How to search for scientific literature

Searching the scietific literature

Science Careers, Adam Ruben, 20 Jan 2016
How to read a scientific paper

"Nothing makes you feel stupid quite like
Reading a scientific journal article."

-Searching for journal articles

-Deciding which articles to read

-Finding the information you want

Science Careers, Elisabeth Pain, 21 Mar 2016
How to (seriously) read a scientific paper

„ Although it is clear that reading
scientific papers
Becomes easier with experience,
the stumbling blocks are real, and
it is up to each scientist to
Identify and apply the techniques
that work best for them."

Searching the literature

Searching the literature
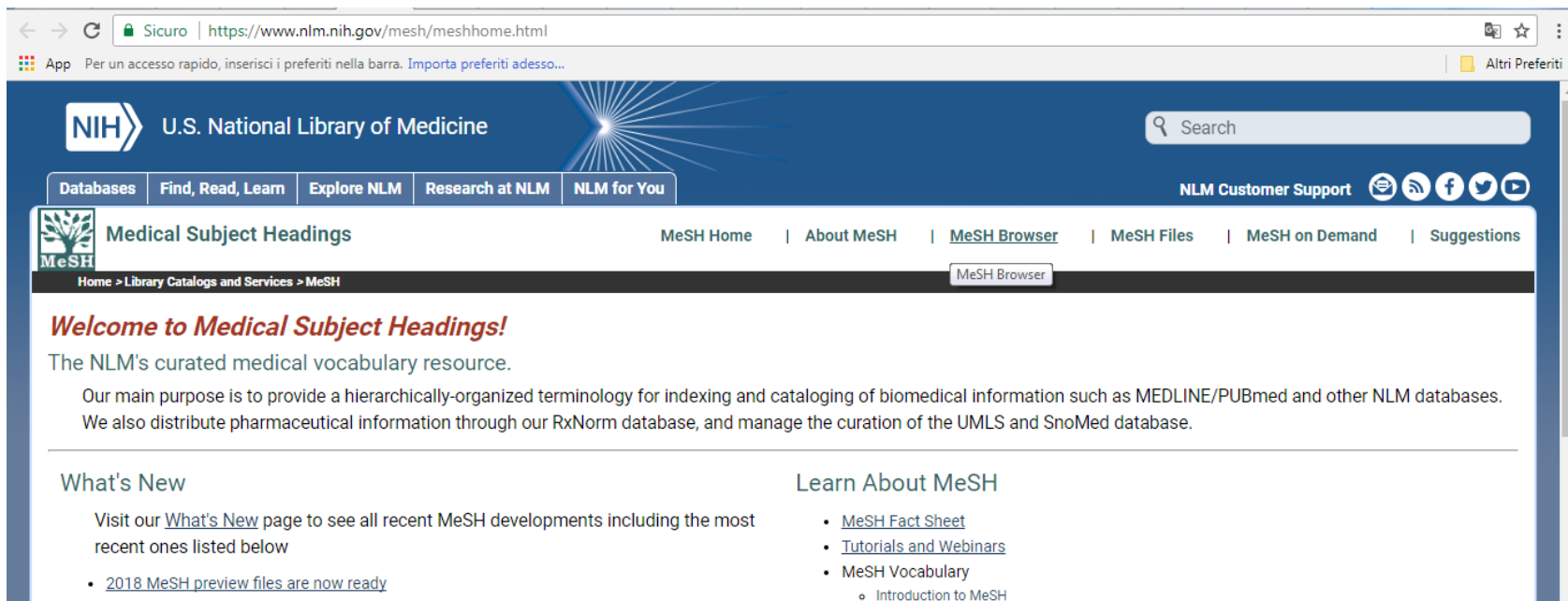
Keywords *vs* subject headings search

Keyword and subject searching methods are two widely used ways to effectively find items on your topic. They are usually offered to the researcher among other search options by any index, database, or online library catalog. There are important advantages to both methods; knowing how to use them and how they differ from each other will help you retrieve better, more accurate results.

Keyword Searching	Subject Headings Searching
uses words or phrases of researcher's choice	uses specific, predefined terms
more flexible – searches in several fields	less flexible – searches in only one field
results may include irrelevant items, less focused search	results include very relevant items, more focused search
may yield too many or too few results	in case of too many results uses sub-headings to focus on one aspect of the broader subject
keywords are appropriate for use across databases; not database-specific	subject headings may differ from database to database

Searching the literature

What is subject searching?

Subject searching uses **subject headings** that come from a predetermined list of possible terms and reflect the content of the item. Most academic libraries use Library of Congress Subject Headings (LCSH) for Subject Search of their online catalogs. A subject search is more **specific** than a keyword search: it looks in only one field of each record – **the subject field**. Many databases use subject headings that are unique to that particular database. This **controlled vocabulary** allows for consistency of terms across the database. For example, **Medline** database uses **MeSH** – medical subject headings and **CINAHL** database also has its own unique headings. These subject headings can be found in the database's **thesaurus**. In the thesaurus subjects are often listed with broader, narrower, or related subjects. Using the database's thesaurus will help you identify most effective search terms.

Searching the literature

Research Tip

Use both **keyword searching** AND **subject searching** to get better results:

1. Start your search with keyword searching; use your own words that describe your topic best.
2. After getting results, focus on the most relevant record(s), and among subject headings, presented in them; choose the most suitable ones for your topic. In some databases subject headings can also be called "terms" or "descriptors".
3. Now is the time to turn to subject headings for your further search.

How to Find Keywords	How to Find Subject Headings
think of any words that describe your topic; use alternate words and synonyms to describe the same idea	catalogs and databases usually provide lists of the subject headings preferred for searching, sometimes called "thesaurus"
start with just a few terms; the more terms you add, the more you narrow your possible results	consult printed multi-volume set of Library of Congress Subject Headings (LCSH), ask Reference Librarian for help

Searching the literature

Define your Topic

A good library research topic usually contains 2-3 concepts. It is often in the form of a research question or statement.

Topics with only 1 concept or many concepts are hard to research.

Look at these examples for how to break a topic into concepts. We will use the concepts as keywords. See how the outcome changes when you have more or fewer concepts in a search topic:

Topic	Number of Concepts	Outcome
Good: Impact of obesity on the development of Type II Diabetes	obesity and Type II Diabetes= 2	34 results in CINAHL Plus with Full Text database
Good: How do high school dropouts rate their self-efficacy?	high school and dropouts and self-efficacy= 3	16 results in ERIC database
Bad: Obesity	Obesity= 1	12,451 results in CINAHL Plus with Full Text database
Bad: Do conflicts with 9th grade homeroom teachers result in students in Boston dropping out of school?	9th grade and homeroom and teachers and students and Boston and drop out= 6	0 results in ERIC database

Searching the literature

Pick Keywords

Breaking your topic or research question into keywords is your second step after you <u>define your topic</u>.

Pull out the words that indicate the main concepts of your topic.

Example:

- Research question: What motivates adult learners taking online courses?

- Keywords: motivates, adult learners, online courses

- Words such as "what" and "taking" do not relate to the core concepts of the research question and are not effective keywords.

- Brainstorm alternative keywords that an author might have used. This includes different word forms:

  - motivates
  - adult learners
  - online courses

  - motivation
  - adult student
  - distance education

  - motivating
  - web-based course

Searching the literature

Why Use Boolean?

Boolean terms (sometimes called Boolean operators, or command terms) connect your keywords to create a logical phrase that the database can understand. This may involve forcing the database to look for multiple terms/concepts at once, which will make your search more precise -- or you may allow the database to search for alternative terms that will bring back more results.

This creates a more precise and powerful search, with a higher percentage of relevant results.

This page will show you how to use the Boolean Terms AND, OR, and NOT in your searches.

Boolean Terms: AND, OR, NOT

Boolean Term	What it Does	How to Use
AND	Finds items that use BOTH keywords.	adult learning AND online courses
OR	Finds items that use EITHER of the keywords.	adult learners OR adult students
NOT	EXCLUDES items that use the keyword(s).	NOT masters programs

Note: You do not have to capitalize and, or, and not in your searches.

Searching the literature

AND

The AND operator:

- connects different concepts
- limits your search
- reduces results

Example:

salary AND retention

articles
about
salary

articles
about
retention

articles about both
concepts: salary
AND retention
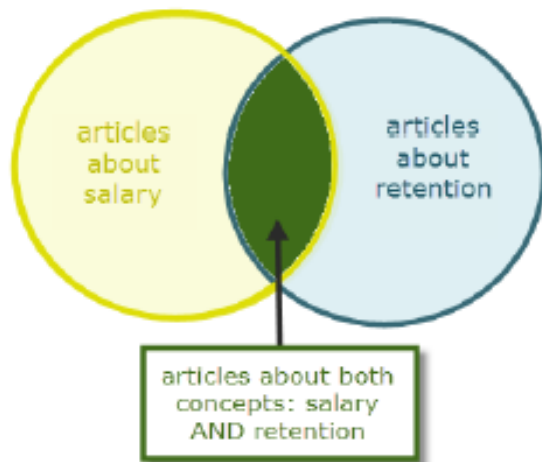
OR

The OR operator:

- finds different ways to phrase a concept
- expands your search
- increases results

Examples:

salary OR wages

articles
about
salary

articles
about
wages

articles about either
concept: salary OR wages
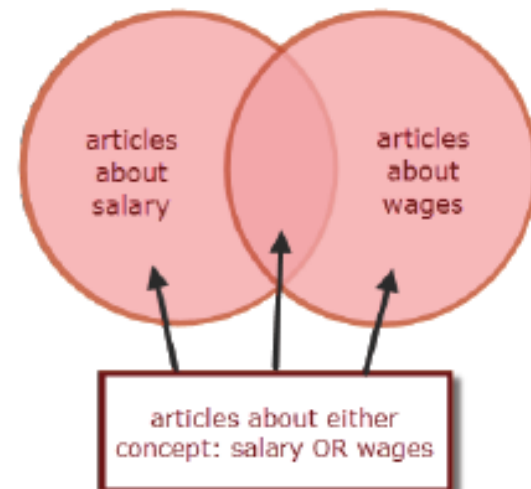
Searching the literature

NOT

The NOT operator:

- excludes results with the keyword

- reduces results

Example:

standardized test NOT SAT

WARNING:Use NOT with caution. It can remove relevant results.

articles about standardized tests NOT SAT

articles about SAT
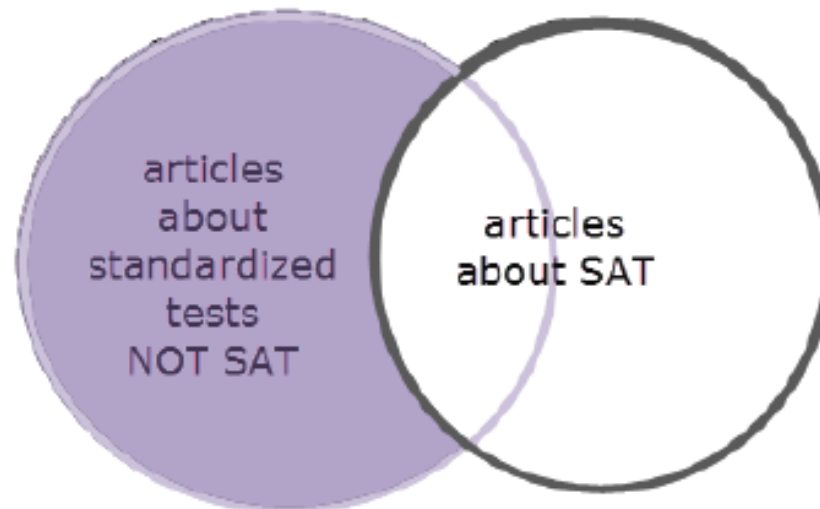
Searching the literature

Truncate Root Words

Truncation allows you to search any ending on a root word.

For example, if your topic uses the word teenagers, then you may also want to search:

- teen

- teens

- teenager

The root word is teen. To truncate and search teen with any ending you would type:

teen*

The asterisk at the end of the root word tells the database to search for that word with any ending.

This expands your search to find more articles.

Searching the literature: google scholar

Advanced search:

Search done by relevance, not by date. To have the newest results use the bar on the left

To search by author, type : author "name"

To search by title: "Title of the article"

Searching the literature: google scholar

The advanced search allows you to search more precisely.
Use the **articles dated between** to limit to specific years.
Try the **authored by** search box to see resources by a specific author
Explore the other search options to see what's most effective for your search:

Searching the literature in PubMed

*PubMed is the **definitive source for literature related to health**. This includes topics in biology, environmental science, public health, neuroscience, and so forth – it's a very large, broad database.*

PubMed

PubMed comprises more than 27 million citations for biomedical literature from MEDLINE, life science journals, and online books. Citations may include links to full-text content from PubMed Central and publisher web sites.

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PubMed Tools

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Batch Citation Matcher

Clinical Queries

Topic-Specific Queries

More Resources

MeSH Database

Journals in NCBI Databases

Clinical Trials

E-Utilities (API)

LinkOut

Latest Literature

New articles from highly accessed journals

Ann N Y Acad Sci (1)

Cell (9)

Cochrane Database Syst Rev (6)

Trending Articles

PubMed records with recent increases in activity

Gut microbiome influences efficacy of PD-1-based immunotherapy against epithelial tumors.
Science. 2017.

Gut microbiome modulates response to anti-PD-1

PubMed Commons

Featured comments

Unpublished data in systematic reviews: E Turner (@eturnermd1) suggests follow-up study to examine how data are used. bit.ly/2hFZICT
Nov 6

Searching the literature in PubMed

Searching the literature in PubMed

Pub Med Tutorial

Index | Glossary | FAQ | MEDLINE/PubMed Resources Guide | Return to PubMed

Home > Learning Resources > PubMed Online Training

- Introduction
- **Understanding the Vocabulary**
- Building the Search
- Managing the Results
- Saving the Search
- Getting the Articles
- Beyond PubMed
- My NCBI
- Review

The MeSH Tree Structure

MeSH vocabulary is organized into 16 main branches:

1. Anatomy
2. Organisms
3. Diseases
4. Chemicals and Drugs
5. Analytical, Diagnostic and Therapeutic Techniques and Equipment
6. Psychiatry and Psychology
7. Phenomena and Processes
8. Disciplines and Occupations
9. Anthropology, Education, Sociology and Social Phenomena
10. Technology, Industry, Agriculture
11. Humanities
12. Information Science
13. Named Groups
14. Health Care
15. Publication Characteristics
16. Geographicals

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Searching the literature in PubMed

*PubMed is the **definitive source for literature related to health**. This includes topics in biology, environmental science, public health, neuroscience, and so forth – it's a very large, broad database.*

Searching the literature in PubMed

Searching the literature in PubMed

Searching the literature in scopus

Scopus is the largest abstract and citation database of peer-reviewed literature, with bibliometrics tools to track, analyze and visualize research. It contains over 22,000 titles from more than 5,000 publishers around the world, covering the fields of science, technology, medicine, social sciences, and Arts & Humanities. Scopus has 55 million records dating back to 1823, 84% of these contain references dating from 1996.

www.elsevier.com/scopus

Searching the literature in scopus

1 Documents
This tab is the main search window of the homepage. To begin, enter the search terms in the space provided. (see page 8 for input rules for search terms).

2 Authors
Choose the Author tab to search for a specific author by name or by ORCID (Open Research and Contributor Identifier) ID.

3 Affiliations
Choose the *Affiliation* tab to search for a specific affiliation.

4 Search Items
Select which fields you wish to search.

5 Add search field
Click on the "+" button to add a search field using multiple keywords (See bullet 6).

6 Boolean Operators
Select from AND, OR, AND NOT to combine search terms.

7 Limit to Section
Click on the "Limit" drop down link to control search by limiting to: published years, recently added, document type and subject areas.

8 Search History
When you return to the search window after carrying out a search, your search history will be displayed at the bottom. The search history is cleared for each new session.

9 Set Alerts or RSS Feeds
Hover over a search result in *Search history* and click on the icons that appear: *Set alert* (to receive email alerts), *Set feed* (to receive RSS updates), *Save query*, *Edit query*, or *Delete query*.

10 Sources
Search and browse sources (journals, book series, conference proceedings and trade publications) and access CiteScore, SJR and SNIP metrics for free.

11 Alerts
Login with your credentials to receive email alerts to stay up to date with the latest developments.

12 Help, tutorials and help desk
On the help page you can find pages explaining all the features in Scopus and watch tutorials. Use the live chat to ask the helpdesk for assistance.

13 Register
Personalize your Scopus experience.

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1 Set Alert
Notifies you by email or RSS feed when a new article that matches your search conditions is listed (requires login).

2 Analyze Search Results
Click to see an analysis of your results, showing the number of documents broken down by various criteria, including year, source, author, affiliation, and so on.

3 Number of Search Results
Displays the number of documents results.

4 Search within Results
Add additional terms to your search by directly entering them here.

5 Refine Results
Use the *Refine Results* pane to limit your results list to certain categories of documents. For example, you can limit the display to documents from a certain author, or those published in a certain year. You can also exclude certain documents from the results list.

6 Batch Processing Results
Export bibliographic information using reference managers Mendeley or RefWorks, or in file formats RIS, CSV, BibTex or Text. If you use RefWorks, you can add your RefWorks ID/PW to seamlessly link Scopus and RefWorks. Click on the ☰ in the navigation bar and go to *Export and reference management settings* found under the *Personal profile access menu*.

Download multiple PDF files and automatically assign them names based on specified rules. The file names can be a combination of author, publication year, article title, journal, and more. The maximum number of files you can download at one time is 50 if PDF is available. Firebox or IE 9, 10, 11 required.

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More (see bullet 10)

7 Display Document Details Page
Click the article title to view the document details (the abstract and referenced works) of the article. Hovering over a search result will show the following links:
- *Full text on each publisher's website if authorized*
- *Show abstract*
- *Related documents*

8 Author details
Click on an author's name to see the author profile and a list of his/ her documents.

9 Source details
Click on a document's source title to view the source details, including Scopus journal metrics.

10 More
View references displays all documents referenced by the article(s).

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Email allows you to send articles as an email.

Print displays articles in a format suited for printing.

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Search
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> Limit

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4 document results

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10 document results

(TITLE-ABS-KEY (hydrolase*) AND TITLE-ABS-KEY (desymmetrization) AND TITLE-ABS-KEY ("amino acid"))

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