Scietometrics

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Dec 2016

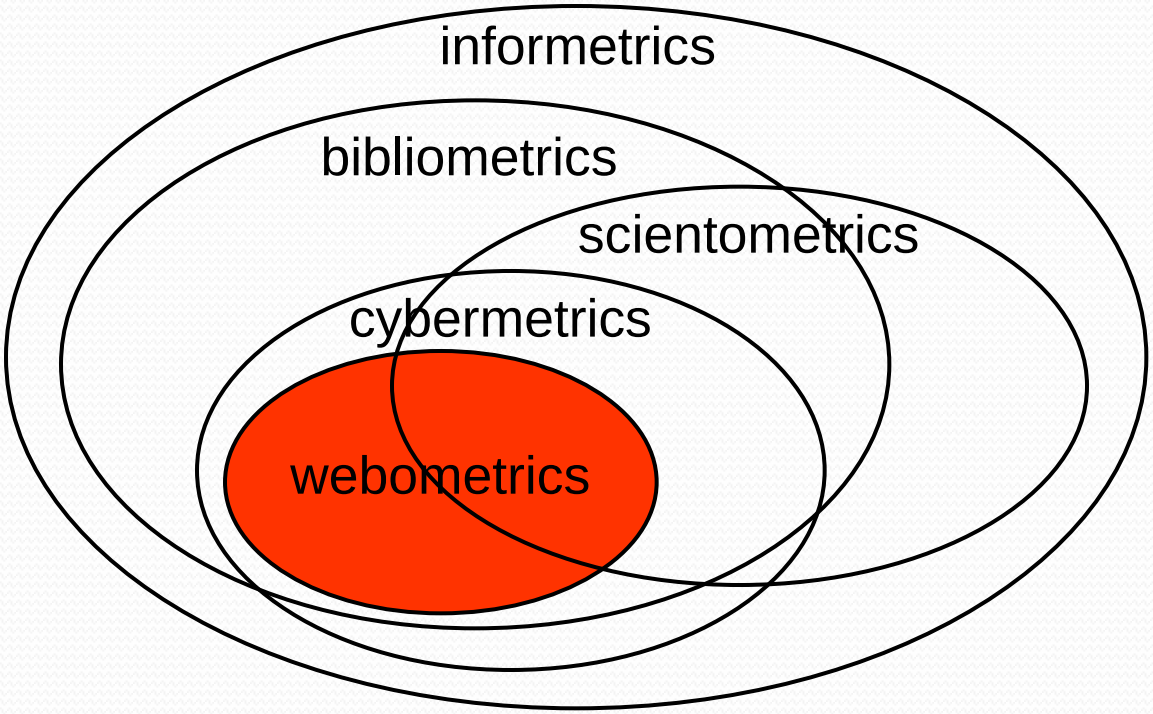
Today's Agenda

- Bibliometrics & Scientometrics
- Impact Factor
- SJR
- SNIP
- Altmetrics
- H-index and variants
- Scopus Journal Analyzer and other metrics
- SciVal and Field-Weighted Citation Impact

تعریف علم‌سنجی

- آن دسته از روش‌های کمّی را که به تحلیل علم بعنوان یک فرآیند اطلاعاتی تأکید دارند "علم سنجی" می‌نامند.
- "علم سنجی" به تعبیری ساده تر عبارت است از دانش اندازه‌گیر علم.

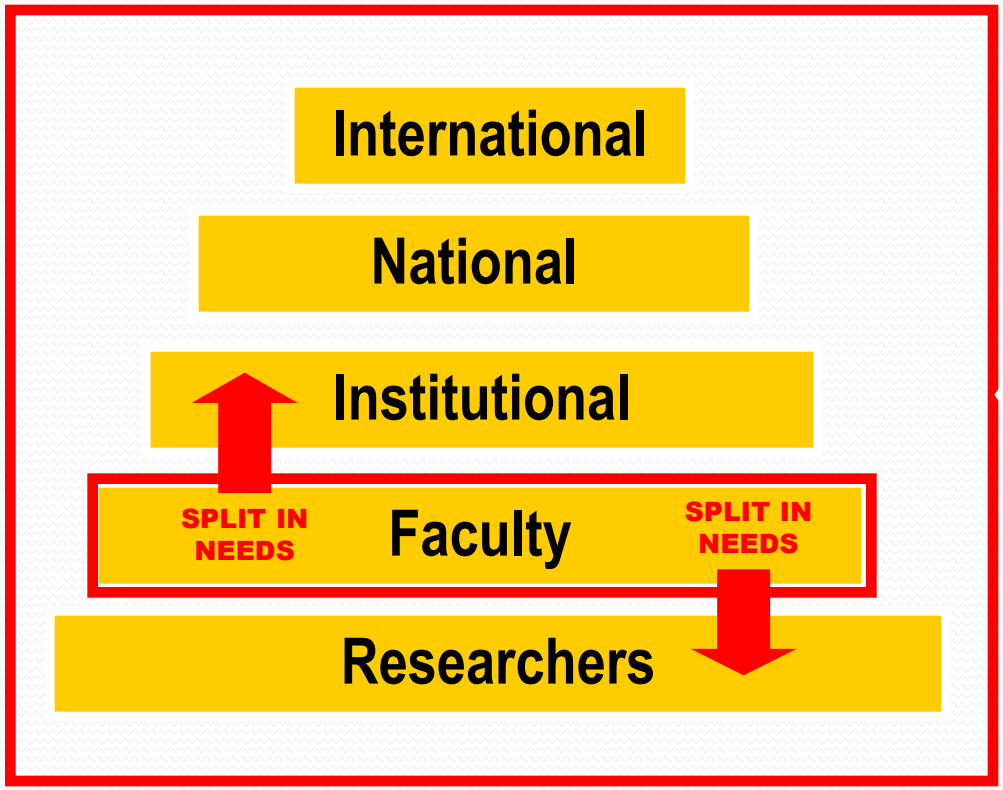
Scientometrics



Bibliometric data used for..

- Scientific output evaluation
  - Impact
  - Citations
- History of science
- Publication strategies
- Science policy; resource allocation
- Collection management
- Sociology of science
- Information organization
- Information management & utilization

Why do we evaluate scientific output



- Grant Allocations
- Policy Decisions
- Benchmarking
- Promotion
- Collection management
- Funding allocations
- Research

3 Kinds of Citation Data Indexes

Articles

- Citation Impact

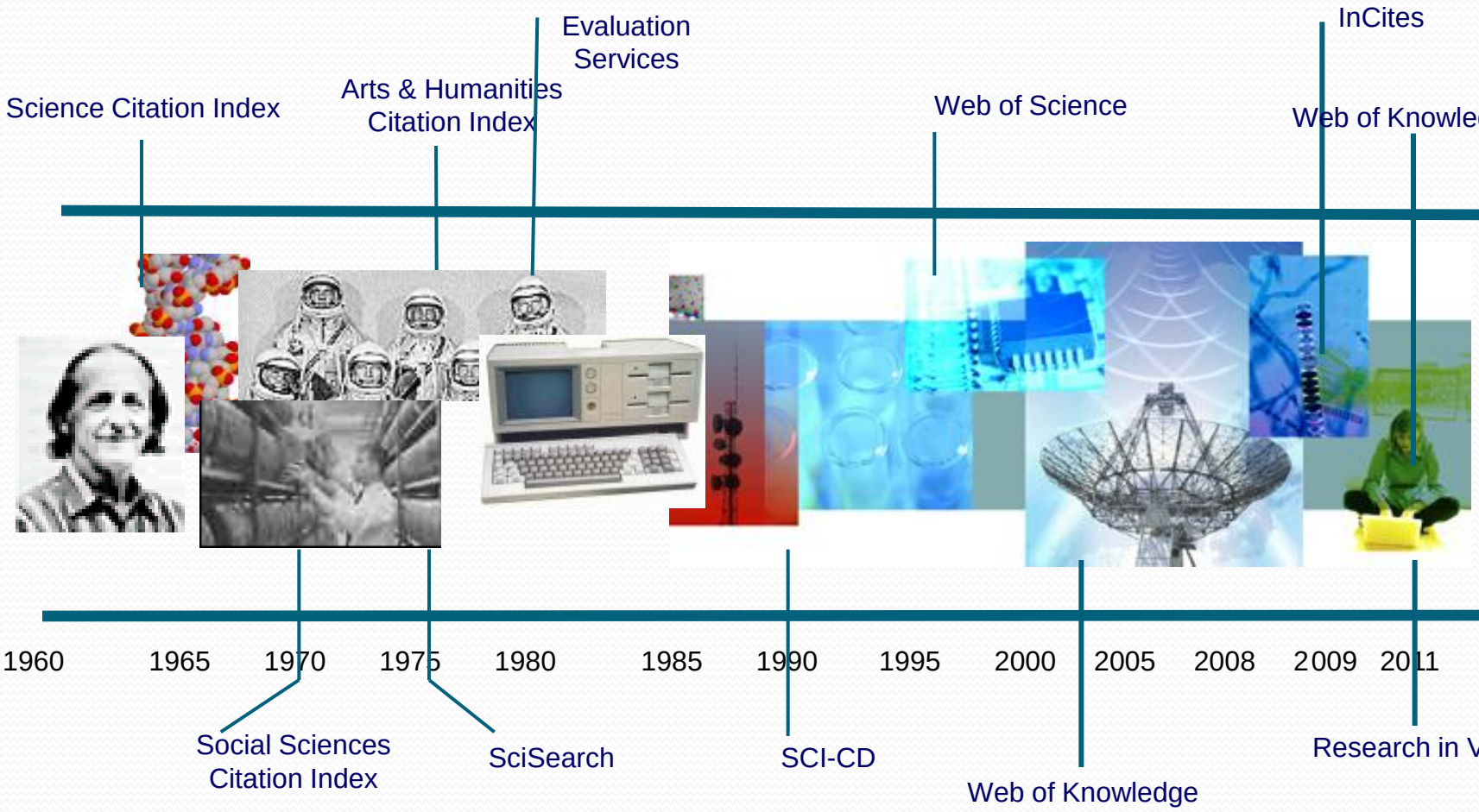
Authors

- Number of papers (Quantity)
- Number of Citations (Quality)
- Average number of citations/article
- *h*-index & *g*-index (Quantity & Quality Both)

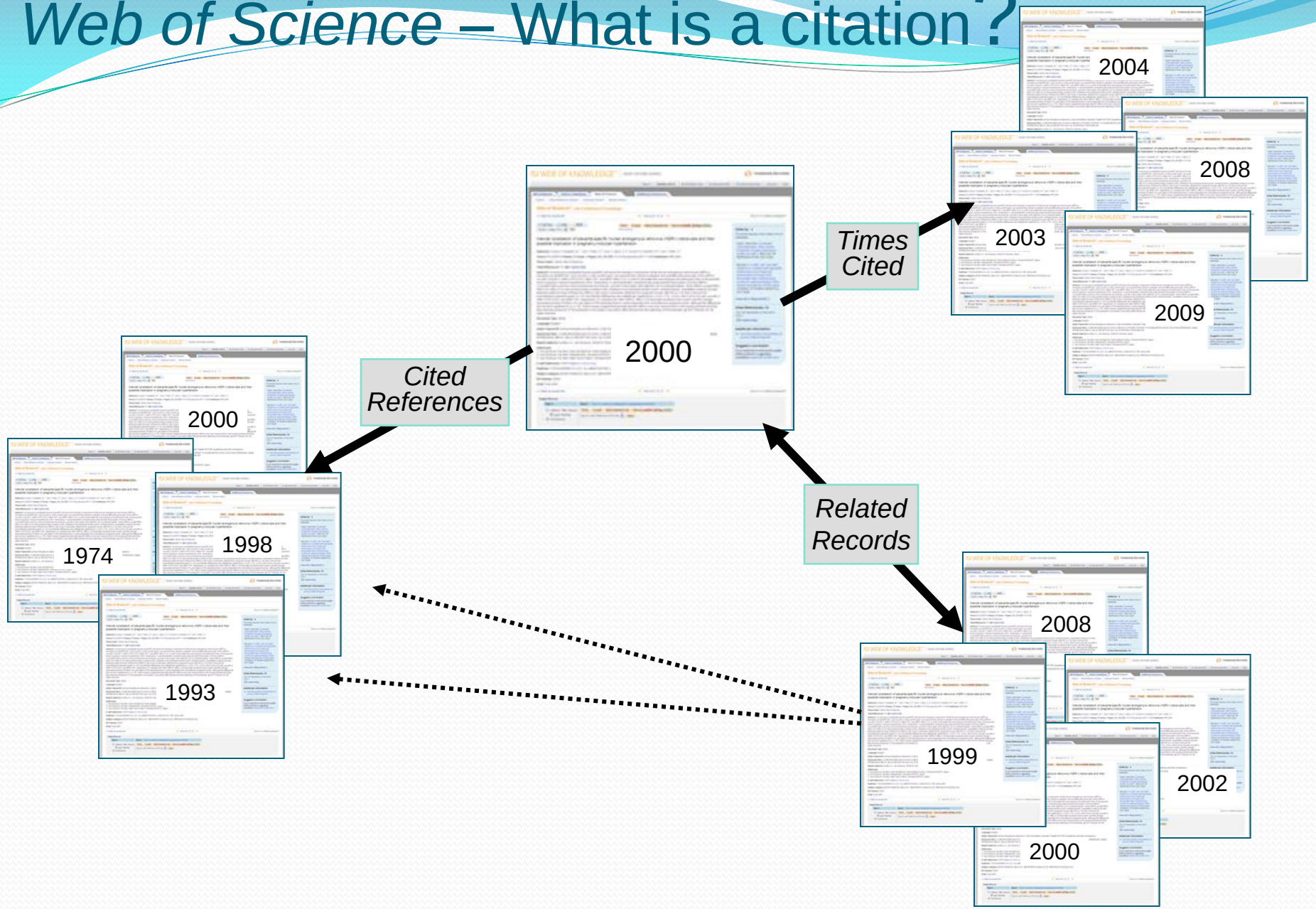
Journals

- Journal Impact Factor
- *h*-index

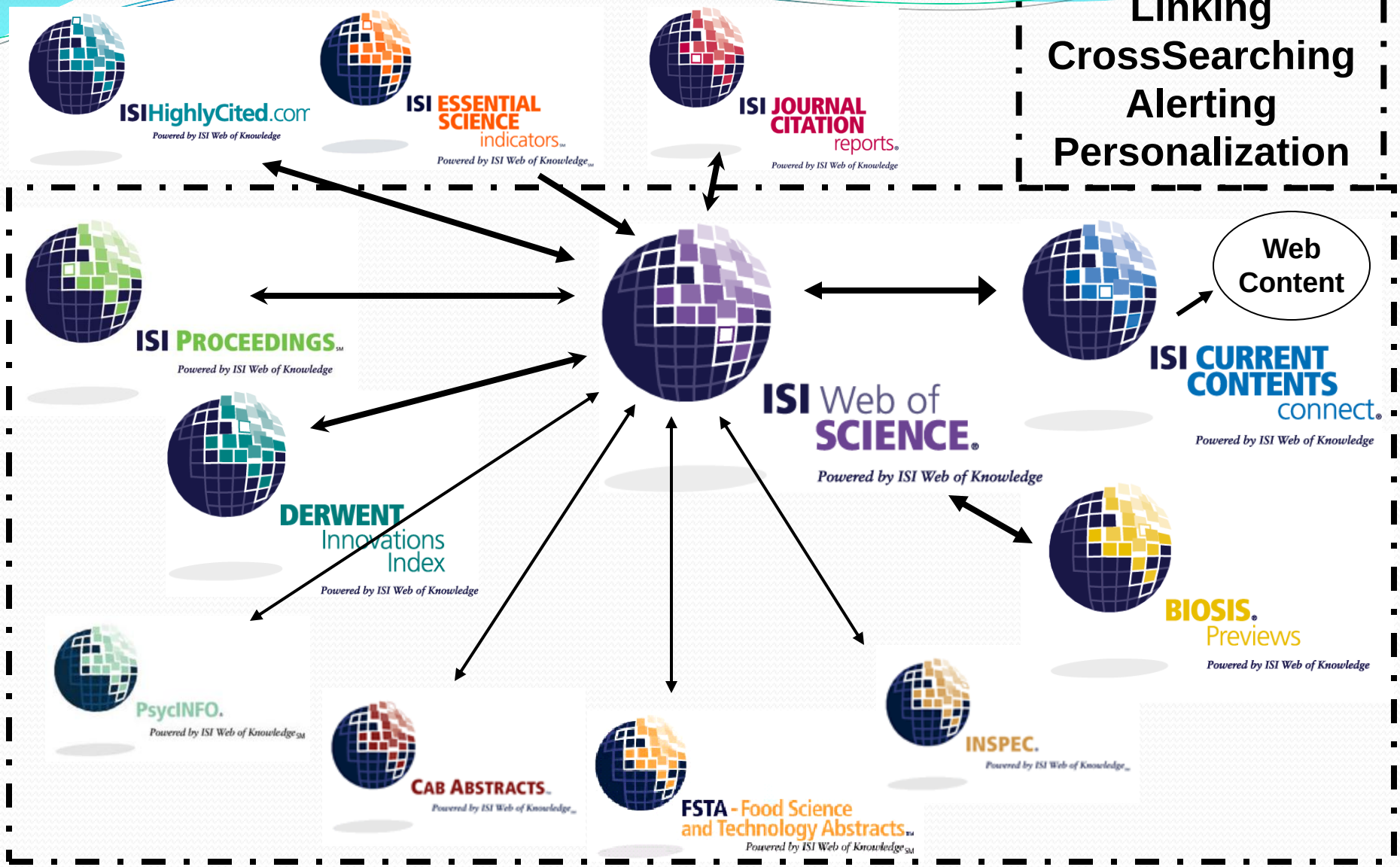
Thomson Reuters – A tradition of innovation



Web of Science – What is a citation?



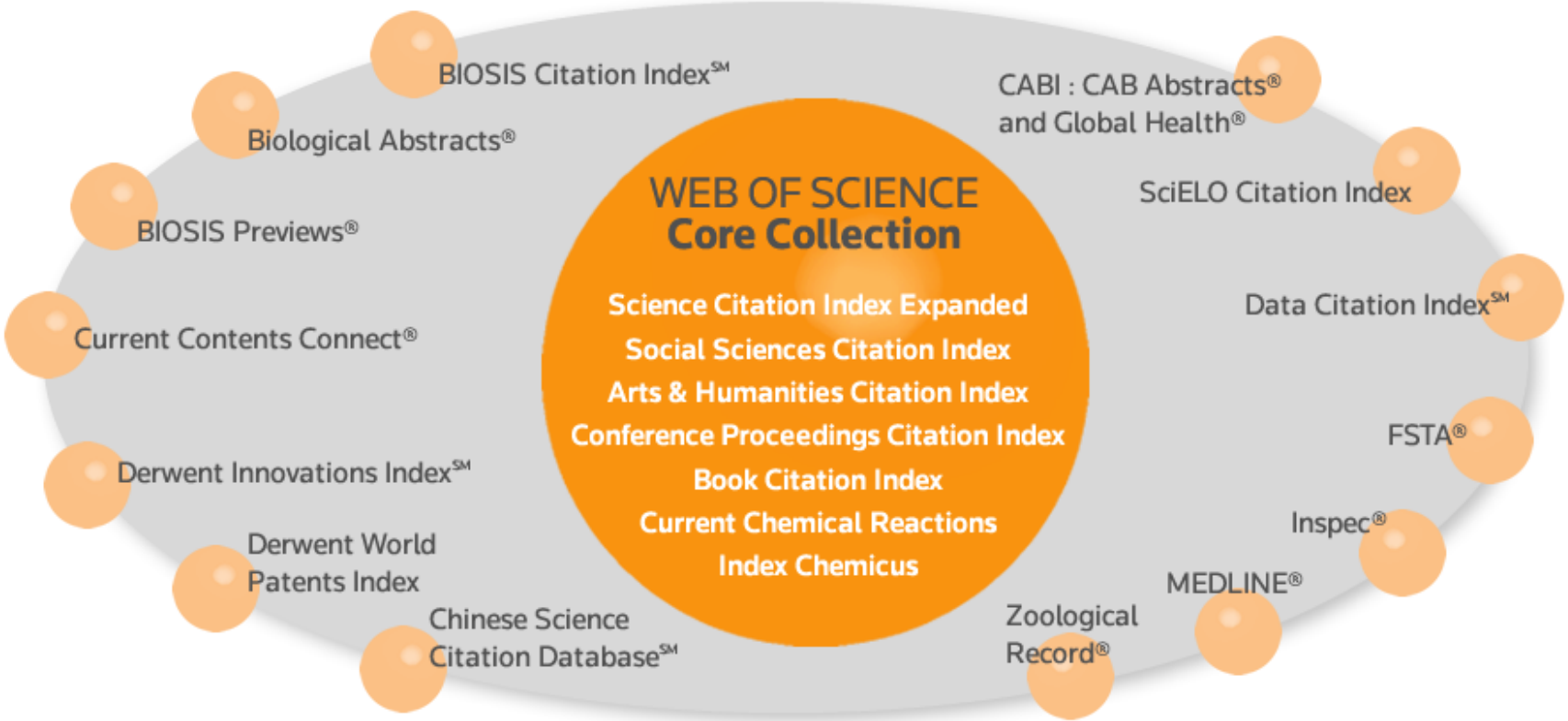
… the ISI Web of KNOWLEDGE



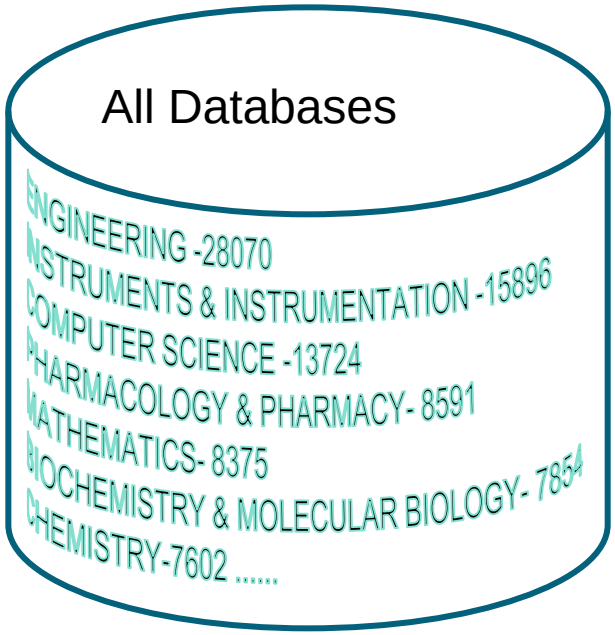
BEFORE

NEW

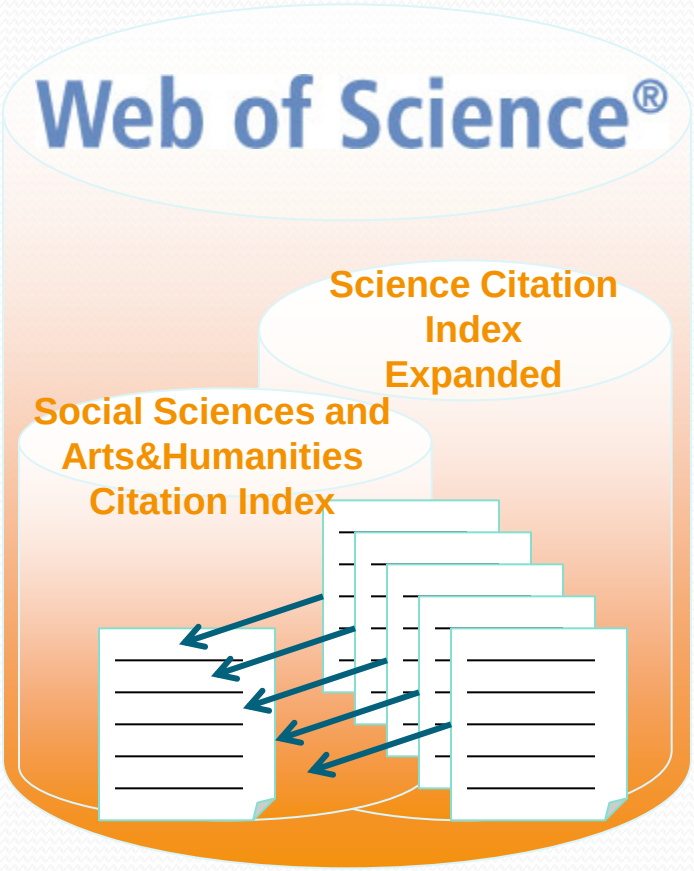
WEB OF SCIENCE™

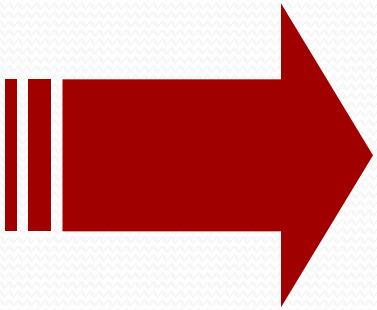


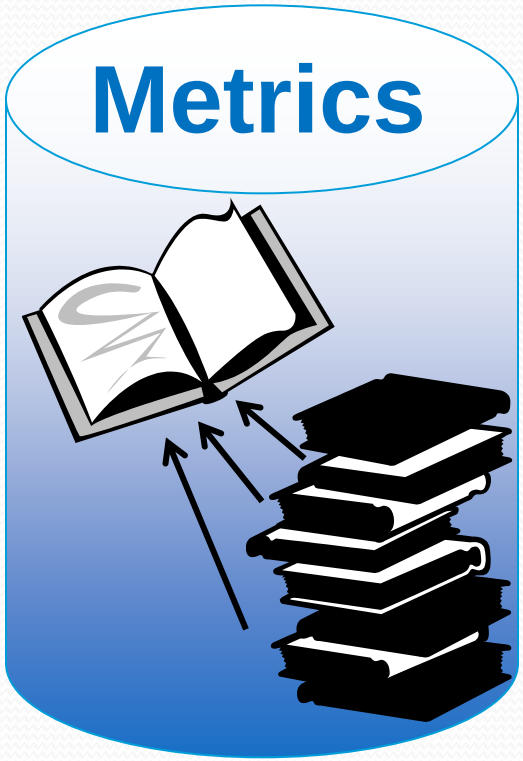
- ***Web of Science: 1900 -***
  Journal Category
- ***Current Contents Connect: 1998***
  Discipline Name
- ***BIOSIS: 1926***
  Major Concept
- ***Zoological Record: 1864***
  Descriptors / Systematics
- ***CAB Abstracts: 1910***
  CABI Code
- ***Inspec: 1898***
  Classification Code
- ***MEDLINE: 1950***
  MeSH Heading, Major Topic, Qualifier
- ***FSTA: 1969***
  Section / Subsection
- ***Derwent Innovations Index: 1963***
  Derwent Class Code
- ***Chinese Science Citation Database: 1989***
  Chinese Library Classification Number



- One single index
- Unified subject classification
- Coverage from ***1864***
- Cited references from 1900
- 22,000 journals
- 85 million records







Article-level data

Journal-level data
Researcher-level data
Institution-level data
Country/region-level data
Field/discipline-level data

ISI Web of Knowledge℠

Journal Citation Reports®

THOMSON REUTERS

Published by Thomson Reuters

Journal Impact Factors and the Author h-index:

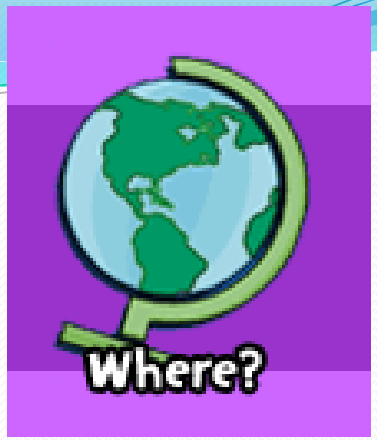
tools used for benchmarking the quality of research

Journal Impact Factors: *Why?* Where? What?

Why?

- Evaluate the scholarly worth of a journal
  - Often touted and tracked by publishers
    e.g., *WHO bulletin*; *BMC*
- Rank journals within a discipline
- Help you decide where to publish your article for maximum impact
- Evaluation for promotion / tenure / grants, or in some countries, even government funding of an institution quote
- Frequently used as an evaluation source by librarians during journal cancellations or new purchases

Journal Impact Factors: Why? *Where?* What?



Where do we find Impact Factors?

Impact factors are listed in *Journal Citation Reports JCR)*

You can easily get to the *JCR* from the *Web of Science*, so let's start there, since understanding the *Web of Science* will help us better understand where the data for the *JCR* comes from.

Access *Web of Science* from our Online Journals & Databases site: http://openurl.library.illinois.edu/sfxlcl3/az

Tip: Use *Web of Science* for article-level information; *JCR* for journal-level information. Both the *Web of Science* and the *JCR* are based on the same database of journal citations and cited references.

THOMSON REUTERS

Web of Science®

Thomson Reuters (formerly ISI) has one, huge database, Web of Science, that…

- **Indexes selected journals**

  > 8,000 science; > 3,000 social science journals;
  > 1,800 Arts & Humanities

- **Tracks "cited references" and "times cited"**
  - Sample topic/author search: "impact factor*" and Garfield E*
- *Activity: Search for an article in your field that has been highly cited.*
  - Then, from a Full Record, look for "Additional Information" and click through to view the journal's impact factor in the JCR.

Journal Impact Factors: Why? *Where?* What?

Where?

- ***Journal Citation Reports*** *(JCR)* keeps track of citations at the journal level (same data as in Web of Science, just a different presentation of the data). A new edition comes out every Spring. We currently have access to 1998-2010 data.

Tip: In addition to accessing the *JCR* via a *Web of Science* citation, you can access the JCR from our *Online Journals & Databases* resource: openurl.library.uiuc.edu/sfxlcl3/az?

- *Activity: Get into the JCR and then:*
  - Choose the Science or Social Sciences edition, and year
  - Search by individual journal title, or by subject category
  - Example:
    - Subject: Biochemistry & Molecular Biology
    - Then, "View Journal Data", sorted by Impact Factor

2010 Journal Citation Reports

Subject: Biochem & Molecular Biology

Sorted by Impact Factor (2-year)

Rank	Abbreviated Journal Title (linked to journal information)	ISSN	JCR Data						*Eigenfactor*™ Metrics	
			Total Cites	Impact Factor	5-Year Impact Factor	Immediacy Index	Articles	Cited Half-life	*Eigenfactor*™ Score	*Article Influence*™ Score
1	CELL	0092-8674	167591	32.406	34.931	6.661	319	8.5	0.70027	20.591
2	ANNU REV BIOCHEM	0066-4154	18621	29.742	34.471	5.464	28	>10.0	0.06103	20.037
3	NAT MED	1078-8956	53666	25.430	27.887	5.377	151	7.1	0.18060	12.479
4	NAT CHEM BIOL	1552-4450	6991	15.808	16.321	3.352	125	3.0	0.06019	7.718
5	MOL PSYCHIATR	1359-4184	11337	15.470	13.253	3.248	101	5.1	0.04398	4.772
6	MOL CELL	1097-2765	42991	14.194	14.447	3.010	304	5.7	0.26290	8.933
7	NAT STRUCT MOL BIOL	1545-9985	21255	13.685	12.481	2.967	212	5.9	0.12645	8.037
8	GENOME RES	1088-9051	24166	13.588	11.971	3.176	170	5.8	0.12588	6.568
9	PLOS BIOL	1544-9173	18454	12.472	14.376	2.706	214	4.1	0.15993	8.211
10	MOL ASPECTS MED	0098-2997	2416	10.552	10.546	1.088	34	4.7	0.00889	3.250
11	TRENDS BIOCHEM SCI	0968-0004	14872	10.364	12.702	1.845	84	8.5	0.04781	6.502
12	TRENDS MOL MED	1471-4914	5365	10.308	9.187	1.377	61	4.8	0.02370	3.365
13	REV PHYSIOL BIOCH P	0303-4240	965	10.200	4.610			7.8	0.00152	1.905
14	CRIT REV BIOCHEM MOL	1040-9238	2538	10.125	10.253	1.323	31	8.2	0.01053	5.965
15	EMBO J	0261-4189	76014	10.124	9.369	2.267	329	9.7	0.20632	5.299

** In 2002, Mol Psychiatr had an Impact Factor of 5.497; in 2006, 11.804.
It now has reviews and opinion pieces… and its Impact Factor has more than doubled!

Journal Impact Factors: Why? Where? *What?*

- What is the Journal Impact Factor?
- How is it calculated?

E.g., the 2009 Impact factor for the journal *Cell* =

$$\frac{\text{Number of times articles or other items published in } \textit{Cell} \text{ during 2007 \& 2008 were cited in indexed journals* during 2009}}{\text{Number of ``citable'' articles** published in } \textit{Cell} \text{ in 2007 \& 2008}}$$

*Only references in articles within the ~13,000 journals indexed in *Web of Science* are counted; does not include citations that may cite the articles in *Cell* from book chapters, proceedings, or other journals that are not indexed in *Web of Science*

** Citable articles are just research articles and reviews – not news articles, commentary, etc.

Journal Impact Factors: Why? Where? *What?*

Calculating the 2009 Journal Impact factor for the journal *Cell* =

Number of times articles or other items published in *Cell* during 2007-2008 were cited in indexed journals during 2009

Number of "citable" articles published in *Cell* in 2008 and 2007

That is:

Cites in 2009 to items published in 2008 + 2007 = 9533 + 12554 = 22087

Number of items published in *Cell in* 2008 + 2007 = 343 + 366 = 709

Impact Factor = Cites to recent items ..... 22087 / Number of recent items published..... 709 **= 31.152**

Criticisms of Journal Impact Factors…

- Only a limited subset of journals is indexed by ISI
  - Only uses the articles cited by the ~13,000 "ISI journals"
  - Some disciplines are especially poorly covered
- Biased toward English-language journals
  - ISI has recently added several hundred non-English journals
- Short (two year) snapshot of journal
  - Some disciplines use older material more or take time to cite new research
  - *JCR* now also includes the 5-year data
- Is an average; not all articles are equally well-cited
  - E.g., look up articles that have been published in Nature, 2008, vol 453. (*WoS* / Cited Ref Search / Cited Work = *Nature*)

Criticisms of Journal Impact Factors…

- Includes self-citations, that is articles in which the article cites other papers in the same journal
- Only includes "citable" articles in the denominator of the equation, i.e., articles and reviews
  - Editors may skew IF by increasing the number of review articles, which bring in more citations (increases the numerator)
  - Or by increasing the number of "news" items (e.g., *Science*, general medical journals) , which are cited (appear in numerator) but not considered "citable" (and so aren't in the denominator)
- It is expensive to subscribe to the *JCR*

SJR- SCImago Journal Rank

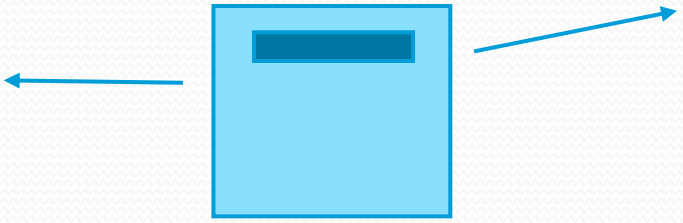
- Developed by Felix de Moya, CSIC (Spanish Research Council)
- Prestige metric- not all citations are the same
- Citations are weighted depending on the status of the source they come from

SJR- SCImago Journal Rank

Life Sciences journal

High impact, lots of citations
One citation = low value

Arts & Humanities journal



Low impact, few on citations
One citation = high value

SJR normalizes for differences in citation behaviour between subject fields

$$SJR_i = \frac{(1-d-e)}{N} + e\frac{Art_i}{\sum_{j=1}^{N} Art_j} + d \cdot \sum_{j=1}^{N} \frac{C_{ji} \cdot SJR_j}{C_j} \cdot \frac{1-\left(\sum_{k \in \{Dangling-nodes\}} SJR_k\right)}{\sum_{h=1}^{N}\sum_{k=1}^{N} \frac{C_{kh} \cdot SJR_k}{C_k}} + d\left[\sum_{k \in \{Dangling-nodes\}} SJR_k\right] \cdot \frac{Art_i}{\sum_{j=1}^{N} Art_j}$$

$$SJRQ_i = \frac{SJR_i}{Art_i}$$

SJR_i -Scimago Journal Rank of the Journal *i*.

C_{ji} - Citation from journal j to journal *i*.

C_j - Number of References of journal *j*.

d - Constant, normally 0.85.

e - Constant, normally 0.10.

N - Number of Journals

Art_j - Number of Articles of journal *j*

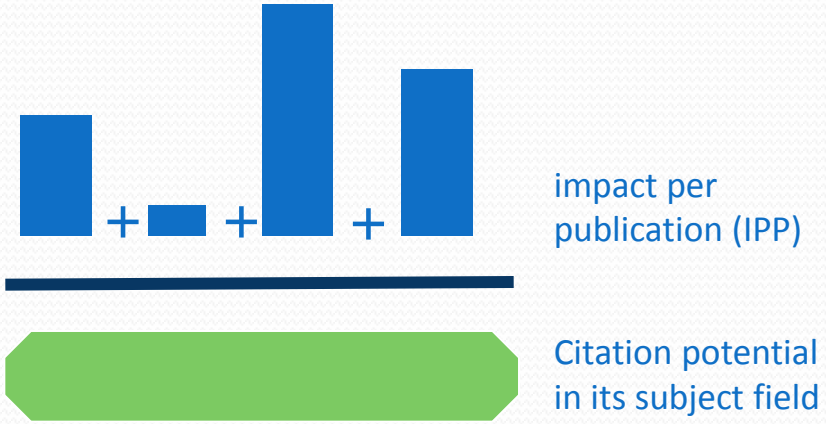
SNIP-Source Normalised Impact per Paper

- Developed by Henk Moed - CWTS (Centre for Science and Technology Studies)-Leiden University
- Measures the average citation impact of the publications of a journal, correcting for the differences in citation practices between scientific fields and therefore allowing for more accurate between-field comparisons of citation impact
- SNIP is field normalized, dependent on likelihood of citation in subject field of source

SNIP: Source-normalized impact per paper

All **20K** journals have **a Source-normalized impact per paper** (SNIP) measuring contextual citation impact by weighting citations per subject field

- Peer-reviewed papers only
- Field's frequency and immediacy of citation
- Database coverage
- Journal's scope and focus
- Measured relative to database median



Journal	IPP	Cit. Pot.	SNIP (IPP/Cit. Pot.)
Inventiones Mathematicae	1.5	0.4	3.8
Molecular Cell	13.0	3.2	4.0

Altmetric

DOI: 10.1038/srep00570 PubMed ID: 22880161 Document Type: Article

References (46)

View in table layout

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1 **The time variation of dose rate artificially increased by the Fukushima nuclear crisis**

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Full Text | View at Publisher

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4 **Cesium-137 deposition and contamination of Japanese soils due to the Fukushima nuclear accident**

(2011) *Proceedings of the National Academy of Sciences of the United States of America*, 108 (49), pp. 19530-19534. Cited 82 times.
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Full Text | View at Publisher

Kinoshita, N., Sueki, K., Sasa, K., Kitagawa, J.-I., Ikarashi, S., Nishimura, T., Wong, Y.-S., (...), Yamagata, T.

5 **Assessment of individual radionuclide distributions from the Fukushima nuclear accident covering central-east Japan**

(2011) *Proceedings of the National Academy of Sciences of the United States of America*, 108 (49), pp. 19526-19529. Cited 59 times.
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Full Text | View at Publisher

Hirose, K.

6 **2011 Fukushima Dai-ichi nuclear power plant accident: Summary of regional radioactive deposition monitoring results**

Find more related documents in Scopus based on:

Authors | Keywords

Mendeley readership statistics

Save **The biological impacts of the Fukushima nuclear accident on the pale grass blue butterfly** to your Mendeley library

102 people have saved this article to Mendeley

Top disciplines
Biological Sciences **64%**
Environmental Sciences **9%**
Physics **7%**

Top demographics
Ph.D. Student **17%**
Post Doc **16%**
Student (Master) **16%**

Top countries
Japan **7%**
United States **3%**
France **3%**

View article in Mendeley | More about Mendeley

Altmetric for Scopus

2112

Up to now this article has been mentioned **2902** times by **2407** sources.

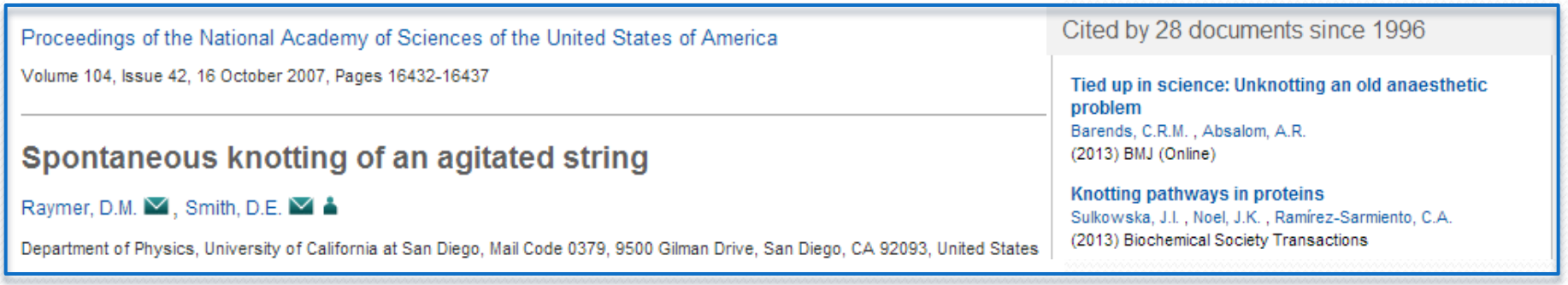
Sources
137 Facebook users
7 science blogs
12 Google+ users
11 news outlets
3 Pinners
8 Reddit threads
2228 tweeters

Saved to reference managers
2 CiteULike **101** Mendeley

see details | open report in new tab

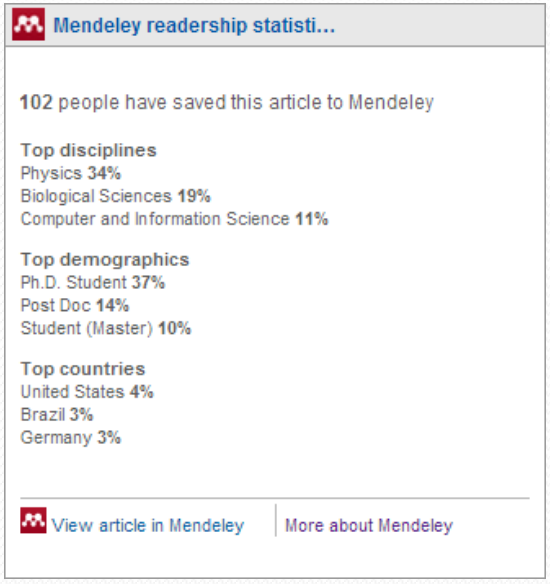
This app is provided by Altmetric. Learn more here.

Integration of article level metrics into Scopus



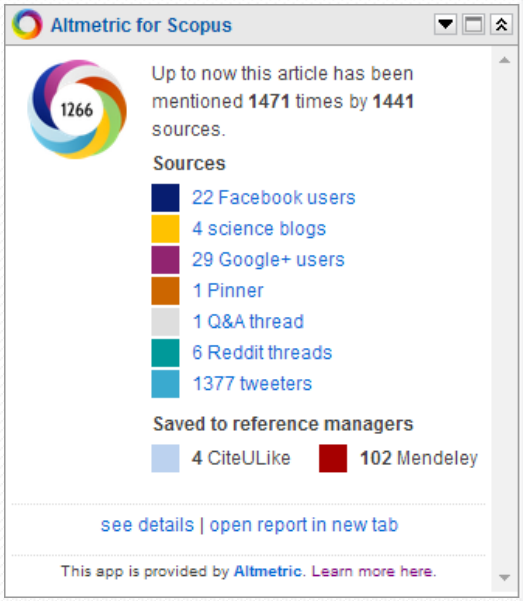
MENDELEY

Mendeley readership Statistics shows how many times Mendeley users have downloaded a specific article to their libraries.



Altmetric

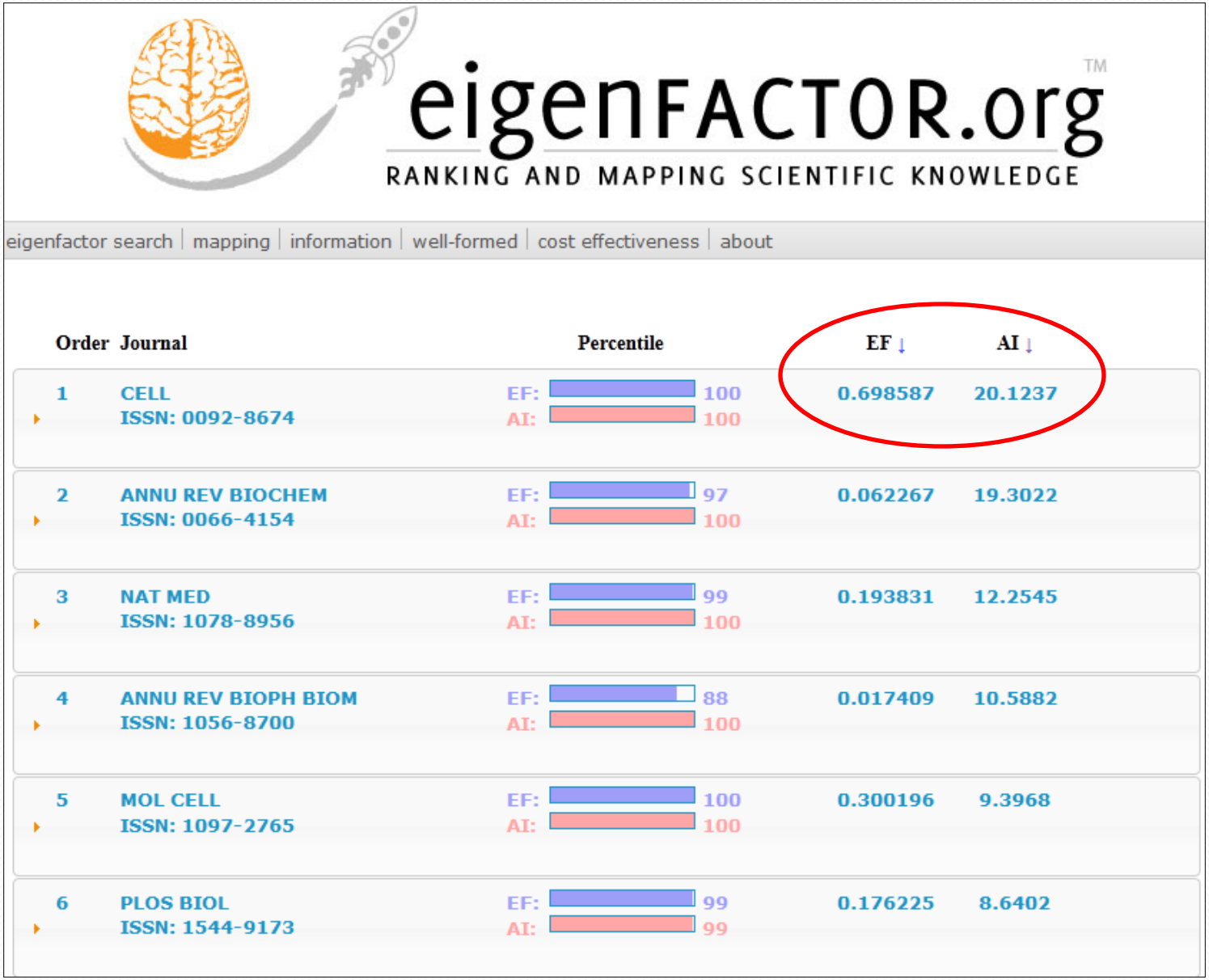
Altmetric is way to see all of the social or mainstream media mentions gathered for a particular paper as well as reader counts on popular reference managers



Other Journal Ranking Efforts…

- Available free at eigenfactor.org (1995-2009 data)
- As with the *JCR*, only ISI journals are ranked
- Uses "all" ISI data, analyzed differently.
  - all cited and citing references (so includes citations from non-ISI journals, books, dissertations, etc.)
- Uses similar algorithm as Google's PageRank
  - By this approach, journals are considered to be influential if they are cited often by other influential journals.
- Looks at five years of data
- As of 2007, also available within *JCR*!

Biochem & Molecular Biology Subject Category…



eigenFACTOR.org™
RANKING AND MAPPING SCIENTIFIC KNOWLEDGE

eigenfactor search | mapping | information | well-formed | cost effectiveness | about

Order	Journal	Percentile	EF ↓	AI ↓
1	CELL ISSN: 0092-8674	EF: 100 AI: 100	0.698587	20.1237
2	ANNU REV BIOCHEM ISSN: 0066-4154	EF: 97 AI: 100	0.062267	19.3022
3	NAT MED ISSN: 1078-8956	EF: 99 AI: 100	0.193831	12.2545
4	ANNU REV BIOPH BIOM ISSN: 1056-8700	EF: 88 AI: 100	0.017409	10.5882
5	MOL CELL ISSN: 1097-2765	EF: 100 AI: 100	0.300196	9.3968
6	PLOS BIOL ISSN: 1544-9173	EF: 99 AI: 99	0.176225	8.6402

Eigenfactor.org Scores

- **Eigenfactor Score: … the higher the better**
  - For a journal, the number of times articles published in the previous *five years* have been cited in the current year. It also considers which journals have contributed these citations so that *highly cited journals will influence the score more than lesser cited journals (*similar to the Google pagerank algorithim*)*. Self citations are removed.
  - *A measure of the journal's total importance to the scientific community.*
  - Eigenfactor scores are scaled so that the sum of the Eigenfactor scores of all journals listed in Thomson's *Journal Citation Reports (JCR)* is 100.
- **Article Influence Score: … the higher the better**
  - The average influence, per article, of the papers in a journal. *As such, it is comparable to the* ***Journal Impact Factor****.*
  - Article Influence scores are normalized so that the *mean article in the entire Thomson Journal Citation Reports (JCR) database has an article influence of 1.00.* A score greater than 1.00 indicates that each article in the journal has above-average influence.
  - Still, as with IFs, it's best to "compare" within subjects.
- **Cost Effectiveness: … the lower the better**
  - Annual Price / Eigenfactor Score

Comparing *JCR* and *Eigenfactor*

For *JCR* Category "Cell Biology" (2008) -- the top six journals sorted by Journal Impact F

	5-year JCR Impact Factor	Eigenfactor Article Influence Score
Nature Rev Molec Cell Biol	35.423 (100)*	19.970 (100)
Cell	31.253 (88)	18.871(94)
Nature Medicine	27.553(78)	12.958(65)
Ann Rev Cell Biology	22.731(64)	16.220(81)
Nature Cell Biology	17.774(50)	10.872(54)
Cell Stem Cell	16.826(48)	12.304(62)
Cell Metabolism	16.107(45)	9.506(48)

*In parenthesis, values normalized.

Another Journal Ranking Effort…

SJR SCImago Journal & Country Rank

SCImago Journal Rank (SJR)

- The citation PageRank of a journal calculated on the basis of the *Scopus* citation data divided by the number of articles published by the journal over 3 years.
- Similar to Eigenfactor methods, but based on citations in ***Scopus*** instead of ***Web of Science***.
  - Freely available at scimagojr.com
  - Covers more journals (~20,000) than JCR because *Scopus* covers more journals than *Web of Science*
  - More international diversity
  - 3 years of citations; no self-citations

SCImago scimagojr.com

SJR SCImago Journal & Country Rank

EST MODUS IN REBUS
Horatio (Satire 1,1,106)

Home
Journal Rankings
Journal Search
Country Rankings
Country Search

Journal Rankings

Ranking Parameters

Subject Area: Biochemistry, Genetics and Molecular Biology
Subject Category: All categories of selected Area
Country: All
Year: 2010
Order By: SJR

How to cite this website?

SJR is developed by:

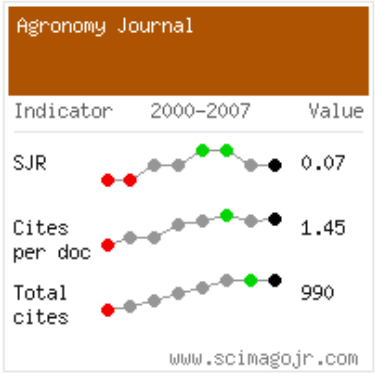
SCIMAGO LAB

Powered by SCOPUS™

	Title	SJR	H index	Total Docs. (2010)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	Country
1	Annual Review of Immunology	17,588	199	22	75	4.199	3.630	74	51,23	190,86	
2	Nature Genetics	14,417	346	277	939	6.420	22.281	651	34,74	23,18	
3	Cell	12,666	475	488	1.649	18.987	35.194	1.037	32,37	38,91	
4	Ca-A Cancer Journal for Clinicians	11,903	80	38	114	2.410	5.264	63	101,36	63,42	
5	Immunity	10,337	234	205	634	9.247	10.323	440	24,43	45,11	
6	Annual Review of Biochemistry	9,570	185	28	99	4.477	3.109	99	28,80	159,89	
7	Cancer Cell	8,759	155	157	394	5.117	6.597	234	27,05	32,59	
8	Nature	8,536	678	2.475	7.054	36.239	92.921	2.940	32,29	14,64	
9	Ageing Research Reviews	7,958	47	62	77	6.601	588	1	0,00	106,47	
10	Nature Immunology	7,763	212	215	705	7.696	10.489	565	17,92	35,80	
11	Cell Stem Cell	7,377	59	196	473	5.881	6.326	260	24,02	30,01	
12	Annual Review of Genetics	7,090	110	19	76	2.714	1.449	76	20,56	142,84	

SCImago Journal Search

Show this information in your website



Display journal title

Embed this in your html code:

<a href="http://www.scimagoji

How to cite this website?

SJR is developed by:

SCIMAGO

Coverage: 1976-1985

ISSN: 00021962, 14350645

H Index: 41

Indicators	1999	2000	2001	2002	2003	2004	2005	2006	2007
SJR	0,076	0,061	0,061	0,072	0,071	0,079	0,078	0,069	0,068
Total Documents	142	179	190	172	187	211	204	199	210
Total Docs. (3years)	398	392	431	511	541	549	570	602	614
Total References	3.594	4.767	5.132	5.358	5.846	6.572	6.344	7.117	7.059
Total Cites (3years)	416	326	403	516	708	811	1.019	1.026	990
Self Cites (3years)	68	74	91	116	143	227	235	211	236
Citable Docs. (3years)	391	389	425	501	526	535	560	594	604
Cites / Doc. (4years)	1,06	1,00	1,11	1,06	1,39	1,55	1,95	1,95	1,78
Cites / Doc. (3years)	1,06	0,84	0,95	1,03	1,35	1,52	1,82	1,73	1,64
Cites / Doc. (2years)	0,81	0,69	0,88	0,88	1,29	1,36	1,57	1,39	1,45
References / Doc.	25,31	26,63	27,01	31,15	31,26	31,15	31,10	35,76	33,61
Cited Docs.	205	189	219	274	304	334	373	407	407
Uncited Docs.	193	203	212	237	237	215	197	195	207
% International Collaboration	16,20	13,97	0,00	1,74	17,11	14,69	17,65	14,07	14,29

*An aside…*The *SCImago Institutions Rankings Report (SIR)*

Institutions are also interested in seeing how they're doing!

Download this free report (2011) at: www.scimagoir.com/

- Ranks 3,042 institutions, worldwide
- Provides 5 indicators of research performance, stressing research output, citations, international collaboration and impact.
- Data comes from the *Scopus* db (analyzed 18,750 research publications, mostly journals and proceedings)
- Data is from 2005-2009

Research Output: 1-Chinese Acad; 2-CNRS (France); 3-Russian Acad Sci; 4-Harvard; 5-Max Planck; 6-Tokyo; 7-NIH; 8-Toronto; 10-Johns Hopkins; 12-Mich; 17-UCLA;
19-Stanford; 24-Berkeley; 30-Wisconsin-Madison; 37-USDA; 40-MIT; 41-Cornell; **42-U of Illinois**; 46-Yale; 65-Northwestern; 69-Purdue; 76-NASA.

Comparison of Three Journal Ranking Systems … Higher is "better" in all cases (2007)

Journal	JCR Journal Impact Factor (2 year)	JCR Journal Impact Factor (5 year)	Eigenfactor Article Influence Score (5 year)	SCImago Journal Rank (3 year)
Science	26.372	30.631	16.539	3.726
Cell	29.887	28.779	18.188	10.735
Nature	28.751	28.751	16.996	4.636
PNAS	9.598	10.369	4.929	2.689
BMC Bioinformatics	3.493	4.221	1.608	.750
Bioinformatics	5.039	6.649	2.406	1.225

•**SJR** from SCImago are based on the *Scopus* database, not the *Web of Science* database; both **JCR** and **Eigenfactors** are calculated from the Web of Science database.

h-Index…
for Evaluating Authors (or Journals)

- Proposed by JE Hirsch as an index to quantify an individual's scientific research output

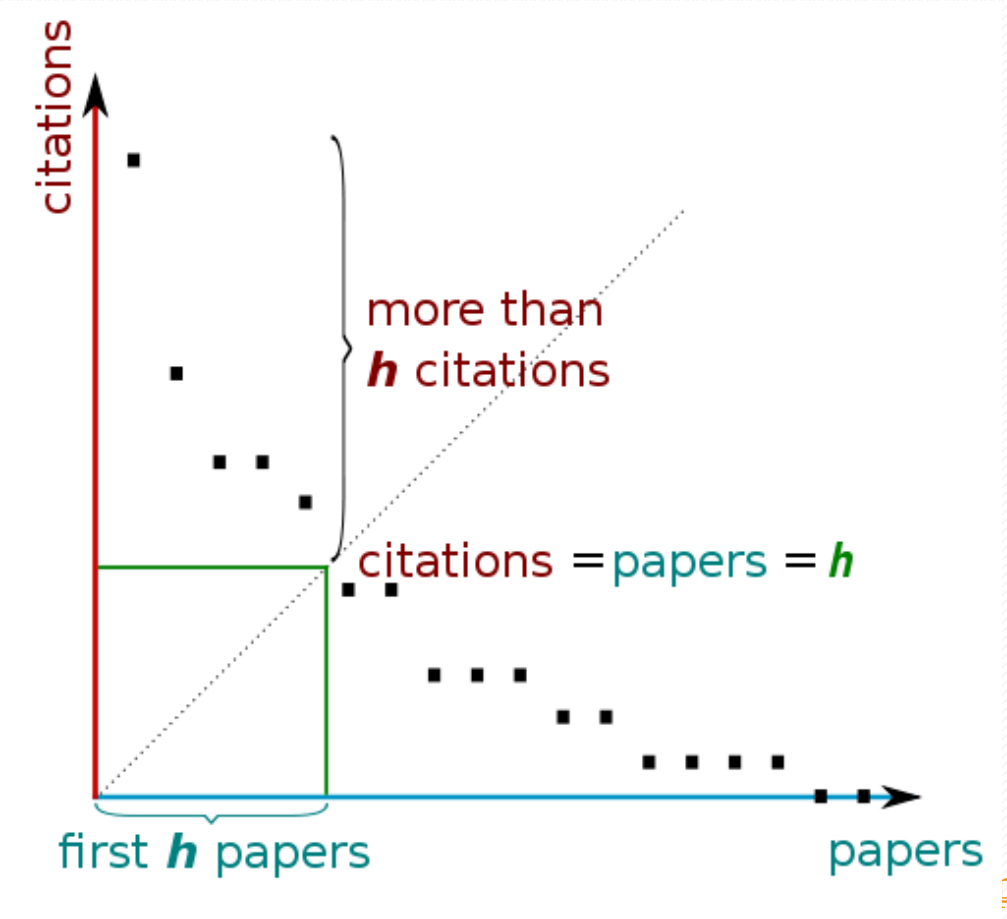
  Remember, Impact Factor is just for journals, though it's often used to evaluate authors.

- Combines an assessment of both quantity (number of papers) and quality (impact, or citations to these papers).
- *h*-index is automatically calculated:
  - *Web of Science*
  - *Scopus*
  - Publish or Perish (free download), based on data in *Google Scholar*
- *h-index* can also be manually calculated for an author based on the number of papers authored and the number of times each paper has been cited.
- See Wikipedia article for overview of h-index including criticisms, alternatives http://en.wikipedia.org/wiki/H-index

h-Index values

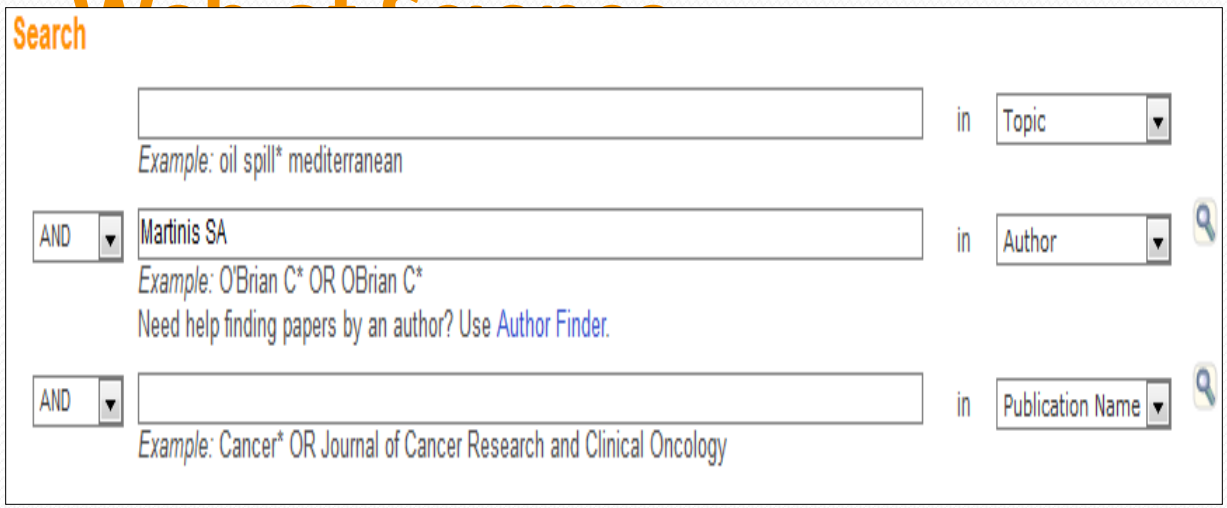
- JE Hirsch:
  "Based on typical h .. values found, I suggest (with large error bars) that for faculty at major research universities, h ≈ 12 might be a typical value for advancement to tenure (associate professor) and that h ≈ 18 might be a typical value for advancement to full professor. Fellowship in the American Physical Society might occur typically for h ≈ 15–20. Membership in the National Academy of Sciences of the United States of America may typically be associated with h ≈ 45 and higher, except in exceptional circumstances."
- As with other metrics, it's best to compare h-index values within a discipline.

Determining h-index Manually



pedia.org/wiki/H-index

Finding a h-index value in Web of Science



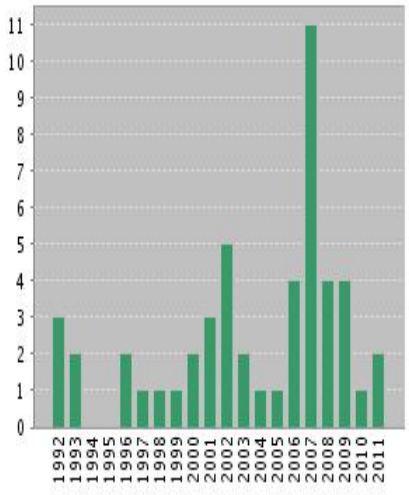
Citation Report (h-index) from Web of Science

Citation Report Author=(Martinis SA)

Timespan=All Years. Databases=SCI-EXPANDED, SSCI, A&HCI.

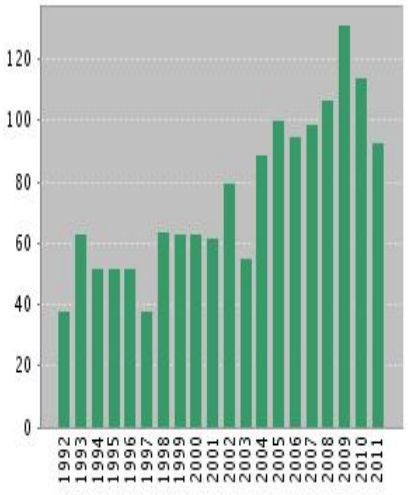
This report reflects citations to source items indexed within Web of Science. Perform a Cited Reference Search to include citations to items not indexed within Web of Science.

Published Items in Each Year



The latest 20 years are displayed.
View a graph with all years.

Citations in Each Year



The latest 20 years are displayed.
View a graph with all years.

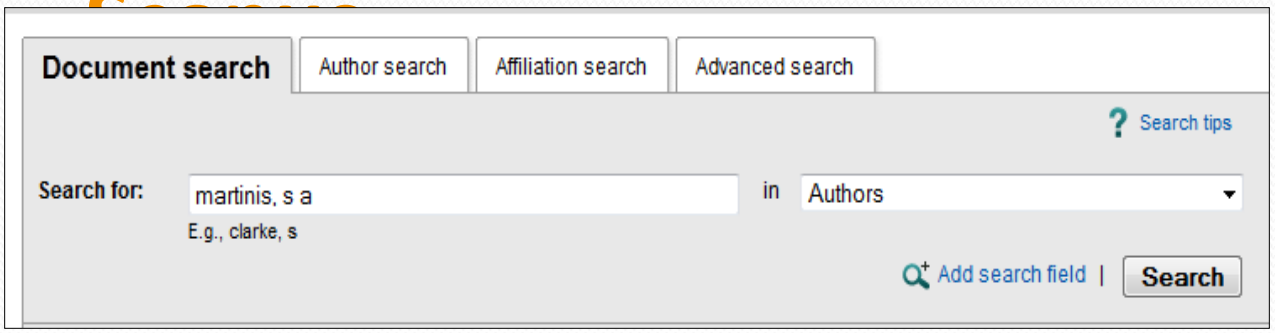
Results found:	55
Sum of the Times Cited [?]:	1540
Sum of Times Cited without self-citations [?]:	1360
Citing Articles [?]:	1073
View Citing Articles	
View without self-citations	
Average Citations per Item [?]:	28.00
h-index [?]:	21

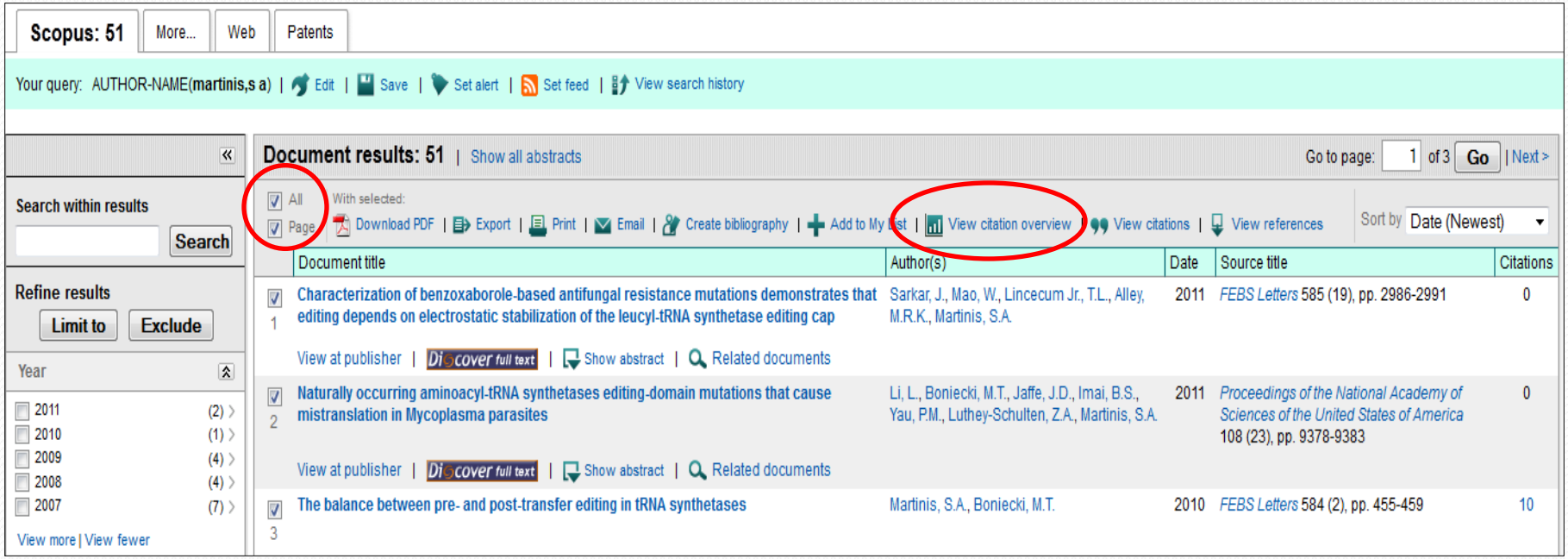
Results: **55** Page 1 of 6 Go Sort by: Times Cited -- highest to lowest

Use the checkboxes to remove individual items from this Citation Report or restrict to items published between 1955 and 2011 Go

	2007	2008	2009	2010	2011	Total	Average Citations per Year
	99	107	131	114	93	1540	64.17
1. Title: A CONSERVED RESIDUE OF CYTOCHROME-P-450 IS INVOLVED IN HEME-OXYGEN STABILITY AND ACTIVATION Author(s): MARTINIS SA; ATKINS WM; STAYTON PS; et al. Source: JOURNAL OF THE AMERICAN CHEMICAL SOCIETY Volume: 111 Issue: 26 Pages: 9252-9253 DOI: 10.1021/ja00208a031 Published: DEC 20 1989	6	7	5	9	3	191	8.30
2. Title: CRYSTAL-STRUCTURE OF THE CYTOCHROME-P-450CAM ACTIVE-SITE MUTANT THR252ALA							

Finding a h-index value in Scopus





Citation Overview (h-index) from Scopus

Citation overview

Citations received since 1996

This is a citation overview for a set of 51 documents.

Export | Print

Overview options Hide

Exclude from citation overview: Self citations of all authors

Sort documents: Year descending

Date range: 2009 to 2011

Update overview

51 Cited Documents Save list

Delete

		Total	Citations <2009	2009	2010	2011	Subtotal	>2011	Total
			1020	136	122	99	357	0	1377
1	2011 Characterization of benzoxaborol...						0		0
2	2011 Naturally occurring aminoacyl-tR...						0		0
3	2010 The balance between pre- and pos...				3	8	11		11
4	2009 A glycine hinge for tRNA-depende...				1	1	2		2
5	2009 A paradigm shift for the amino a...				1		1		1
6	2009 Leucyl-tRNA synthetase-dependent...						0		0
7	2009 Defects in transient tRNA transl...			2	1	1	4		4
8	2008 CP1-dependent partitioning of pr...		1	6	7	9	22		23
9	2008 Functional segregation of a pred...			5	1		6		6
10	2008 A Flexible Peptide Tether Contro...			1		2	3		3

h index = 20

Document *h* index

View h-Graph

Of the 51 documents considered for the *h* index, 20 have been cited at least 20 times.

Scopus does not have complete citation information for articles published before 1996.
About h-Graph

Graph of h-Index from Scopus

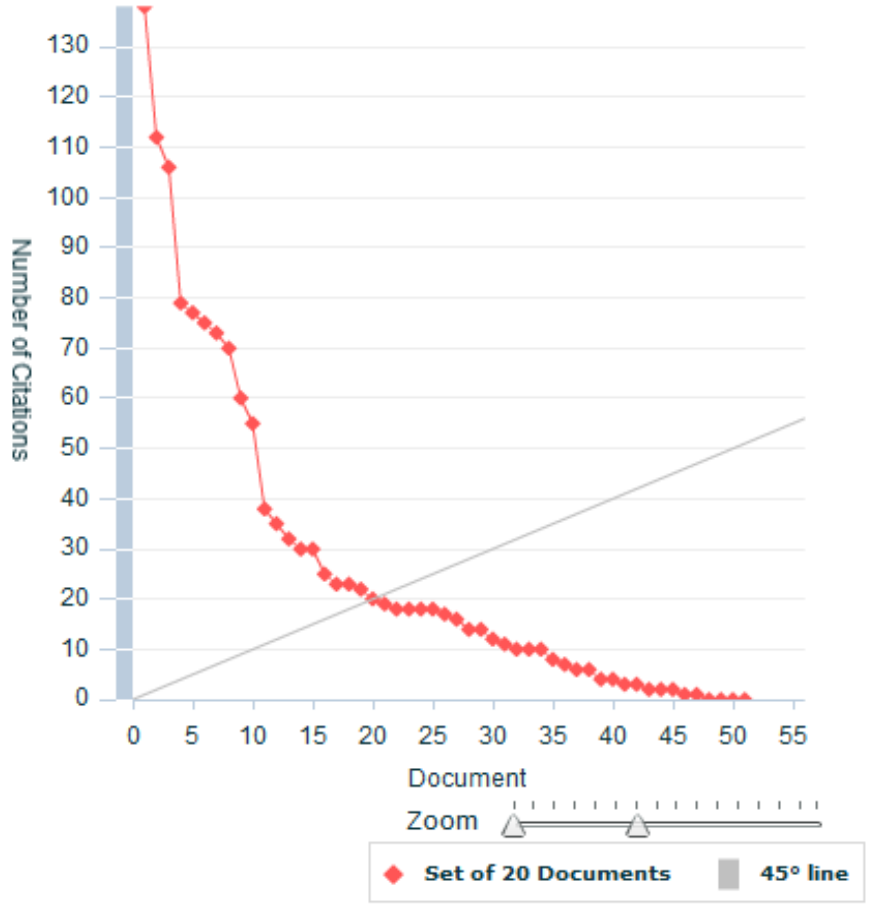
This is a *h*-graph for a set of 51 documents.

The *h*-graph measures the impact of a set of articles and shows the number of citations per document.

***h* index = 20** (of the 51 documents considered for the *h*-Index, 20 have been cited at least 20 times.) Print

Note: Scopus does not have complete citation information for articles published before 1996. About h-Graph

Document *h*-Graph Line Chart | Table



HARZING.COM

Publish or Perish (PoP)

A tool for analyzing citations in Google Scholar (handy for calculating h-index values)

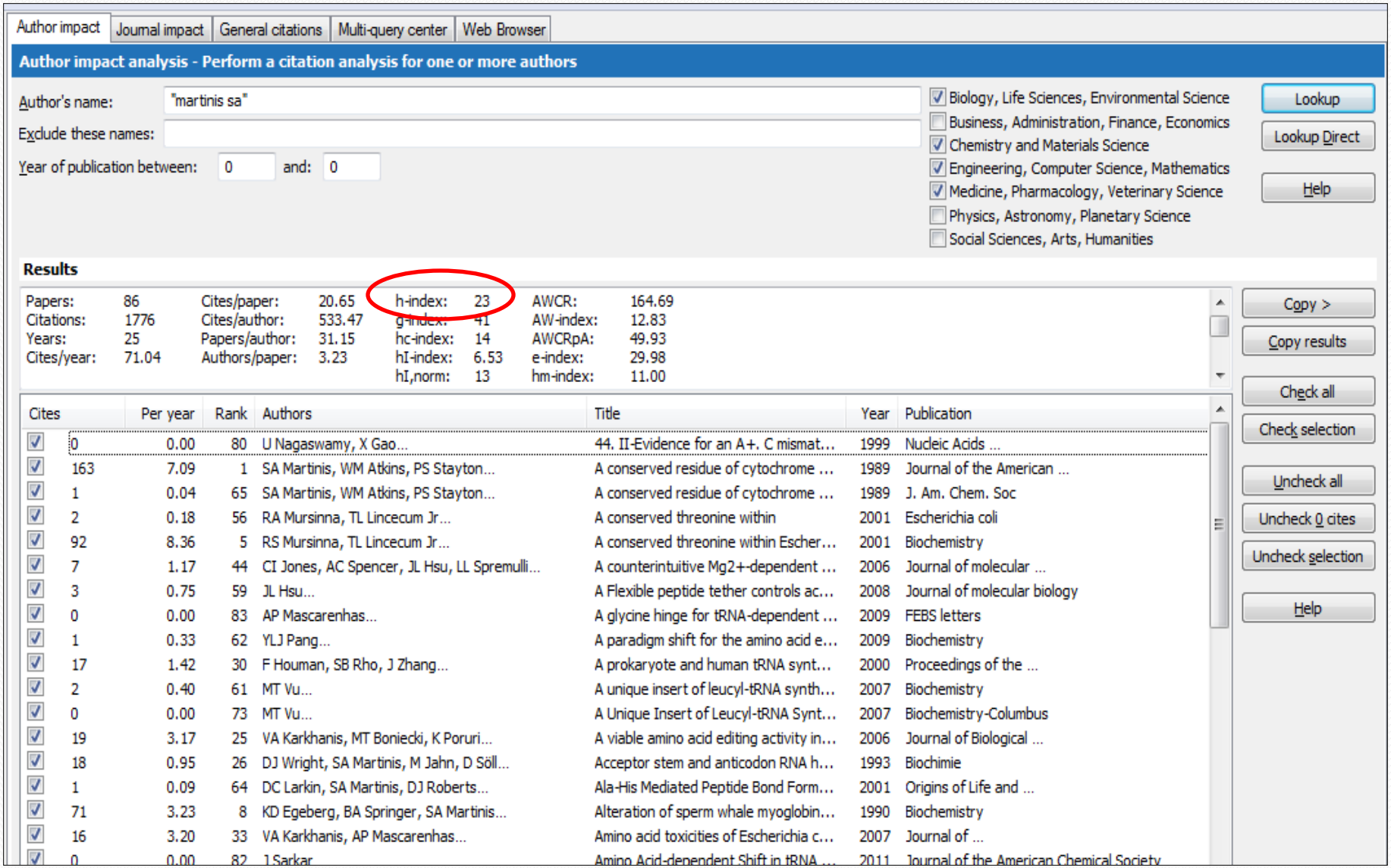
"Are you applying for tenure, promotion or a new job? Do you want to include evidence of the impact of your research? Is your work cited in journals which are not ISI listed? … try PoP, designed to help individual academics to present their case for research impact to its best advantage."

- Based on *Google Scholar* citations, can analyze (up to 999 entries) by author or journal. For journals *POP* provides:
  - Average cites/paper
  - Average # of authors / paper
  - *h-index*: combines an assessment of both quantity (number of papers) and quality (impact, or citations to these papers)
- Most people use PoP to search for author h-indexes (not journal data)
- Free software (for academics) ; download at **harzing.com/pop.htm**
- Sample Search: PLoS Medicine, 2006-2008; or Author, A Harzing; or Author SA Martinis

Publish or Perish:

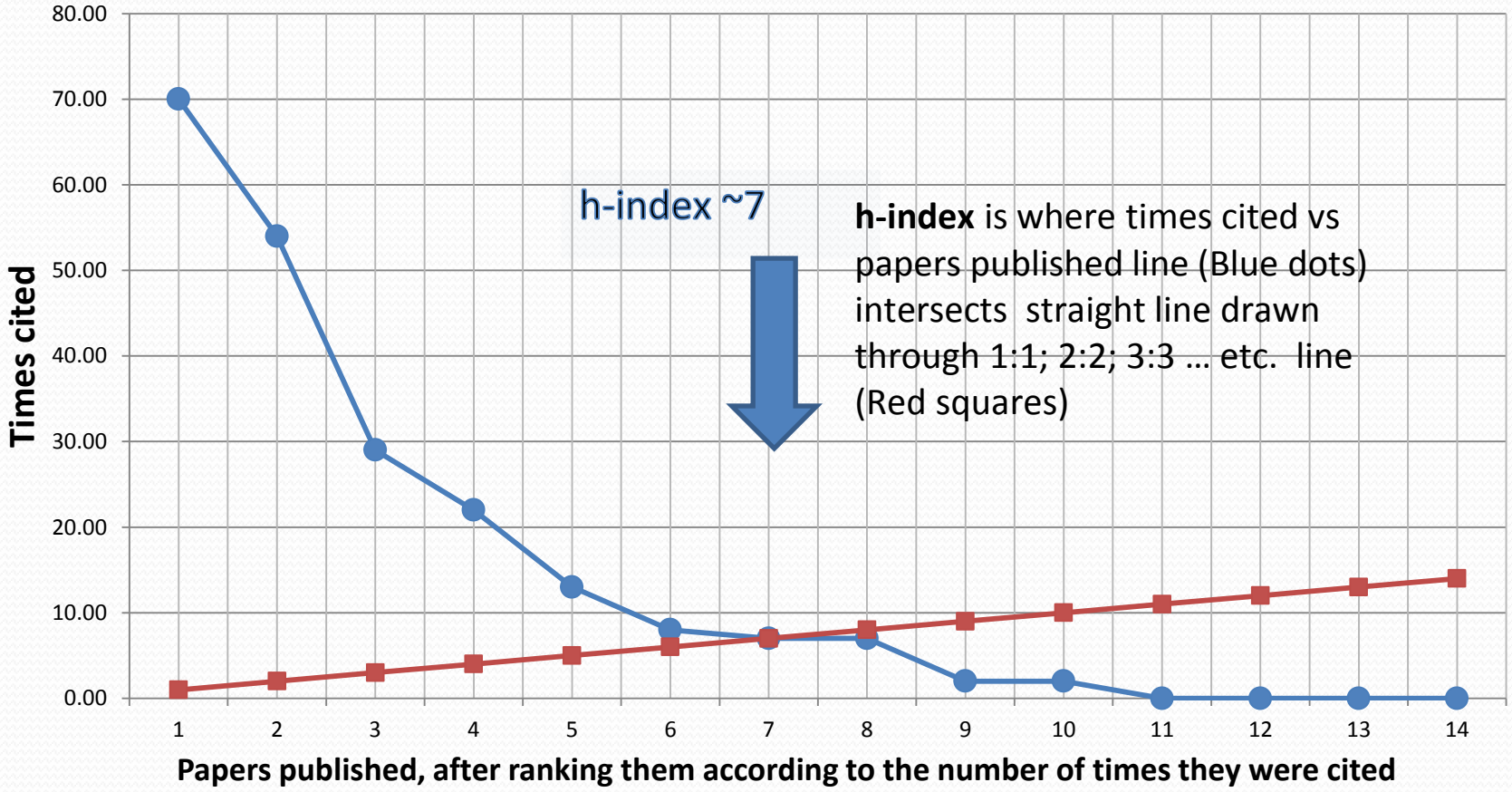
(alternative search engine for *Google Scholar*)

I used PoP to manually calculate the h-index = 7 for the local researcher



Example of h-index Calculation for a Local Author Going up for Assoc. Prof.

Based on Google Scholar & Publish or Perish



Comparison of *h-index* Values from Several Sources for Several Authors

Author	From Scopus	From Web of Science	From Google Scholar via "Publish or Perish"
Robinson, GE	54 *[193 docs]*	55 *[202 docs]*	*55 [381 docs]*
Chancellor Wise, PM	44 *[178 docs]*	51 *[204 docs]*	50 *[333 docs]*
Garfield, E	*22 [211 docs]*	288 *[815 docs]*	*45 [>1000 docs]*
Pres. Hogan, MJ	*-- [1 doc]*	6 *[33 docs]*	14 *[65 docs]*
Pres. Easter, RA	*23 [87 docs]*	*25 [107 docs]*	*38 [276 doc, many duplicates]*

Comparison of 2007 h-index Values for Several Journals

Journal	From Scopus** via SCImago	From Scopus (via its Citation Overview option)	From Web of Science	From Google Scholar via "Publish or Perish"
Science	523	68* [of 2375 docs]	69 [of 2542]	66 [of 999]
Cell	387	52 [of 555 docs]	56 [of 612]	49 [of 999]
Nature	532	72 [of 2349 docs]	77 [of 2681]	56 [of 999]
PNAS	340	42 [of 3776 docs]	44 [of 3656]	42 [of 999]
BMC Bioinformatics	37	13 [of 600 docs]	13 [of 491	16 [of 664]
Bioinformatics	112	17 [of 701 docs]	20 [of 737]	~22 [of ~870]

h-index: the *h* number of articles in a journal that received at least *h* citations. Combines an assessment of both quantity (number of papers) and quality (impact, or citations to these papers). The *h-index* is more frequently used to assess the impact of authors.

* "Of the 2375 documents published in *Science* in 2007, 68 have been cited at least 68 times"

** Value for *h-index was calculated from citations from 1999-current*, not just 2007.

Learn more about h-index: **en.wikipedia.org/wiki/H-index**

SciVal metrics- a snapshot

	Productivity	Citation Impact	Collaboration	Disciplinarity	Snowball Metric	"Power metric"
Scholarly Output	■				■	■
Journal Count				■		■
Journal Category Count				■		■
Citation Count		■			■	■
Cited Publications		■				■
Citations per Publication		■			■	
Number of Citing Countries		■				■
Field-Weighted Citation Impact		■			■	
Collaboration			■		■	■
Collaboration Impact		■	■			
Academic-Corporate Collaboration			■			■
Academic-Corporate Collaboration Impact		■	■			
Outputs in Top Percentiles		■			■	■
Publications in Top Journal Percentiles		■				■
h-indices	■	■			■	■

SciVal metrics- Field-weighted citation impact

- Indicates how the number of citations received by an entity's publications compares with the average number of citations received by all other similar publications in the data universe.
- FWCI of 1→ world average
- FWCI > 1 → cited more than global average
- FWCI < 1 → cited less than global average
- The Field-Weighted Citation Impact (FWCI) for a set of N publications is c

$$\text{FWCI} \equiv \frac{1}{N}\sum_{i=1}^{N}\frac{c_i}{e_i}$$

c_i = citations received by publication i
e_i = expected number of citations received by all similar publications in the publication year plus following 3 years

18 sets of metrics at your disposal

Slice and dice your data from multiple angles to identify your core strengths and weaknesses

Productivity metrics

- Scholarly Output
- Outputs in Top Percentiles
- Publications in Top Journal Percentiles

Citation Impact metrics

- Citation Count
- Citations per Publication
- Cited Publications
- Number of Citing Countries
- *h*-indices (*h*, *g*, *m*)
- Field-Weighted Citation Impact

Collaboration metrics

- Collaboration (geographical)
- Collaboration Impact (geographical)
- Academic-Corporate Collaboration
- Academic-Corporate Collaboration Impact

Disciplinarity metrics

Journal count
Journal category count

Usage metrics (Trends module)

Views Count
Views per Publication
Field-Weighted Views Impact

Snowball Metric; www.snowballmetrics.com/metrics