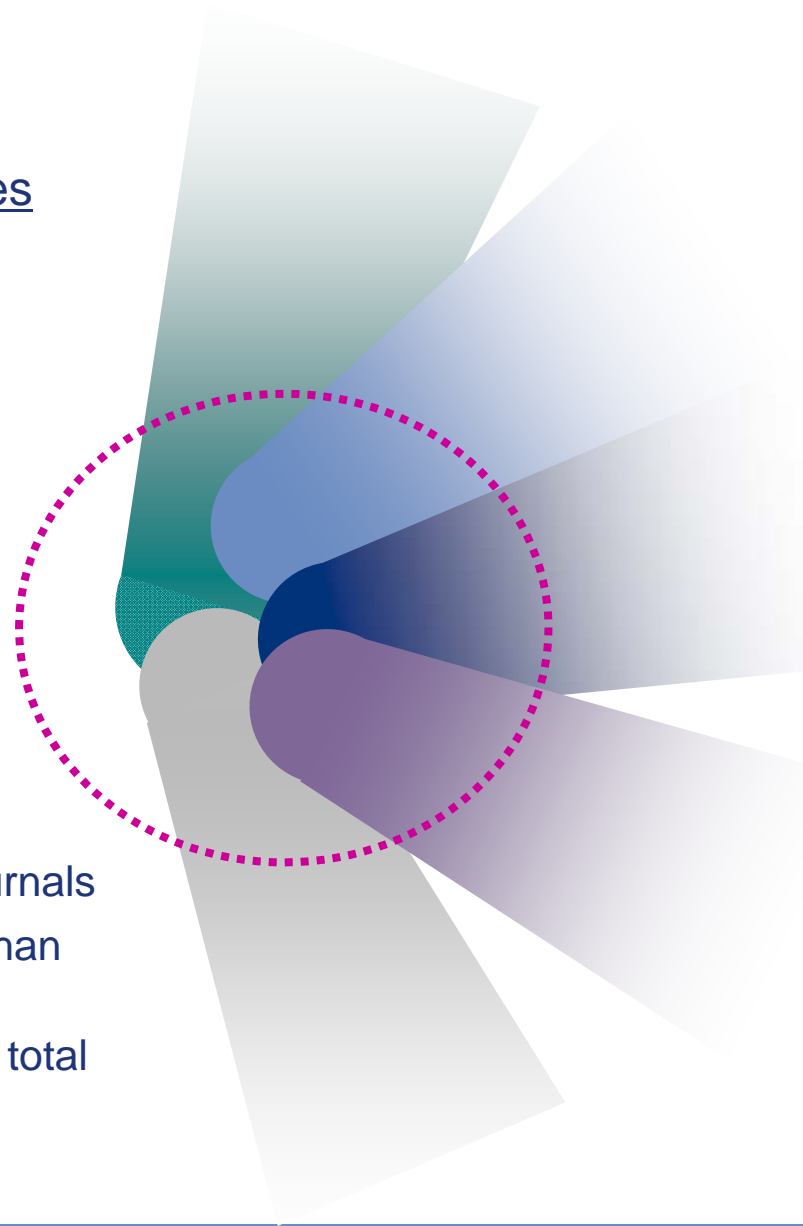
Garfield, E. "Mystery of Transposed Journal Lists - Wherein Bradfords Law of Scattering Is Generalized According to Garfield's Law of Concentration." *Current Contents/Life Sciences* 14, no. 31 (1971): 5-&.

# Web of Science®

- 9,300 high quality journals from all disciplines
  - Science Citation Index Expanded
  - Social Sciences Citation Index
  - Arts & Humanities Citation Index
- Weekly updated

## Journal Citation Reports®

- Journal-level compilation of WoS records
- Annually updated
- A study in JCR 2003 edition shows:
  - More than half of citations pointing to 300 journals
  - These 300 journal titles alone publish more than 1/3 of total articles
  - Approximately 3,000 journals publish 80% of total articles; attract 95% of all citations



# Journal selection process at Thomson Scientific

- Continuous selection process by dedicated staff
  - Consistently managed over 40 years
  - Review more than 2,000 journals per year
  - Only 10% accepted
- 4 basic standards
  1. Basic Journal Publishing Standards
  2. Editorial Content
  3. International Diversity
  4. Citation Analysis



<http://scientific.thomson.com/free/essays/selectionofmaterial/journalselection/>

# 1. Basic journal publishing standards

- Timeliness
  - A journal must be published according to its stated publication schedule
  - Thomson Scientific must receive 3 on-time issues in sequence.
    - E-Journals: steady stream of articles published regularly over 9 month period.
  
- Editorial Conventions
  - Informative journal titles
  - Descriptive article titles
  - Full address Information for every author
  - Complete bibliographic Information for all cited references



# 1. Basic journal publishing standards (Cont.)

- English Language Bibliographic Information
  - Article Titles
  - Author Names and Addresses
  - Cited References
  - Abstracts and Keywords
- Full text English is becoming the standard in the international publishing community – especially in Natural Sciences
- Peer Review
  - Assure the quality of contents
  - Guarantees the correctness & appropriateness of cited references



## 2. Editorial contents

- In light of the needs of database users:
  - In which products?
  - In which category?
  - What other journals already covered in that category?
  - What advantage the journal provides over other titles?
  - Does the new journal help to better meet the needs of our database?



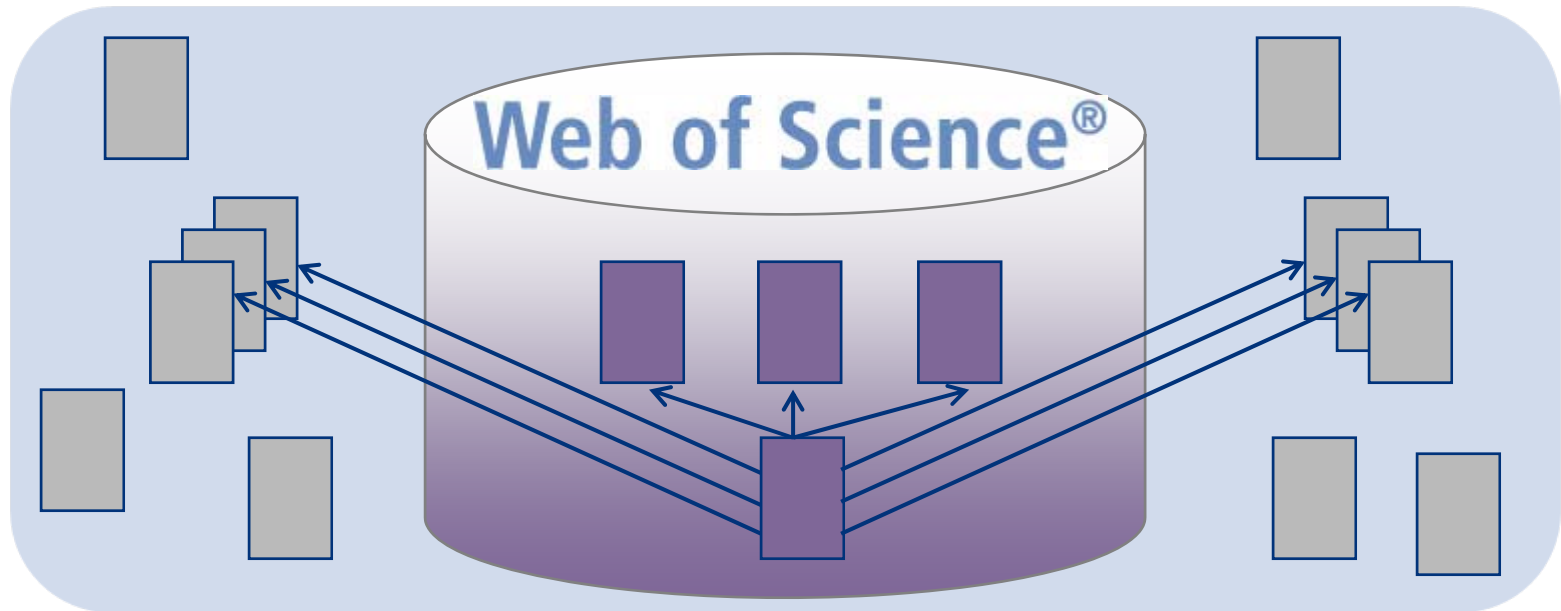
### 3. International diversity

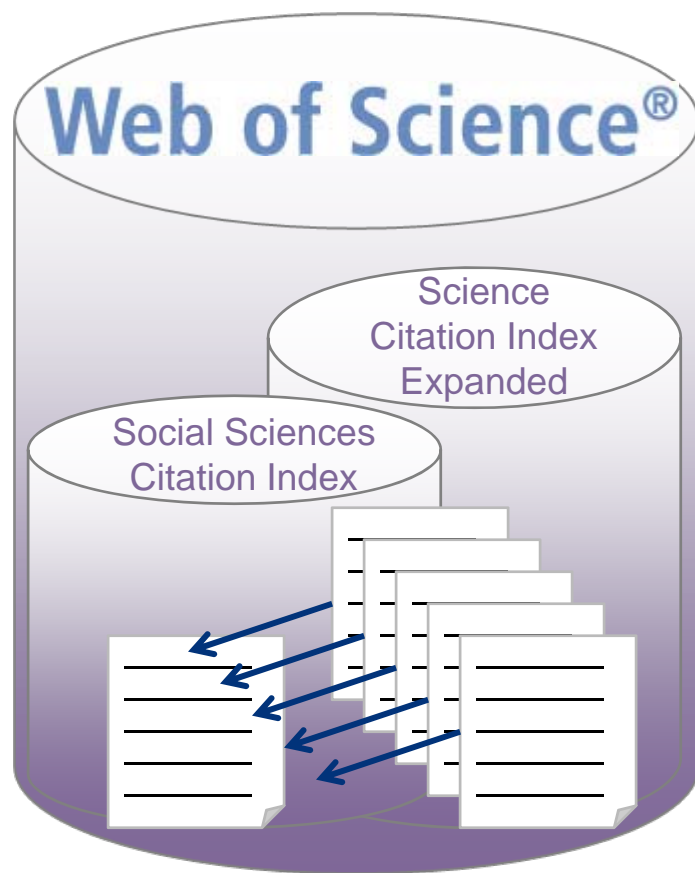
- To capture the global context of scientific research:
  - Core journals from each discipline
    - What are the most frequently referenced journals in a particular discipline, or research topic?
    - Does the journal reflect the needs of scientific community?
  - International diversity of:
    - Authors
    - Editorial board members
    - Topics covered
- Regional Journals
  - Best journals from each geographic area



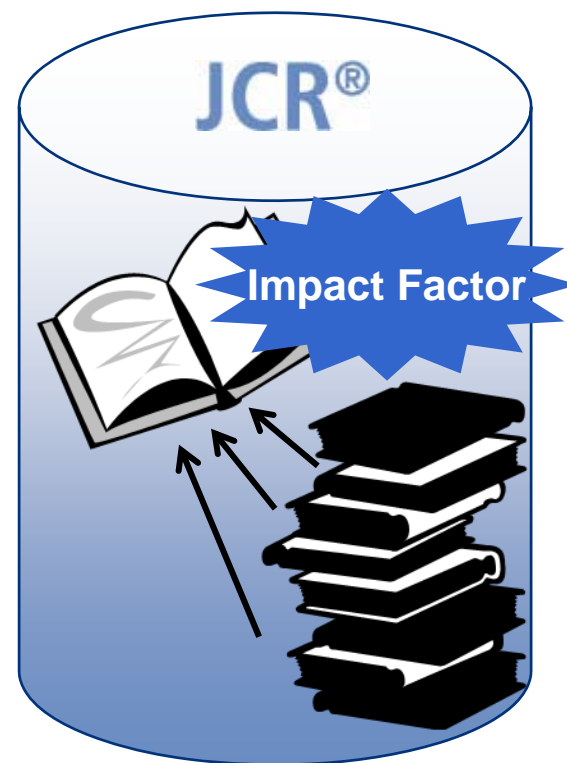
## 4. Citation analysis

- Being selective yet comprehensive
  - Limiting in coverage policy
  - Yet comprehensive in indexing policy – “cover to cover”
  - Citations to non-covered literature can be analyzed





**Article-level data**



**Journal-level data**

# Citation analysis – how it can help publishing strategy?

- How the journal has been cited
  - Approximate journal impact
  - Compare against similar journals in the same discipline
  - Quality vs. quantity
    - Cited by which other journals?
    - Cited by which countries?
    - Cited by which authors?
- Authors and editorial board members?
  - Where have they been publishing?
  - What is their citation history?



## Journal Citation Reports®

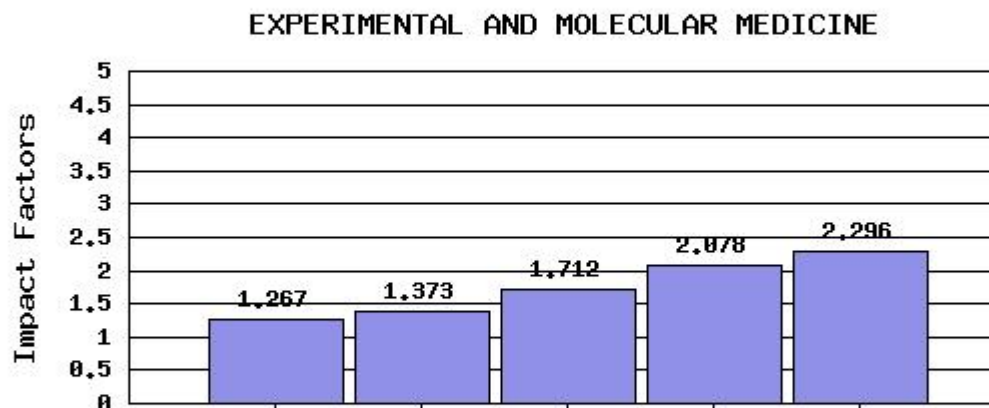


2006 JCR Science Edition



### Impact Factor Trend Graph: EXPERIMENTAL AND MOLECULAR MEDICINE

Click on the "Return to Journal" button to view the full journal information.



The journal impact factor is a measure of the frequency with which the “average article” in a journal has been cited in a particular year. The impact factor will help you **evaluate a journal’s relative importance, especially when you compare it to others in the same field.**

# Calculating Journal Impact Factor

Example: 2006 IF for *EXPERIMENTAL AND MOLECULAR MEDICINE*

## 2006 Impact Factor

Cites in 2006 to articles published in: 2005 = 138    Number of articles published in: 2005 = 76

2004 = 211

2004 = 76

Sum: 349

Sum: 152

Calculation:  $\frac{\text{Cites to recent articles}}{\text{Number of recent articles}} = \frac{349}{152} = 2.296$

2004

2005

2006

76 papers published in 2004

211 times cited in 2006

76 papers published in 2005

138 times cited in 2006

211+138

349

76+76

152

$\div 2.296$

## Journal Citation Reports®



2006 JCR Science Edition

## Journal: EXPERIMENTAL AND MOLECULAR MEDICINE

Mark	Journal Title	ISSN	Total Cites	Impact Factor	Immediacy Index	Articles	Cited Half-life	Citing Half-life
	<a href="#">EXP MOL MED</a>	1226-3613	965	<a href="#">2.296</a>	<a href="#">0.265</a>	83	<a href="#">3.6</a>	<a href="#">6.7</a>
<a href="#">Cited Journal</a> <a href="#">Citing Journal</a> <a href="#">Source Data</a>								

CITED JOURNAL DATA

CITING JOURNAL DATA

IMPACT FACTOR TREND

RELATED JOURNALS

## Journal Information ⓘ

**Full Journal Title:** EXPERIMENTAL AND MOLECULAR MEDICINE**ISO Abbrev. Title:** Exp. Mol. Med.**JCR Abbrev. Title:** EXP MOL MED**ISSN:** 1226-3613**Issues/Year:** 4**Language:** ENGLISH**Journal Country/Territory:** SOUTH KOREA**Publisher:** KOREAN SOC MED BIOCHEMISTRY MOLECULAR BIOLOGY**Publisher Address:** #812 KOFST, 635-4 YOKSAM-DONG KANGNAM-GU, SEOUL 135-703, SOUTH KOREA**Subject Categories:** BIOCHEMISTRY & MOLECULAR BIOLOGY

SCOPE NOTE

VIEW JOURNAL SUMMARY LIST

VIEW CATEGORY DATA

MEDICINE, RESEARCH &amp; EXPERIMENTAL

SCOPE NOTE

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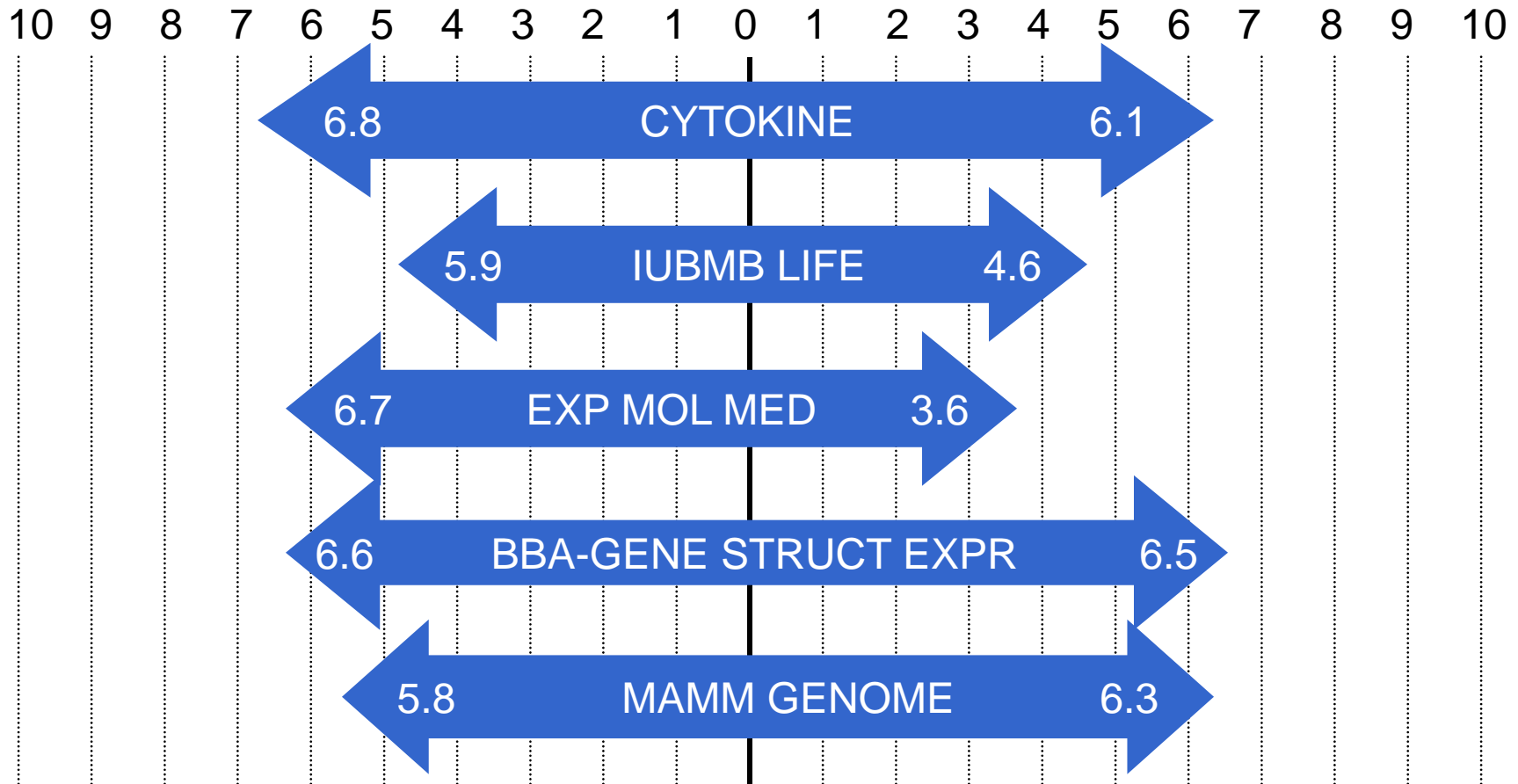
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Holdings ▼ GO

# Citing HL & Cited HL (Biochemistry & Molecular Biol)



## Citing Half-Life:

how old articles the journal is citing

## Cited Half-Life:

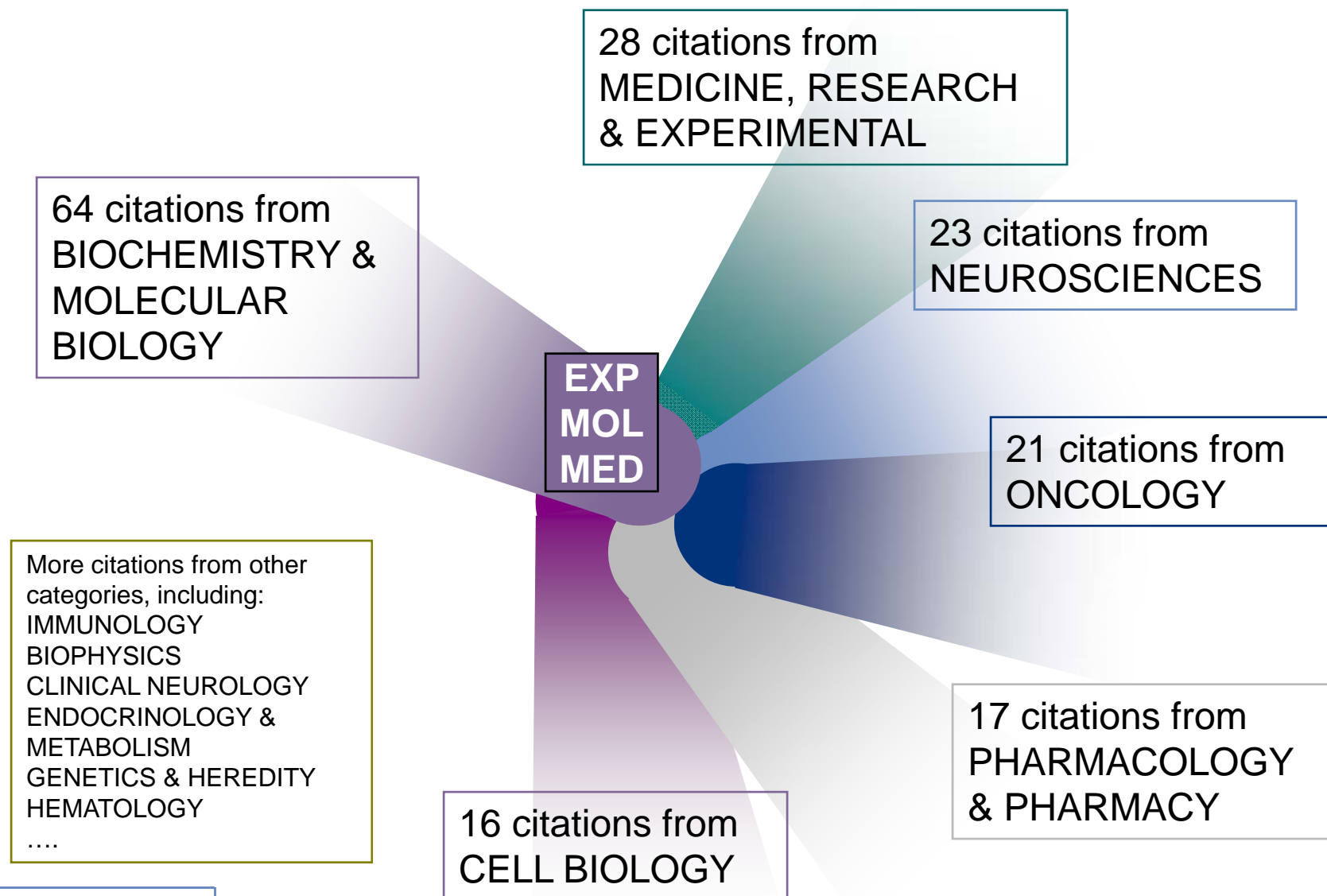
how long the journal is being cited

Impact	Cited Journal	Cited Year											
		All Yrs	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	Rest
	All Journals	2833	37	198	240	245	257	243	263	228	203	146	773
	ALL OTHERS (344)	344	7	30	33	48	29	30	31	21	13	10	92
5.808	<a href="#">J BIOL CHEM</a>	258	0	9	21	26	26	15	30	18	22	14	77
9.643	<a href="#">P NATL ACAD SCI USA</a>	103	1	1	1								
2.296	<a href="#">EXP MOL MED</a>	89	10	26	34								
6.293	<a href="#">J IMMUNOL</a>	89	2	2	7								
26.681	<a href="#">NATURE</a>	79	0	3	1	5	4	3	8	8	2	10	35
30.028	<a href="#">SCIENCE</a>	61	0	2	2	6	6	2	3	4	9	3	24
29.194	<a href="#">CELL</a>	54	0	0	1	0	4	2	3	1	4	6	33
2.855	<a href="#">BIOCHEM BIOPH RES CO</a>	53	0	9	5	9	6	6	3	1	0	2	12
6.773	<a href="#">MOL CELL BIOL</a>	42	0	3	1	3	4	6	3	4	3	2	13
7.656	<a href="#">CANCER RES</a>	39	0	4	1	1	4	2	4	4	4	3	12

**Cited Journal:**  
which journals are being cited in the journal

Impact	Citing Journal	Cited Year											
		All Yrs	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	Rest
	All Journals	965	22	138	211	177	163	104	45	78	23	1	3
	ALL OTHERS (286)	286	6	43	58	57	45	32	14	15	15	0	1
2.296	<a href="#">EXP MOL MED</a>	89	10	26	34	7	6	3	1	2	0	0	0
2.855	<a href="#">BIOCHEM BIOPH RES CO</a>	29	0	8	5	4	5	4	0	3	0	0	0
7.656	<a href="#">CANCER RES</a>	21	0	3	6	1	4	4	0	3	0	0	0
5.808	<a href="#">J BIOL CHEM</a>	18	0	1	1	8	2	1	2	3	0	0	0
5.735	<a href="#">PROTEOMICS</a>	11	0	2	3	0	4	0	1	1	0	0	0
1.479	<a href="#">ANTICANCER RES</a>	10											0
3.409	<a href="#">J CELL BIOCHEM</a>	9											0
0.962	<a href="#">TRANSPL P</a>	9											0
4.491	<a href="#">ANTIOXID REDOX SIGN</a>	8	0	0	1	2	3	0	0	2	0	0	0
2.389	<a href="#">LIFE SCI</a>	8	0	1	1	0	2	1	0	2	1	0	0

**Citing Journal:**  
which journals are citing the journal



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**Cited Reference Search.** Find the articles that cite a person's work

**Step 2 of 2:** Select cited references and click "Finish Search."

Select the references for which you wish to see the citing articles, then click the "Finish Search" button.

Hint: Look for [cited reference variants](#) (sometimes different pages of the same article are cited or papers are cited incorrectly).

## CITED REFERENCE INDEX

References: **1 - 9 of 9**
 << Page  of 1  >>


Select	Cited Author	Cited Work [SHOW EXPANDED TITLES]	Year	Volume	Page	Article ID	Citing Articles **	View Record
<input type="checkbox"/>	CHAE MJ	KOREAN J HEPATOL	2004	10	99		1	
<input type="checkbox"/>	CHANG HY	KOREAN J HEPATOL	2005	11	116		4	
<input type="checkbox"/>	CHO CM	KOREAN J HEPATOL	2005	11	59		1	
<input type="checkbox"/>	HUH UY	KOREAN J HEPATOL	2005	11	275		1	
<input type="checkbox"/>	KANG HS	KOREAN J HEPATOL	2004	10	191		1	
<input type="checkbox"/>	KIM J	KOREAN J HEPATOL	2004	10	125		1	
<input type="checkbox"/>	KONG YH	KOREAN J HEPATOL	2004	10	279		3	
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<input type="checkbox"/>	PARK JW	KOREAN J HEPATOL	2004	10	88		9	



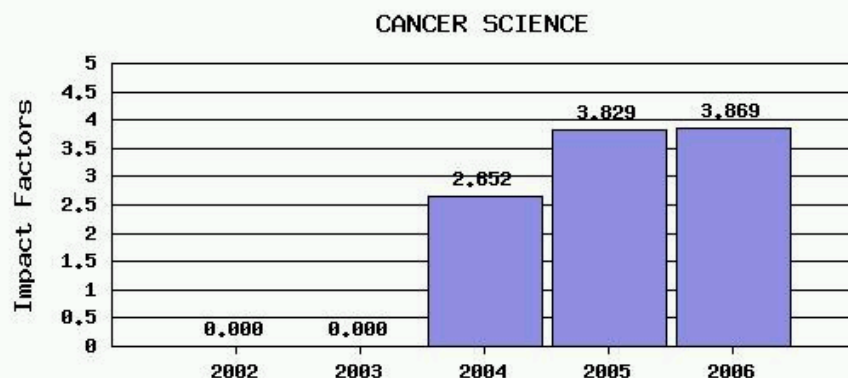
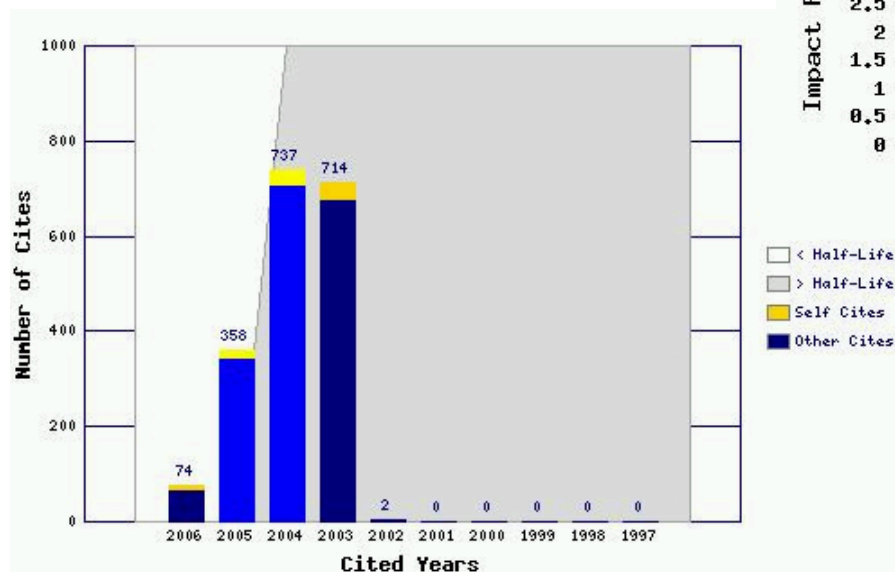
# What is Impact Factor?

- Evaluative indicator of a journal title
- Assigned by Thomson Scientific to the journals captured in **Web of Science®** longer than 3 years
- Updated annually and published in **Journal Citation Reports®**
- Average citation counts of papers published in a particular year
- Not designed to measure individual's performance
- Special attention & adjustment needed
  - Discipline
  - Publication type
  - Statistical manipulation



## More in citation analysis

- Stable, healthy grow?
- Excessive or inappropriate citations?



***Thank you.***

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