



Battle of the giants: a comparison of Web of Science, Scopus ... & Google Scholar 😊

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Focus

- Content
- Currency
- Keyword searching
- Author & affiliation searching
- Citation searching & browsing
- Google Scholar
- Summary & conclusions



Content: WoS

- One component of the Web of Knowledge Platform
- 8, 700 current international and high impact titles – 6,000 STM
- Multidisciplinary resource
- Conferences in ISI Proceedings
- Patents in Derwent Innovations Index
- Integration possible with range of additional tools including Journal Citation Reports, Medline, BIOSIS, Web Citation Index



Content

Scopus: a 'one stop shop'

- 15, 000 current international titles
- Essentially STM and social science
- Conferences included
- Patents searched separately
- Includes web search SCIRUS: web sites, theses and e-prints



Content: WoS

- Essentially designed as a citation index
- SCI 1900 – (abstracts from 1991 and keywords from 1991)
- SSCI 1956 – (abstracts from 1992 and keywords from 1991)
- AHCI 1975 – (abstracts from 2000 and keywords from 1991)
- Index Chemicus 1993- Current Chemical Reactions 1986 -
- Retrospective access dependent on backfile purchase; but timescales affect any notion of size



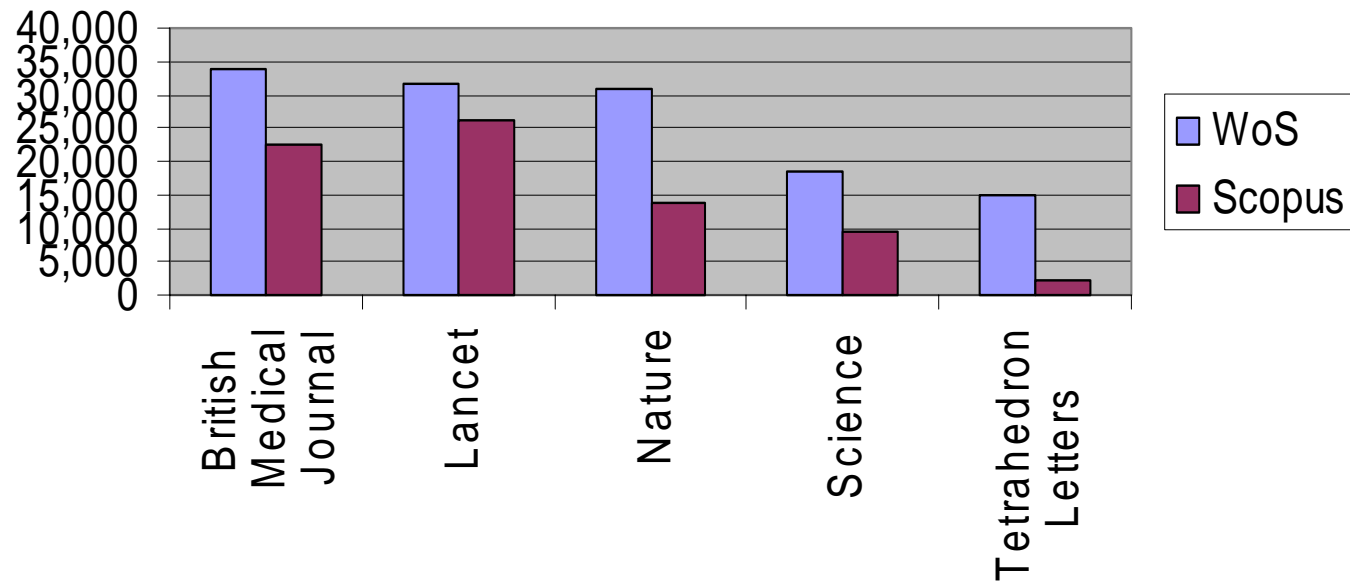
Content: Scopus

- Publisher-submitted records 1996 -
- Citation enhancements from 1996 -
- PubMed records from 1966-
- Content from other Elsevier databases: including Embase (1970-), Biobase (1994-) and Compendex (1970-)
- Notion of broad-based STM is exaggerated. Pre-1996: heavy health & life, engineering focus. Medicinal chemistry & chemical engineering well-served
- 2007 - back files - 7m records from publishers including Elsevier, Springer, Nature, RSC - will include abstracts and focus on chemistry, physics and social science



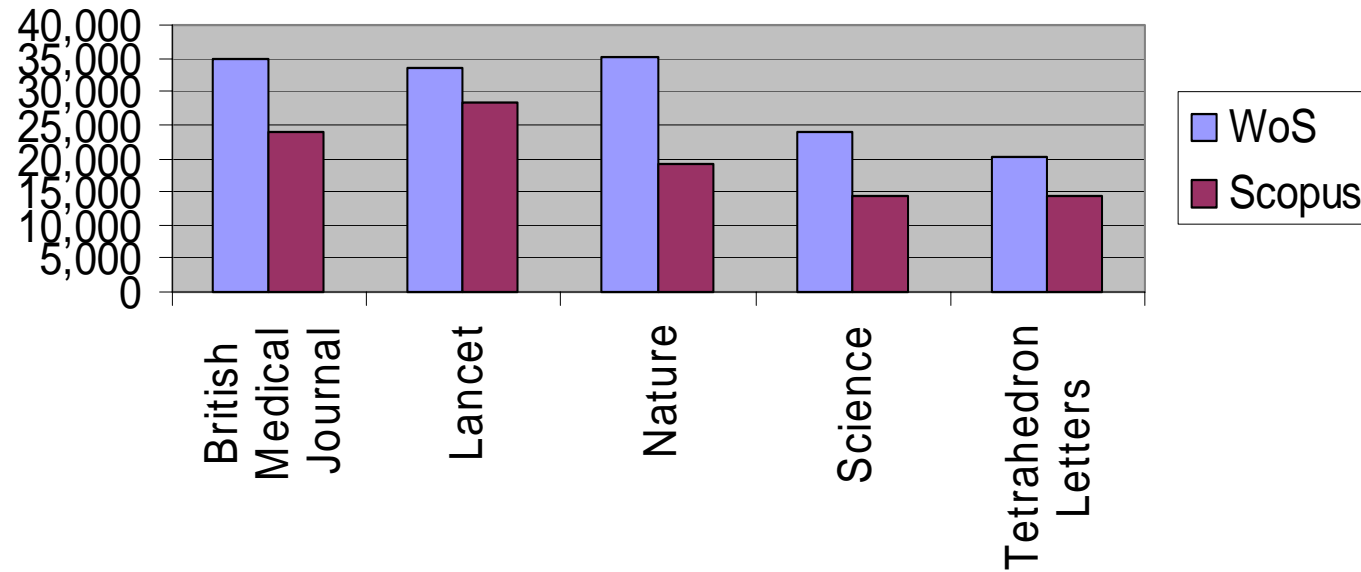
Content

Journal title search 1976-1985



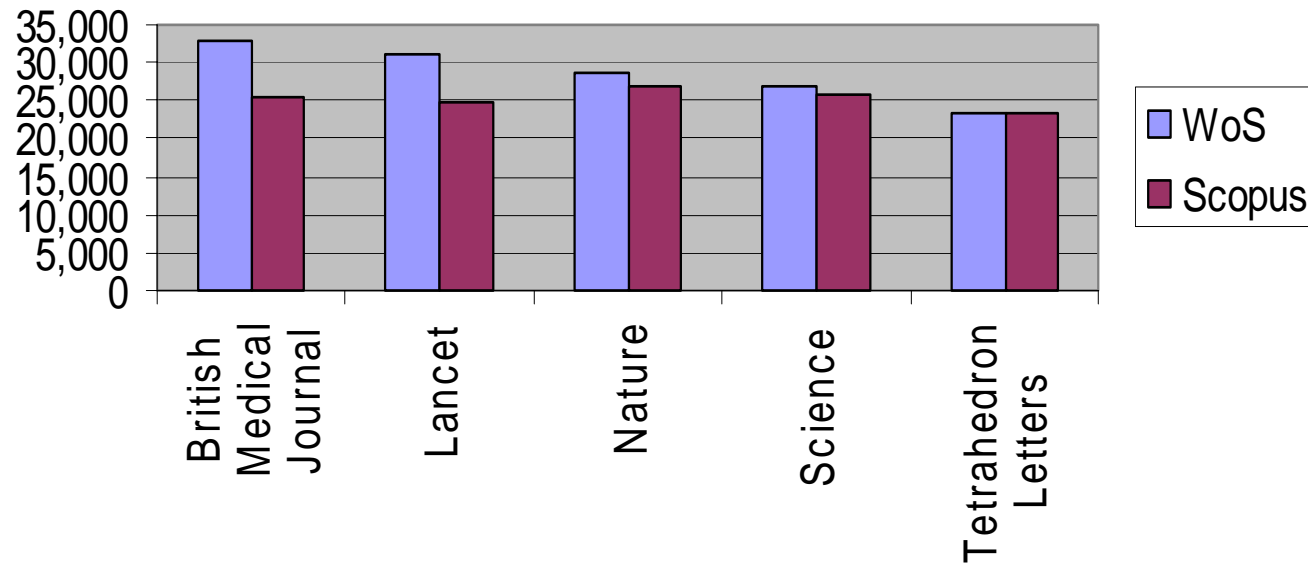
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Content

Journal title search 1996-2005



Currency

Journal	Publisher latest issue	WoS latest issue	Scopus latest issue
BMJ	7572	7568	7568
Lancet	9544	9541	9535
Nature	7112	7111	7110
Science	5797	5796	5794
Tetrahedron Letters	46	38	45



Currency

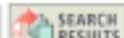
Journal	Publisher latest issue	WoS latest issue	Scopus latest issue
J.A.C.S	42	38	38
Optics Letters	21	18	15
Chem. Comms.	40	38	38
Pharm J.	7422	7404	7419
N.E.J.M	15	14	13



Keyword searching

- Both databases are free text; neither offers linguistic support tools
- WoS has automated indexing that assigns author keywords & 'keywords plus' from 1991 onwards
- Scopus adds author keywords and some index terms from Pubmed (MeSH) and Elsevier databases (including Emtree)
- While they are derived from controlled vocabularies, there is none of the functionality
- Harvesting records in Scopus and refining searches has great potential
- However, ambiguity and inconsistency in the process and more clarity on indexing rules is required
- Best to utilise quality of indexing in PubMed, Embase, SciFinder





Full Record

Record 1 of 4,229

Title: Mechanisms of resistance to anticancer drugs: the role of the polymorphic ABC transporters ABCB1 and ABCG2**Author(s):** [Lepper ER](#), [Nooter K](#), [Verweij J](#), [Acharya M](#), [Figg WD](#), [Sparreboom A](#)**Source:** PHARMACOGENOMICS 6 (2): 115-138 MAR 2005**Document Type:** Review**Language:** English[Cited References: 236](#) [Times Cited: 6](#)[FIND RELATED RECORDS](#)

Abstract: ATP-binding cassette (ABC) genes play a role in the resistance of malignant cells to anticancer agents. The ABC gene products, including ABCB1 (P-glycoprotein) and ABCG2 (breast cancer-resistance protein [BCRP], mitoxantrone-resistance protein [MXR], or ABC transporter in placenta [ABCP]), are also known to influence oral absorption and disposition of a wide variety of drugs. As a result, the expression levels of these proteins in humans have important consequences for an individual's susceptibility to certain drug-induced side effects, interactions, and treatment efficacy. Naturally occurring variants in ABC transporter genes have been identified that might affect the function and expression of the protein. This review focuses on recent advances in the pharmacogenetics of the ABC transporters ABCB1 and ABCG2, and discusses potential implications of genetic variants for the chemotherapeutic treatment of cancer.

Author Keywords: ABC transporters; ABCB 1; ABCG2; BCRP; breast cancer resistance protein; chemotherapy; P-glycoprotein; pharmacogenetics; polymorphisms

KeyWords Plus: ATP-BINDING CASSETTE; SINGLE-NUCLEOTIDE POLYMORPHISMS; MEDIATED MULTIDRUG-RESISTANCE; RENAL-TRANSPLANT PATIENTS; MESSENGER-RNA EXPRESSION; MDR1 GENE POLYMORPHISMS; PERIPHERAL-BLOOD LYMPHOCYTES; ACUTE LYMPHOBLASTIC-LEUKEMIA; INTESTINAL P-GLYCOPROTEIN; HEALTHY JAPANESE SUBJECTS

Addresses: Sparreboom A (reprint author), NCI, Clin Pharmacol Res Core, Bldg 10, Room 5A01, 9000 Rockville Pike, Bethesda, MD 20892 USA
NCI, Clin Pharmacol Res Core, Bethesda, MD 20892 USA
Erasmus Univ, Med Ctr, Dept Med Oncol, Rotterdam, NL-3075 EA Netherlands

E-mail Addresses: sparreba@mail.nih.gov

Publisher: FUTURE MEDICINE LTD, UNITEC HOUSE, 3RD FLOOR, 2 ALBERT PLACE, FINCHLEY CENTRAL, LONDON, N3 1QB, ENGLAND

Subject Category: PHARMACOLOGY & PHARMACY

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Author Keywords

ABC transporters; ABCB1; ABCG2; BCRP; Breast cancer resistance protein; Chemotherapy; P-glycoprotein; Pharmacogenetics; Polymorphisms

Index Keywords

EMTREE drug terms: antineoplastic agent; breast cancer resistance protein; glycoprotein P

EMTREE medical terms: malignant neoplastic disease; pharmacogenetics

Molecular Sequence Numbers

GENBANK, [M14758](#)(referenced)

Chemicals and CAS Registry Numbers

4 [3 (4 benzyl 1 piperidiny)propionyl] 2,3,4,5 tetrahydro 7 methoxy 1,4 benzothiazepine, 145903-06-6; 6 formylamino 12,13 dihydro 1,11 dihydroxy 5h indolo[2,3 a]pyrrolo[3,4 c]carbazole 5,7(6h) dione 13 glucoside, 151069-12-4; 7 ethyl 10 hydroxycamptothecin, 86639-52-3; 7 hydroxystaurosporine, 112953-11-4; biricodar, 174254-13-8; cyclosporin, 79217-60-0; dactinomycin, 1402-38-6, 1402-58-0, 50-76-0; daunorubicin, 12707-28-7, 20830-81-3, 23541-50-6; dextriguldipine, 113145-70-3, 120054-86-6; dioxacillin, 13412-64-1, 3116-76-5, 343-55-5; diethylstilbestrol, 30498-85-2, 56-53-1; diflomotecan, 220997-97-7; digoxin, 20830-75-5, 57285-89-9; DNA topoisomerase, 80449-01-0; docetaxel, 114977-28-5; doxorubicin, 23214-92-8, 25316-40-9; efavirenz, 154598-52-4; elacridar, 143664-11-3; epirubicin, 56390-09-1, 56420-45-2; estradiol, 50-28-2; etoposide, 33419-42-0; exatecan, 144008-87-7, 169869-90-3, 171335-80-1, 197720-53-9; flavopiridol, 146426-40-6; gefitinib, 184475-35-2, 184475-55-6, 184475-56-7; imatinib, 152459-95-5, 220127-57-1; irinotecan, 100286-90-6; ivermectin, 70288-86-7; loperamide, 34552-83-5, 53179-11-6; methotrexate, 15475-56-6, 59-05-2, 7413-34-5; midazolam, 59467-70-8; mitoxantrone, 65271-80-9, 70476-82-3; n [4 (3 chloro 4 fluoroanilino) 7 (3 morpholinopropoxy) 6 quinazolinyl]acrylamide, 267243-28-7, 338796-35-3; nelfinavir, 159989-64-7, 159989-65-8; nortriptyline, 72-69-5, 894-71-3; novobiocin, 1476-53-5, 303-81-1, 39301-00-3, 4309-70-0; paclitaxel, 33069-62-4; phenytoin, 57-41-0, 630-93-3; prednisone, 53-03-2; reserpine, 50-55-5, 8001-95-4; rifampicin, 13292-46-1; ritonavir, 155213-67-5; talinolol, 57460-41-0; tamoxifen, 10540-29-1; tariquidar, 206873-63-4; teniposide, 29767-20-2; testosterone, 58-22-0; tipifarnib, 192185-72-1; topotecan, 119413-54-6, 123948-87-8; tsukubaenolide, 104987-11-3; valspodar, 121584-18-7; vinblastine, 865-21-4; vincristine, 57-22-7; warfarin, 129-06-6, 2610-86-8, 3324-63-8, 5543-58-8, 81-81-2; zosuquidar, 167354-41-8, 167465-36-3, 312905-17-2, 474276-97-6

Tradenames

Drug tradename: bn 80915, ci 1033, dx 8951f, gf 120918, j 107088, jtv 519, ly 335979, nb 506, psc 833, r 101933, r 115777, sn 38, ucn 01, vx 710, xr 9576, zarestra.

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Mechanisms of resistance to anticancer drugs: the role of the polymorphic ABC transporters ABCB1 and ABCG2.

[Lepper ER](#), [Nester K](#), [Yerweij J](#), [Acharya MR](#), [Figz WD](#), [Sparreboom A](#).

National Cancer Institute, Clinical Pharmacology Research Core, Building 10, Room 5A01, 9000 Rockville Pike, Bethesda, MD 20892, USA.

ATP-binding cassette (ABC) genes play a role in the resistance of malignant cells to anticancer agents. The ABC gene products, including ABCB1 (P-glycoprotein) and ABCG2 (breast cancer-resistance protein [BCRP], mitoxantrone-resistance protein [MXR], or ABC transporter in placenta [ABCP]), are also known to influence oral absorption and disposition of a wide variety of drugs. As a result, the expression levels of these proteins in humans have important consequences for an individual's susceptibility to certain drug-induced side effects, interactions, and treatment efficacy. Naturally occurring variants in ABC transporter genes have been identified that might affect the function and expression of the protein. This review focuses on recent advances in the pharmacogenetics of the ABC transporters ABCB1 and ABCG2, and discusses potential implications of genetic variants for the chemotherapeutic treatment of cancer.

Publication Types:

- [Review](#)

MeSH Terms:

- [ATP-Binding Cassette Transporters/genetics](#)
- [ATP-Binding Cassette Transporters/physiology](#)
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- Both offer basic and advanced functions
- Boolean, proximity operators, wild cards...
- Limits
- Both databases have embraced Google syntax and default to AND searching unless you use “”
- Approach free text with caution



Author & affiliation searching

- Matching authors to affiliation information is crucial to disambiguate
- WoS indexes all authors and affiliations provided in the source
- Varying levels of consistency in Scopus: pre-96 1st author/correspondence address; 1996-2001 80% all; 2003 - all
- Standardisation problems partly rest with the authors and institutions!
- WoS offers consistency via an authority file for addresses, including postcode and offers an 'Author Finder' option
- Scopus enables you to select an author from a list of authors with same name and initials



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Volume 162, Issue 5, 1 September 2003, Pages 789-794

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GPI-anchored uPAR requires Endo180 for rapid directional sensing during chemotaxis

[Storrie, J.](#)
[Wianka, D.](#)
[East, L.](#)
[Jones, G.E.](#)
[Isacke, C.M.](#)

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Abstract

Urokinase-type plasminogen activator (uPA) and its receptor (uPAR) play an important role in cell guidance and chemotaxis during normal and pathological events. uPAR is GPI-anchored and the mechanism by which it transmits intracellular polarity cues across the plasma membrane during directional sensing has not been elucidated. The constitutively recycling endocytic receptor Endo180 forms a trimolecular complex with uPAR in the presence of uPA, hence its alternate name uPAR-associated protein. Here, we demonstrate that Endo180 is a general promoter of random cell migration and has a more specific function in cell chemotaxis up a uPA gradient. Endo180 expression was demonstrated to enhance uPA-mediated filopodia production and promote rapid activation of Cdc42 and Rac. Expression of a noninternalizing Endo180 mutant revealed that promotion of random cell migration requires receptor endocytosis, whereas the chemotactic response to uPA does not. From these studies, we conclude that Endo180 is a crucial link between uPA-uPAR and setting of the internal cellular compass.

Author Keywords

Cdc42; Endocytosis; Migration; Rac; UPA

References (35)**Cited By since 1996**

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(2006) *Journal of Cell Biology*

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- [Lelesne, D.](#), [Haranzozaman, M.](#)
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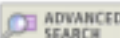
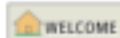
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Abstract: Urokinase-type plasminogen activator (uPA) and its receptor (uPAR) play an important role in cell guidance and chemotaxis during normal and pathological events. uPAR is GPI-anchored and the mechanism by which it transmits intracellular polarity cues across the plasma membrane during directional sensing has not been elucidated. The constitutively recycling endocytic receptor Endo180 forms a trimolecular complex with uPAR in the presence of uPA, hence its alternate name uPAR-associated protein. Here, we demonstrate that Endo180 is a general promoter of random cell migration and has a more specific function in cell chemotaxis up a uPA gradient. Endo180 expression was demonstrated to enhance uPA-mediated filopodia production and promote rapid activation of Cdc42 and Rac. Expression of a noninternalizing Endo180 mutant revealed that promotion of random cell migration requires receptor endocytosis, whereas the chemotactic response to uPA does not. From these studies, we conclude that Endo180 is a crucial link between uPA-uPAR and setting of the internal cellular compass.

Author Keywords: Cdc42; endocytosis; migration; Rac; uPA**Keywords Plus:** MANNOSE RECEPTOR FAMILY; PLASMINOGEN-ACTIVATOR; UROKINASE RECEPTOR; CELL-MIGRATION; LECTIN RECEPTOR; COLLAGEN; BINDING; CANCER; RHO; GLYCOPROTEIN**Addresses:** Isacke CM (reprint author), Inst Canc Res, Breakthrough Breast Canc Res Ctr, Chester Beatty Labs, 237 Fulham Rd, London, SW3 6JB EnglandInst Canc Res, Breakthrough Breast Canc Res Ctr, Chester Beatty Labs, London, SW3 6JB England
GKT Sch Biomed Sci, Randall Ctr Mol Mechanisms Cell Funct, London, SE1 1UL England**Publisher:** ROCKEFELLER UNIV PRESS, 1114 FIRST AVE, 4TH FL, NEW YORK, NY 10021 USA**Subject Category:** CELL BIOLOGY**IDS Number:** 718KT**ISSN:** 0021-9525Record 1 of 11 (Set #2) [SUMMARY](#)

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Citation searching

- Key performance management tool
- ...a degree of academic vanity 😊
- WoS retrospective coverage enhances power of citation searching (100+ years)
- Scopus has added some 245 million references from 1996 -
- Both offer citation browsing and alerting facilities



Citation searching

King, MC and Wilson, AC 1975. *Evolution at two levels in humans and chimpanzees* Science: 188, 107-116

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WoS consistently higher for older articles

So: chronology does matter in the size debate

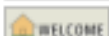


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Example: J Comput Appl Math*

science

CITED YEAR(S): Enter year, or range of years, the cited work was published.

Examples: 1943 or 1943-1945

SEARCH CLEAR

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Your search has found the following references.
Select only those cited references you want to include,
then click FINISH SEARCH.
 (Hint: Look for variants. Papers are sometimes cited incorrectly.)

FINISH SEARCH >>

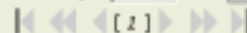
View the articles that cite the selected references.
 The completed search will be added to the search history.

[\(Limit by language and document type\)](#)

CITED REFERENCE INDEX

Go to Page: 1 of 1 60

References 1 -- 6



SELECT PAGE

SELECT ALL*

CLEAR ALL

or select specific references from the list.
 When desired references have been selected from all pages, click FINISH SEARCH to complete your search.

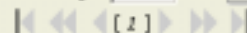
Select	Times Cited**	Cited Author	Cited Work [SHOW EXPANDED TITLES]	Year	Volume	Page	Article ID	View Record
<input type="checkbox"/>	1	ANAND K	SCIENCE					
<input type="checkbox"/>	3	ANAND K	SCIENCE	2003				
<input type="checkbox"/>	1	ANAND K	SCIENCE	2003	5626	1763		
<input type="checkbox"/>	1	ANAND K	SCIENCE	2003	300	1463		
<input type="checkbox"/>	191	ANAND K	SCIENCE	2003	300	1763		View Record
<input type="checkbox"/>	1	ANAND K	SCIENCE	2003	13	13		

* "Select All" adds the first 500 matches to your cited reference search, not all matches.

** Times Cited counts are for all databases and all years, not just for your current database and year limits.

Go to Page: 1 of 1 60

References 1 -- 6



Restrict search by languages and document types:

All languages	All document types
English	Article
Afrikaans	Abstract of Published Item

FINISH SEARCH >>

View the articles that cite the selected references.
 The completed search will be added to the search history.

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Scopus Citation searching

- A related documents option is available, based on citations, authors or keywords
- 'Citation Tracker' generates a global overview of articles and citation rates
- It's more complex to find citations to items not included in Scopus ...
- No simple 'cited reference search' option - you have to use advanced search



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[Basic Search](#) [Author Search](#) [Advanced Search](#)

Search for: [Search Tips](#) | [View list of all codes](#)

REFAUTH(adams mj) REFSRCTITLE(nature) REFPUBYEAR(1970)

Add to search: [Author name](#)

[Search](#) [Clear](#)

- MANUFACTURER
- PAGEFIRST
- PAGELAST
- PAGES
- PUBDATETXT
- PUBYEAR
- REF
- REFARTNUM
- REFAUTH
- REFPAGE
- REFPAGEFIRST
- REFPUBYEAR
- REFSRCTITLE
- REFTITLE

As you type Scopus offers code suggestions. Double click or press "enter" to add to advanced search.

Code: MANUFACTURER
Names: Manufacturer

For Example:
Entering MANUFACTURER(sigma) will return documents with "sigma" in the keywords field.

Advanced search examples:
ALL("heart attack") AND AUTHOR-NAME(smith)
TITLE-ABS-KEY("somatic complaint was?n") AND PUBYEAR AFT 1993
SRCTITLE("field smith") AND VOLUME(75) AND ISSUE(3) AND PAGES(58-66)

[Search History](#)

[Close](#)

Search	Results	Source	Actions
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You have not performed any searches in this session.

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Notes: This Search History will contain the latest 50 searches you perform in this session.

Quick Search

Citation Overview Citations received since 1996

Authors: Sturge, Justin; Sturge, Justin Exclude author self citations

Sort documents: year descending **Date Range:** 2004 to 2006

5 Cited Documents save to list		Citations						total
		<2004	2004	2005	2006	subtotal	>2006	
<input type="button" value="Delete"/>	Total	17	23	24	16	63	0	63
1	<input type="checkbox"/> 2003 GPI-anchored uPAR requires Endo180 ...		6	1	4	11		11
2	<input type="checkbox"/> 2003 A targeted deletion in the endocyt...	2	2	7	2	13		15
3	<input type="checkbox"/> 2003 Regulation of breast cancer cell ch...	1	2	2	2	25		28
4	<input type="checkbox"/> 2001 Fibrin monomer and fibrinopeptide B...			1		1		1
5	<input type="checkbox"/> 2000 Regulation by fibrinogen and its pr...	12	6	6	1	13		25

Display Documents 1 to 5

Citation searching

- Scopus back files will NOT include cited references
- WoS is about to launch a Citation Report tool: statistical & graphical summaries



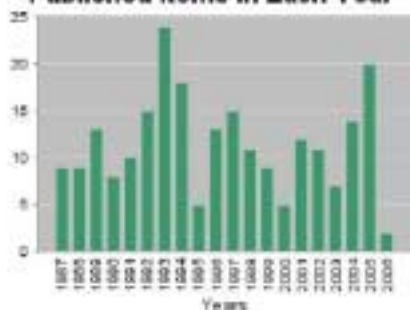
Citation Report

[<< Return to previous Summary page](#)

AU={sharpless kb}

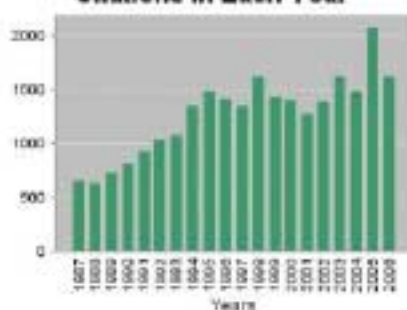
DocType=All document types; Language=All languages; Databases=SCI-EXPANDED, SSCI, AMHCI; Timespan=1900-2006

Published Items in Each Year



Only the first 20 years are displayed.
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Citations in Each Year



Only the first 20 years are displayed.
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Results found: 355

Sum of the Times Cited: 30,094
[View without self-citations](#)

Average Citations per Item: 84.77

h-index: 88

Records 1 to 10 [PRINT](#)

This report reflects citations to source items indexed within Web of Science. Perform a Cited within Web of Science.

355 results found

Go to Page: 1 of 36

Records 1 -- 10

[<](#) [<<](#) [<<<](#) [1](#) [2](#) [>>>](#) [>>](#) [>](#)

Use the checkboxes to remove individual items from Citation Report

or restrict to items processed between 1900-1914 and 2006

- | | 1992 | 1994 | 1996 | 1998 | 2000 | 30,094 | 699.86 |
|---|------|------|------|------|------|--------|--------|
| <input type="checkbox"/> 1. KOLB HC, VANNIEUWENHZE MS, SHARPLESS KB
CATALYTIC ASYMMETRIC DIHYDROXYLATION
CHEMICAL REVIEWS 94 (8): 2483-2547 DEC 1994 | 167 | 154 | 157 | 157 | 107 | 1692 | 141.00 |
| <input type="checkbox"/> 2. GAO Y, HANSON RM, KLUNDER JM, et al.
CATALYTIC ASYMMETRIC EPOXIDATION AND KINETIC RESOLUTION - MODIFIED PROCEDURES INCLUDING INSITU DERIVATIZATION
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 109 (19): 5765-5780 SEP 16 1987 | 80 | 81 | 59 | 70 | 59 | 1509 | 75.45 |
| <input type="checkbox"/> 3. KATSUKI T, SHARPLESS KB
THE 1ST PRACTICAL METHOD FOR ASYMMETRIC EPOXIDATION
JOURNAL OF THE AMERICAN CHEMICAL SOCIETY 102 (18): 5974-5976 1980 | 51 | 64 | 64 | 70 | 51 | 1486 | 55.04 |
| <input type="checkbox"/> 4. CARLSEN PHI, KATSUKI T, MARTIN VS, et al.
A GREATLY IMPROVED PROCEDURE FOR RUTHENIUM TETRAOXIDE CATALYZED OXIDATIONS OF ORGANIC COMPOUNDS
JOURNAL OF ORGANIC CHEMISTRY 46 (10): 3936-3938 1981 | 53 | 72 | 59 | 70 | 28 | 1410 | 54.23 |

Statistical summary of search results. Provides instant analysis of citation statistics, such as total and average citation count and the h-index. Also includes graphical summaries and the ability to save to file.

Data Management

- Print, email, save
- Both offer integrated workflow options
- Export to bibliographic software
- WoS – EndnoteWeb
- RSS alerting



Summary

- As an amalgam of databases there are considerable variations in data entry in Scopus
- Scopus needs to address gaps and inconsistencies in pre-96 coverage...a work in progress
- Scopus interface is clearer and more intuitive
- WoS is good for currency and depth of coverage
- Scopus is good for author/affiliation searching
- Scopus is good for keyword searching
- WoS is good for citation searching, particularly for pre-1996 articles
- Detailed and subject-specific analysis required



Google Scholar

- Free, but lots of content requires authentication
- Still in beta and still an unknown quantity
- Comprises peer-reviewed papers, abstracts, theses, books, e-prints, technical reports
- Trawls publisher sites, professional societies, institutional repositories, full text documents and cited references – but how??
- No clarity on size, content, selection criteria or time span
- No clarity on data gathering or ranking algorithms



Google Scholar 😊

- It's more up to date and identifies material not yet indexed by WoS or Scopus
- It identifies lots of unique material
- It's fast
- It's increasing collaboration with publishers and libraries ensures links to 'appropriate copy' and holdings information is available
- Google search options including "" phrase searching are easy to learn
- It has an 'advanced' search option, with the opportunity to restrict to broad subject areas
- It includes citation data, and there is a 'cited by' function



Google Scholar ☹️

- We've no idea what's included or excluded – or even how it works
- Not all publishers will play ball, so PubMed is used as a proxy index
- Google is constantly crawling the web, but how often is GS updated?
- It lacks any of the sophisticated search functionality of Scopus and WoS - but what would you expect for free!
- Data is inconsistent and there are no efforts at standardisation
- Does it add to info glut?





Conclusions

- Budgetary restraint: fee or free?
- JISC's academic database assessment tool may help
- Demands for Google search functionality will see further interface developments
- Local user requirements crucial in any comparison
- Recall versus precision: does size matter?
- We are not comparing like with like: Comparison of Scopus with accumulated WoS, ISI Proceedings, Medline, Biosis and Web Citation Index would be better



Conclusions

- Estimated critical mass of STM journals 30-50K...so the Google Scholar option is an attractive 'mop up' solution: potentially huge critical mass of supplementary data
- Got to be mean to keep them keen 😊
- Intense competition has bred innovation in author profiling and citation analysis
- No perfect answers



Acknowledgements

- Linda Humphreys, Science Faculty Librarian, University of Bath and Chair, JIBS User Group



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