Measuring Academic Impact

Svetla Baykoucheva
White Memorial Chemistry Library
sbaykouc@umd.edu

Eugene Garfield

The Institute for Scientific Information (ISI) at 3501 Market Street, Philadelphia
The Science Citation Index (SCI)

- The SCI was created by Eugene Garfield in the early 60s.
- He founded the Institute for Scientific Information (ISI), which was later acquired by Thomson-Reuters.
- Web of Science is based on the SCI.
- Journal Impact Factors (IFs) are published in *Journal Citation Reports*.

The converted chicken coop in Thorofare, NJ, where ISI® began.
The IF of a particular journal is the ratio between the number of times articles published in the journal were cited, divided by the number of citable articles published in this journal during the same period of time.

The IF of a journal for the year 2010 is calculated as follows: the number of citations made in 2010 to papers published in a journal during the previous two years (2008 and 2009) is divided by the number of citable articles published in the same two-year period.
Drawbacks of IFs

• Concealed and flawed calculation
• Does not take into account self-citations or negative citations
• Includes limited number of journals
• English-language biased
• Can be misused by editors by publishing reviews as editorials
• Authors may avoid citing their competitors
### Journal Citation Reports (JCR) (Chemistry)

#### Journal Summary List

- **Journals from:** Subject categories: Chemistry, Analytical; Chemistry, Applied; Chemistry, Inorganic & Nuclear; Chemistry, Medicinal; Chemistry, Multidisciplinary; Chemistry, Physical

#### Journals 1 - 20 (of 514)

<table>
<thead>
<tr>
<th>Mark</th>
<th>Rank</th>
<th>Abbreviated Journal Title (linked to journal information)</th>
<th>ISSN</th>
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</table>
Web of Science: Cited Reference Search

Web of Science®

Cited Reference Search  (Find the articles that cite a person's work)

Step 1: Enter information about the cited work. Fields are combined with the Boolean AND operator.

* Note: Entering the title, volume, issue, or page in combination with other fields may reduce the number of cited reference variants found.

Barkusheva S
Example: O'Brian C* OR O'Brian C*

Example: J Comp* Appl* Math* (journal abbreviation list)

Example: 1943 or 1943-1945

Add Another Field >>

Search  Clear  Searches must be in English
1. Title: Regulation of the biosynthesis of 4,7,10,13,16-docosapentaenoic acid
   Author(s): Mohammed, BS; Luthria, DL; Baykoucheva, SP, et al.
   Source: BIOCHEMICAL JOURNAL Volume: 326 Pages: 425-430 Part Part 2 Published: SEP 1 1997
   Times Cited: 16 (from Web of Science)

2. Title: Reevaluation of the pathways for the biosynthesis of polyunsaturated fatty acids
   Author(s): Sprecher, H; Luthria, DL; Mohammed, BS, et al.
   Source: JOURNAL OF LIPID RESEARCH Volume: 36 Issue: 12 Pages: 2471-2477 Published: DEC 1995
   Times Cited: 239 (from Web of Science)

3. Title: PEROXISOMAL MICROSONAL COMMUNICATION IN UNSATURATED FATTY ACID METABOLISM
   Author(s): BAYKOUCHEVA, SP; LUTHRIA, DL; SPRECHER, H
   Times Cited: 18 (from Web of Science)

4. Title: DOUBLE-BOND REMOVAL FROM ODD-NUMBERED CARBONS DURING PEROXISOMAL BETA-OXIDATION OF ARACHIDONIC-ACID Requires BOTH 2,4-DIENYL-COA REDUCTASE AND DELTA(3,5),DELTA(2,4)-DIENYL-COA ISOMERASE
   Author(s): LUTHRIA, DL; BAYKOUCHEVA, SP; SPRECHER, H
   Source: JOURNAL OF BIOLOGICAL CHEMISTRY Volume: 270 Issue: 23 Pages: 13771-13776 Published: JUN 9 1995
   Times Cited: 34 (from Web of Science)

5. Title: DIFFERENCES IN THE REGULATION OF BIOSYNTHESIS OF 20-CARBON VERSUS 22-CARBON POLYUNSATURATED FATTY ACIDS
   Author(s): SPRECHER, HW; BAYKOUCHEVA, SP; LUTHRIA, DL, et al.
   Source: PROSTAGLANDINS LEUKOTRIENES AND ESSENTIAL FATTY ACIDS Volume: 52 Issue: 2,3 Pages: 99-101 DOI: 10.1016/0952-3278(95)90005-5 Published: FEB-MAR 1995
   Times Cited: 5 (from Web of Science)
Web of Science Citations/h-index

Citations in Each Year

Results found: 17
- Sum of the Times Cited: 342
- Sum of Times Cited without self-citations: 333
- Citing Articles: 292
- Citing Articles without self-citations: 287
- Average Citations per Item: 20.12
- h-index: 5

The latest 20 years are displayed.
View a graph with all years.
The *h*-index

- The value of h is equal to the number of papers (N) in the list that have N or more citations.
- An h-index of 20 means there are 20 items that have 20 citations or more.
- This metric is useful because it discounts the disproportionate weight of highly cited papers or papers that have not yet been cited.
- Favors academics that publish a continuous stream of papers with lasting and above-average impact.
- Developed by J.E. Hirsch in 2005
Google Scholar Citations

- Sign to your Google account
- The Citations sign up form will ask you to confirm the spelling of your name, and to enter your affiliation, interests, etc.
- On the next page, you'll see groups of articles written by people with names similar to yours. Click "Add all articles" next to each article group that is yours, or "See all articles" to add specific articles from that group.
- If you don't see your articles in these groups, click "Search articles" to do a regular Google Scholar search, and then add your articles one at a time. Feel free to do as many searches as you like.
Example of Google Scholar Citations

Svetla Baykoucheva

University of Maryland, College Park

Chemical information - science information - lipids - publishing

Verified email at umd.edu

My profile is public

Citation indices

<table>
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<td>i10-index</td>
<td>5</td>
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</tbody>
</table>

Citations to my articles


Reevaluation of the pathways for the biosynthesis of polyunsaturated fatty acids.
H Sprecher, DL Luthria, BS Mohammed, SP Baykoucheva
Journal of Lipid Research 36 (12), 2471-2477

Double Bond Removal from Odd-numbered Carbons during Peroxisomal-Oxidation of Arachidonic Acid Requires both 2, 4-Dienoyl-CoA Reductase and 3-Dienoyl-CoA Isomerase
DL Luthria, SP Baykoucheva, H Sprecher
Journal of Biological Chemistry 270 (23), 13771-13776

Arachidonic acid formed by peroxisomal beta-oxidation of 7, 10, 13, 16-docosatetraenoic acid is esterified into 1-acyl-sn-glycero-3-phosphocholine by microsomes
SP Baykoucheva, DL Luthria, H Sprecher
Journal of Biological Chemistry 269 (28), 18390-18394
Using the metrics in the Journal Analyzer, Librarians and Researchers can objectively assess all of the journals which are indexed in Scopus to make informed decisions on collection development and article submissions.

- SJR
- SNIP
- Documents
- Percent Review
- Percent not cited
- Number of citations
Citations from all items

2009 & 2010 Articles

2011 Citations

= IF™ = 4

Only peer-reviewed items

= IF™ = 3
**SNIP: Balancing the scales**

Created by Professor Henk Moed at CTWS, University of Leiden, Source-Normalized Impact per Paper (SNIP) measures contextual citation impact by weighting citations based on the total number of citations in given subject field. The impact of a single citation is given a higher value in subject areas where citations are less likely, and vice versa.

**About SNIP**

- Measures contextual citation impact by ‘normalizing’ citation values
- Takes a research field’s citation frequency into account
- Considers immediacy - how quickly a paper is likely to have an impact in a given field
- Accounts for how well the field is covered by the underlying database
- Calculates without use of a journal’s subject classification to avoid delimitation

**SJR: The power of prestige**

Developed by Professor Félix de Moya, SCImago Journal Rank (SJR) is a prestige metric based on the idea that ‘all citations are not created equal’. With SJR, the subject field, quality and reputation of the journal has a direct impact on the value of a citation. This means that a citation from a source with a relatively high SJR is worth more than a citation from a source with a lower SJR.

**About SJR**

- Is weighted by the prestige of the journal, thereby ‘leveling the playing field’ among journals.
- Eliminates manipulation: the only way to raise the SJR ranking is to be published in more reputable journals.
- ‘Shares’ a journal’s prestige equally over the total number of citations in that journal.
# Bibliometrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>Impact Factor™</th>
<th>SNIP &amp; SJR</th>
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<td>Equation</td>
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<td>Transparent</td>
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<tr>
<td>Coverage</td>
<td>10,000</td>
<td>19,500</td>
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<tr>
<td>Citation Window</td>
<td>2 &amp; 5 years</td>
<td>3 years</td>
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</tbody>
</table>
SNIP – “Balancing the Scales”

- **SNIP** normalizes for different citation patterns within subject areas, allowing for comparison between Journal A and Journal B.
- When using **SNIP** you can be sure that differences are due to *journal quality* and not subject area citation behaviour.

**SNIP Normalization:**
- Life Sciences – high impact and high citation potential
- Social Science – low impact and low citation potential
SNIP Key takeaways

- Ability to compare titles from different subject fields
- Only uses peer-reviewed items when calculating impact
### SJR – “The power of prestige”

**Journal A** will have a higher SJR than **Journal B**

<table>
<thead>
<tr>
<th>Journal A</th>
<th>Journal B</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Prestige Titles</td>
<td>Low Prestige Titles</td>
</tr>
</tbody>
</table>

- Impact Factor is a metric measuring popularity summing up all citations a journal receives regardless of the status of the citing journal.
- When calculating the SJR quality and reputation of a citing journal has a direct effect on the value of citations.
SJR Key takeaways

• Identifies a Journal’s intricate citation networks

• Aims to limit excessive benefits derived from self citation by discounting journal self-citations once they exceed 1/3 of the total citations received by a journal
### SJR Journal Ranking (Chemistry)

#### How to cite this website?

SJR is developed by

![SCImago](https://www.scimagojr.com/)

Powered by [Scopus](https://www.scopus.com/)

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### Journal Rankings

**Subject Area:** Chemistry  
**Year:** 2011

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<tr>
<td>Accounts of Chemical Research</td>
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<td>Annual Review of Physical Chemistry</td>
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SJR (Chemistry)
The Challenge: Scholarly Name Ambiguity

Many researchers that too closely resemble one another.

Researchers publish under name variations.

Dr. Smith  Dr. Smith  Dr. Smith

Dr. Smith  Dr. J. Smith  Dr. James Smith
The most powerful ALGORITHMIC data processing in the industry

Groups papers to a profile with high degree of accuracy based on matching of name, email, affiliation, subject area, citations, co-authors,...

MANUAL feedback via the Author Feedback Wizard

Combines the starting point from the algorithm profiles and the manual feedback to create the most accurate profiles with the least effort.

Scopus Author/Affiliation Profiles
Scopus Author Searching

Make Author Selection

Author Last Name
Baykoucheva
E.g., smthn

Initials or First Name
E.g., Jl

Affiliation
E.g., university of toronto

Search

To determine which author names should be grouped together under a single identifier number, the Scopus Author Identifier uses an algorithm that matches author names based on their affiliation, address, subject area, source title, dates of publication, creations, and co-authors. Documents with insufficient data may not be matched; this can lead to more than one entry in the results list for the same author. By default, only details pages matched to more than one document in Scopus are shown in search results. About Scopus Author Identifier

Refine results
Limit to
Exclude

Source Title
- Acta Microbiologica
- Bulgarica
- Acta Microbiologica
- Virologica Et Immunologica
- Cancer Letters
- Chemical Innovation
- FEBS Letters

View more

Author results: 2
1 of 1

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<th>Authors</th>
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Request to merge authors
Select the author profiles you’d like to merge and launch the Feedback Wizard

**Merge selected authors**
You have requested to merge the following authors:

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ORCID: Connecting Research & Researchers

ORCID Mission:
ORCID aims to solve the name ambiguity problem in research and scholarly communications by creating a central registry of unique identifiers for individual researchers.
Scopus2ORCID: Easy ORCID Set Up
orcid.scopusfeedback.com

Enter via Scopus2ORCID Wizard or from ORCID!
Scopus2ORCID: Benefits

Save Time
Importing your authors’ information from Scopus is faster and more accurate than manually entering information in ORCID.

Improve Your Researchers’ Scopus Author Profiles
Changes made while using the wizard will be processed in Scopus Author Profiles (approximate time: 8 weeks)
Scopus Tools & Features

• Scopus Profiles Feedback Wizard & ORCID
• Citation Tracker in Scopus
• Author Evaluator Tool
### Make Author Selection

- **Author Last Name**: Baykoucheva
- **Initials or First Name**: E.g., I.
- **Affiliation**: University of Toronto

To determine which author names should be grouped together under a single identifier number, the Scopus Author Identifier uses an algorithm that matches author names based on their affiliation, address, subject area, source title, dates of publication, citations, and co-authors. Documents with insufficient data may not be matched, this can lead to more than one entry in the results list for the same author. By default, only details pages matched to more than one document in Scopus are shown in search results.

### Author results: 2

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Select Show Documents
Analyze Citations Received for the Selected Group of Documents

Citation overview

Citations received since 1996

This is a citation overview for a set of 20 documents.

Overview options

Exclude from citation overview: □ Self citations of all authors

Sort documents Date range

Citations descending ▼ 2011 ▼ to 2013 ▼

Update Overview

<table>
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<td>2 1995 Double bond removal from odd-num...</td>
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<td>0</td>
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<td>3 1995 Peroxisomal-microsomal communica...</td>
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<td>1</td>
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<tr>
<td>4 1994 Arachidonic acid formed by perox...</td>
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</table>
Scopus Tools & Features

- Scopus Profiles Feedback Wizard & ORCID
- Citation Tracker in Scopus
- Author Evaluator Tool
Select author name to open Author Profile
Choose “find potential author matches” to group both profiles in real time.

**Baykousheva, Svetla P.**

**Personal**
- **Name**: Baykousheva, Svetla P.
- **Other formats**: Baykousheva, Svetla
- **Author ID**: 0000096105
- **Affiliation**: University of Maryland, White Memorial Chemistry Library, College Park, United States

**Research**
- **Documents**: 16
- **References**: 0
- **Citations**: 318 total citations by 283 documents
- **$h$ Index**: 1
- **Co-authors**: 13
- **Web search**: 10
- **Subject area**: Biochemistry, Genetics and Molecular Biology, Medicine, Immunology and Microbiology

**History**
- **Publication range**: 1977-2008
- **Source history**: Prostaglandins Leukotrienes and Essential Fatty Acids, Journal of Chromatography A, Zeitschrift fur Allgemeine Mikrobiologie
Author Profile recalculates author stats based on grouped profiles

Baykousheva, Svetla P.

Personal
Name: Baykousheva, Svetla P.

Other formats:
Baykousheva, Svetla
Baykousheva, S. P.
Baykousheva Sv.

Author ID: 6603096105
Affiliation:
University of Maryland, White Memorial Chemistry Library, College Park, United States

Research
Baykousheva, Svetla P.
Documents: 16
References: 0
Citations: 318 total citations by 283 documents

h Index: 1

Total including 1 grouped author
Documents: 20
References: 60
Citations: 320 total citations by 284 documents

h Index: 2

The h Index considers Scopus articles published after 1995.

Co-authors: 13
Web search: 10

Subject area:
Biochemistry, Genetics and Molecular Biology
Medicine
Immunology and Microbiology

Grouped authors:
You have grouped 1 potential author matches with Baykousheva, Svetla P.
To store this group in Settings, click Save group.
Altmetrics
www.altmetrics.org

“...the creation and study of new metrics based on the Social Web for analyzing and informing scholarship”

Takes into account a new environment:

– Sharing of “raw science” like datasets, code, and experimental designs
– Semantic publishing or “nanopublication,” where the citeable unit is an argument or passage rather than entire article.
– Widespread self-publishing via blogging, microblogging, and comments or annotations on existing work.
Google Scholar Metrics

• Uses the Google’s PageRank algorithm
• Uses the h-index to calculate the impact of journals
• One of the main advantages of Google Scholar is that it is more comprehensive in its scope than Thomson Reuters’ Web of Science
• The h-index was created to evaluate individual scholar’s impact; not reliable for journals