



## PubMed Help

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PubMed comprises approximately 20 million citations for biomedical literature from MEDLINE, life science journals, and online books. PubMed citations and abstracts include the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences. PubMed also provides access to additional relevant Web sites and links to the other NCBI molecular biology resources.

PubMed is a free resource that is developed and maintained by the National Center for Biotechnology Information (NCBI), at the U.S. National Library of Medicine (NLM), located at the National Institutes of Health (NIH).

Publishers of journals can submit their citations to NCBI and then provide access to the full-text of articles at journal Web sites using LinkOut.



For a brief overview of searching PubMed, see the Quick Start section.

### FAQs

- How can I get the full-text article?
- How do I find consumer health information about a disease or condition?
- How can I import citations into my reference management program?
- How do I create a link to PubMed?
- What can I do about system error messages or typographical errors?
- Why is the link to the full-text not working?
- How can I save my search and receive an automatic ?

### PubMed Quick Start

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### How do I search PubMed?

#### Quick Tour

- 1 Identify the key concepts for your search.
- 2 Enter the terms (or key concepts) in the search box.
- 3 Automatic suggestions will display as you type your search terms. Click Turn off to temporarily disable the auto suggest feature.
- 4 Click Search. [Click here to run this search in PubMed.](#)

Example
What role does pain have in sleep disorders?
The key concepts are:
pain
sleep disorders

### How do I search by author?

#### Quick Tour

Enter the author's last name plus initials without punctuation in the search box and click Search.

Example
Watson JD
Lederberg J

Click Advanced search to use the Search Builder, and then select Author from the All Fields menu. The author search box includes an autocomplete feature.

Example
To search for citations to articles written by Bonnie W. Ramsey about gene therapy for cystic fibrosis patients enter the following search terms into the search box:
cystic fibrosis gene therapy ramsey bw

Example
Full author names may be searched for citations published from 2002 forward if the full author name is available in the article:
Joshua Lederberg
Garcia Algar, Oscar

If you only know the author's last name, use the author search field tag [au], e.g., brody[au].

If an author name includes only stopwords, use the author search field tag [au] to search in combination with other terms, e.g., just by[au] seizure.

### How do I search by journal name?

Enter the journal name or abbreviation in the search box.

Example
To search for citations to articles about drosophila in the journal Molecular Biology of the Cell enter the following in the search box:
molecular biology of the cell drosophila

Click Advanced Search to use the Search Builder, and then select Journal from the All Fields menu. The journal search box includes an autocomplete feature.

### How do I find a specific citation? I have some information such as the author, journal name and the year the article was published.

Use the Single Citation Matcher to find citations with a fill-in-the-blank format:

- 1 Click Single Citation Matcher from the PubMed homepage or use the Advanced search Search Builder.
- 2 Enter the information you have in the fill-in-the-blank boxes.
- 3 Click Go.

### Is there anything special for clinical searches?

From the Clinical Queries page you can search by a clinical study category, find systematic reviews and run medical genetics searches.

#### Clinical study category

The Clinical Study Categories use built-in search filters that will limit retrieval to citations to articles reporting research conducted with specific methodologies, including those that report applied clinical research. To find citations for a specific clinical study category:

- 1 Click Clinical Queries from the PubMed homepage or Advanced search.
- 2 Click Search by Clinical Study Category.
- 3 Enter your search terms in the search box.
- 4 Select a category: therapy, diagnosis, etiology, or prognosis.
- 5 Select a scope: narrow, specific search or broad, sensitive search.
- 6 Click Go.

Example
If you are researching the clinical aspect of gene therapy for cystic fibrosis, from the Clinical Queries page, select the category "therapy" and the Scope "narrow, specific search" and enter the following search terms in the search box:
cystic fibrosis gene therapy

### How do I find systematic reviews or medical genetic searches?

In PubMed, Systematic Reviews cover a broad set of articles that build consensus on biomedical topics and Medical Genetics Searches find citations related to topics in medical genetics.

- 1 Click Clinical Queries from the PubMed homepage or Advanced Search.

- 2 Select either Find Systematic Reviews or Medical Genetics Searches.
- 3 Enter search terms in the search box.
- 4 For Medical Genetics Searches, change the search categories, if applicable.
- 5 Click Go.

Example
If you are researching systematic reviews on inhalation therapy for pneumonia from the Clinical Queries page click Systematic Reviews and enter the following search terms in the search box:
inhalation therapy pneumonia

Example
To find information on sickle cell anemia and genetic counseling from the Clinical Queries page click Medical Genetic Search, click the All check box to deselect all the categories and click the Genetic Counseling check box. Enter the following search terms in the search box:
sickle cell anemia

### Can you explain the search results?

PubMed search results are displayed in a summary format, see the Anatomy of Search Results Page below.

Citations are initially displayed 20 items per page with the most recently entered citations displayed first.

You can mouse over a journal's title abbreviation to display the full journal name.

### Anatomy of the Summary Results

- [C-type Lectins](#) ← **Title**
1. Cummings RD, McEver RP. ← **Authors**  
 In: Varki A, Cummings RD, Esko JD, Freeze HH, Stanley P, Bertozzi CR, Hart GW, Etzler ME, editors. Essentials of Glycobiology. 2nd edition, Cold Spring Harbor (NY): Cold Spring Harbor Laboratory Press; 2009. Chapter 31.  
 PMID: 20301263 [PubMed] [Books & Documents](#) [Free text](#) ← **Link to Free Full-Text**
- [Teaching medical students about chronic disease: patient-led teaching in rheumatoid arthritis](#)
2. [arthriti](#) ← **Journal Abbreviation**  
 Phillpotts C, Creamer P, Andrews T.  
 Musculoskeletal Care. 2010 Mar 19. [Epub ahead of print]  
 PMID: 20301228 [PubMed - as supplied by publisher]
- [miR-125b-2 is a potential oncomiR on human chromosome 21 in megakaryoblastic leukemia](#)
3. Klusmann JH, Li Z, Böhmer K, Maroz A, Koch ML, Emmrich S, Godinho FJ, Orkin SH, Reinhardt D. ← **Publication Date**  
 Genes Dev. 2010 Mar 1;24(5):478-90. ← **Pages**  
 PMID: 20194440 [PubMed - indexed for MEDLINE] [Free PMC Article](#) [Free text](#)  
[Related citations](#) ← **Volume & Issue Number**

### How do I display an abstract?

Click the title of the article to see the abstract. “No abstract available” is indicated on citations without an abstract.

### How can I get a copy of the article?

PubMed search results do not include an electronic copy of the journal article. However, the abstract display of PubMed citations may provide links to electronic copies from non-PubMed sources, such as directly from the publisher’s Web site.

These electronic journals may require a subscription although access may be available through your local medical library. In addition, electronic journals sometimes provide free access. Consider visiting your local medical library if there is not an electronic copy available.

For more information on obtaining the article, see [How to Get the Journal Article](#).

### How can I save my results?

There are several ways to save PubMed search results including using the **Clipboard** to save citations temporarily and to save indefinitely.

- 1 Click the check box to the left of the citations you want to save.
- 2 From **Send to**, select **Clipboard**.
- 3 To view your selections, click the **Clipboard** items link.

For additional information see [Saving Citations Temporarily using the Clipboard and .](#)

For other save options, see:

- 
- [Creating a URL to Bookmark Your Search](#)
- [Saving Citations as a Text File](#)
- [Exporting Citations into a Reference Management Program](#)

### I retrieved too many citations. How can I focus my search?

To limit the number of search results:

- Replace general search terms with more specific ones (e.g., search for low back pain instead of back pain).
- Add additional terms to your search.
- Use Limits to limit citations by age group, language, publication type, date, human studies, etc.
- Click Manage Filters in the **Filter your results** portlet to change your filter selections in .

Example
If the search pain sleep disorders retrieves too many citations consider adding more specific search terms to focus your results such as facial pain sleep disorders.

### I retrieved too few citations. How can I expand my search?

- Click the **Related citations See all** link for a relevant citation to display a pre-calculated set of PubMed citations closely related to the article.
- Remove extraneous or specific terms from the search box.

- Try using alternative terms to describe the concepts you are searching.

Example
If your search, facial pain sleep disorders, retrieves too few citations consider removing search terms to broaden the search and retrieve more citations such as, pain sleep disorders.

### I'm not finding what I need. How does a PubMed search work?

PubMed may modify your search terms to enhance your retrieval.

To see how PubMed modified your search, click **Advanced search** Details. You can edit your search in Details.

For additional information, see How PubMed works: Automatic Term Mapping.

Example
If you search for cystic fibrosis by its abbreviation of the cf search retrieves some citations that do not discuss cystic fibrosis. To see why PubMed retrieved these citations, click Advanced search Details to see that PubMed translated cf to search for citations about cerebrospinal fluid or cf.

### I need further assistance and training

#### Contacting customer support

- E-mail the PubMed Help Desk
- Call the NLM Customer service desk: 1-888-FIND-NLM (1-888-346-3656)

#### Other NLM publications

- Tutorials
- Distance Education Resources
- NLM PubMed Training Manuals
- NLM Technical Bulletin

### Search Field Descriptions and Tags

Affiliation [AD] Article Identifier [AID] All Fields [ALL] Author [AU] Book [book] Comment Corrections Corporate Author [CN] Create Date [CRDT] EC/RN Number [RN] Editor [ED] Entrez Date [EDAT] Filter [FILTER] First Author Name [IAU] Full Author Name [FAU] Full Investigator Name [FIR] Grant Number [GR] Investigator [IR]	ISBN [ISBN] Issue [IP] Journal Title [TA] Language [LA] Last Author [LASTAU] Location ID [LID] MeSH Date [MHDA] MeSH Major Topic [MAJR] MeSH Subheadings [SH] MeSH Terms [MH] NLM Unique ID [JID] Other Term [OT] Owner Pagination [PG] Personal Name as Subject [PS] Pharmacological Action MeSH Terms [PA]	Place of Publication [PL] PMCID & MID Publication Date [DP] Publication Type [PT] Secondary Source ID [SI] Subset [SB] Substance Name [NM] Text Words [TW] Title [TI] Title/Abstract [TIAB] Transliterated Title [TT] UID [PMID] Volume [VI]
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#### Affiliation [AD]

May include the institutional affiliation and address (including e-mail address) of the first author of the article as it appears in the journal. This field can be used to search for work done at specific institutions (e.g., cleveland [ad] AND clinic [ad]).

**Article Identifier [AID]**

Includes article identifiers submitted by journal publishers such as doi (digital object identifier). These data are typically used for generating LinkOut links.

**All Fields [ALL]**

Untagged terms and terms tagged with [all fields] are processed using Automatic Term Mapping. Terms that do not map are searched in all search fields except for Place of Publication and Transliterated Title. Terms enclosed in double quotes or truncated will be searched in all fields. PubMed ignores stopwords.

**Author [AU]**

The format to search for this field is: last name followed by a space and up to the first two initials followed by a space and a suffix abbreviation, if applicable, all without periods or a comma after the last name (e.g., fauci as or o'brien jc jr). Initials and suffixes may be omitted when searching.

PubMed automatically truncates on an author's name to account for varying initials, e.g., o'brien j [au] will retrieve o'brien ja, o'brien jb, o'brien jc jr, as well as o'brien j. To turn off this automatic truncation, enclose the author's name in double quotes and tag with [au] in brackets, e.g., "o'brien j" [au] to retrieve just o'brien j.

Searching by full author name for articles published from 2002 forward is also possible, if available. Full names display in the FAU field on the MEDLINE display format. Various limits on the number of authors included in the MEDLINE citation have existed over the years (see NLM policy on author names).

**Book [book]**

To search for book citations, e.g., genereviews[book].

Use the following untagged searches to retrieve all book or book chapters, e.g., ataxia AND pmcbookchapter

books and chapters: pmcbook

books: pmcbooktitle

book chapters: pmcbookchapter

**Comment Correction Type**

The data in these fields are citations to other associated journal publications, e.g., comments or errata. Often these link to the respective citation. Comments/Corrections data can be retrieved by the search term that follows each type:

- **Comment in:** hascommentin
- **Comment on:** hascommenton
- **Erratum in:** haserratumin
- **Erratum for::** haserratumfor
- **Corrected and republished in:** hascorrectedrepublishedin
- **Corrected and republished from:** hascorrectedrepublishedfrom
- **Partial Retraction in:** haspartialretractionin

- **Partial Retraction of:** haspartialretractionof
- **Republished in:** hasrepublishedin
- **Republished from:** hasrepublishedfrom
- **Retraction in:** hasretractionin
- **Retraction of:** hasretractionof
- **Update in:** hasupdatein
- **Update of:** hasupdateof
- **Summary for patients in:** hassummaryforpatientsin
- **Original Report in:** hasoriginalreportin

### Corporate Author [CN]

Identifies the corporate or collective authorship of an article. Corporate names display exactly as they appear in the journal.

Note: Citations indexed pre-2000 and some citations indexed in 2000-2001 retain corporate authors at the end of the title field. For comprehensive searches, consider including terms and/or words searched in the title field [ti].

### Create Date [CRDT]

The date the citation record was first created.

### Editor [ED]

Editors for book or chapter citations.

### EC/RN Number [RN]

Number assigned by the Enzyme Commission (EC) to designate a particular enzyme or by the Chemical Abstracts Service (CAS) for Registry Numbers, e.g., 1-5-20-4[rn]

### Entrez Date [EDAT]

Date the citation was added to the PubMed database. Exceptions: As of December 15, 2008, records that enter PubMed more than twelve months after the date of publication have the EDAT set to the date of publication. Prior to this, the Entrez Date was set to the Publication Date on citations published before September 1997.

Search results are displayed in Entrez Date order, i.e., last in, first out. The Entrez Date is not changed to reflect the date a publisher supplied record is elevated to in process or when an in process record is elevated to indexed for MEDLINE.

To enter a date range, insert a colon (:) between each date (e.g., 1996:1997 [edat] or 1998/01:1998/04 [edat]).

Note: The Entrez Date is not changed to reflect the date a publisher supplied record is elevated to in process or when an in process record is elevated to indexed for MEDLINE.

See Searching By Date for additional information.

### Filter [FILTER] [SB]

Technical tags used by LinkOut, filters include:

- **loall[sb]** - Citations with LinkOut links in PubMed.
- **free full text[sb]** - Citations that include a link to a free full-text article.
- **full text[sb]** - Citations that include a link to a full-text article.

Use **Advanced Search Search Builder Index** to browse the LinkOut index. Select Filter from the All Fields menu, enter 'loprov' in the search box, select Index. PubMed displays an alphabetic list of the LinkOut providers. The 'losubj' and 'loattr' entries are links indexed by . The 'loftext' entries include a link to the online full-text of a journal citation.

### First Author Name [1AU]

The first personal author name in a citation.

### Full Author Name [FAU]

The full author name for articles published from 2002 forward, if available. Full author searching can be entered in natural or inverted order, e.g., julia s wong or wong julia s.

### Full Investigator or Collaborator Name [FIR]

The full investigator or collaborator name for articles, if available. Full investigator searching can be entered in natural or inverted order, e.g., harry janes or janes harry.

### Grant Number [GR]

Research grant numbers, contract numbers, or both that designate financial support by agencies of the US PHS (Public Health Service), and other national or international funding sources. The four parts of the grant data are:

- 1 number, e.g., LM05545
- 2 PHS 2-character grant abbreviation, e.g., LM
- 3 institute acronym, e.g., NLM NIH HHS
- 4 country, e.g., United States

Each part is searchable using [gr], e.g., NIH[gr]

See Grant codes and agency abbreviations used in grant numbers for the 2-character abbreviations, PHS agency acronyms, and other US and non-US funding organization.

#### More information about grant numbers:

- NIH grant numbers, e.g., 5R01CA101211-03, typically have three main parts:
  - A prefix that indicates the type of grant, e.g., 5R01
  - An 8-character serial number consisting of a 2-character grant abbreviation and a 6-digit number, e.g., CA101211
  - A suffix with additional data such as grant year, e.g., 03
- To search for an individual NIH grant number use the 8-character serial number and [gr] tag, e.g., ca101211[gr].
- Grant numbers display in PubMed as they appear in the published article. If the grant number in the journal article is not 6 digits, e.g., CA84141, search by inserting a leading zero, e.g., ca084141[gr], so the entire string is a total of 8 characters long.
- For a broader search, use the PHS 2-character grant abbreviation, e.g., ca[gr] or the institute acronym, e.g., nci[gr].

- Search non-PHS organization names in full or individual parts, e.g., wellcome trust [gr], wellcome[gr].
- For generic numbers, it may be necessary to include the organization or country, e.g., 193588[gr] AND canada[gr].

**ISBN [ISBN]**

The ISBN for book or book chapters.

**Issue [IP]**

The number of the journal issue in which the article was published.

**Investigator [IR]**

Names of principal investigator(s) or collaborators who contributed to the research. Search names following the Author field format, e.g., sollar b [ir]

**Journal Title [TA]**

The journal title abbreviation, full journal title, or ISSN number (e.g., J Biol Chem, Journal of Biological Chemistry, 0021-9258).

The Journals database is available from the PubMed Advanced Search and home pages to look up the full name, abbreviation, and ISSN number of a journal. If a journal title contains special characters, e.g., parentheses, brackets, enter the name without these characters, e.g., enter J Hand Surg [Am] as J Hand Surg Am.

**Language [LA]**

The language in which the article was published. Note that many non-English articles have English language abstracts. You can either enter the language or enter just the first three characters of most languages, e.g., chi [la] retrieves the same as chinese [la]. The most notable exception is jpn [la] for Japanese.

**Last Author Name [LASTAU]**

The last personal author name in a citation.

**Location ID [LID]**

The DOI or publisher ID that serves the role of pagination to locate an online article.

**MeSH Date [MHDA]**

The date the citation was indexed with MeSH Terms and elevated to MEDLINE for citations with an Entrez Date after March 4, 2000. The MeSH Date is initially set to the Entrez Date when the citation is added to PubMed. If the MeSH Date and Entrez Date on a citation are the same, and the Entrez Date is after March 4, 2000, the citation has not yet been indexed.

Dates must be entered using the format YYYY/MM/DD [mhda], e.g. 2000/03/15 [mhda]. The month and day are optional (e.g., 2000 [mhda] or 2000/03 [mhda]).

To enter a date range, insert a colon (:) between each date (e.g., 1999:2000 [mhda] or 2000/03:2000/04 [mhda]).

## MeSH Major Topic [MAJR]

A MeSH term that is one of the main topics discussed in the article denoted by an asterisk on the MeSH term or MeSH/Subheading combination, e.g., Cytokines/physiology\*. See MeSH Terms [MH] below.

## MeSH Subheadings [SH]

MeSH Subheadings are used with MeSH terms to help describe more completely a particular aspect of a subject. For example, the drug therapy of asthma is displayed as asthma/drug therapy, see MeSH/Subheading Combinations in MeSH Terms [MH] below.

The MeSH Subheading field allows users to "free float" Subheadings, e.g., hypertension [mh] AND toxicity [sh].

MeSH Subheadings automatically include the more specific Subheading terms under the term in a search. To turn off this automatic feature, use the search syntax [sh:noexp], e.g., therapy [sh:noexp].

In addition, you can enter the two-letter MeSH Subheading abbreviations rather than spelling out the Subheading, e.g., dh [sh] = diet therapy [sh].

## MeSH Terms [MH]

NLM's Medical Subject Headings controlled vocabulary of biomedical terms that is used to describe the subject of each journal article in MEDLINE. MeSH contains more than 23,000 terms and is updated annually to reflect changes in medicine and medical terminology. MeSH terms are arranged hierarchically by subject categories with more specific terms arranged beneath broader terms. PubMed allows you to view this hierarchy and select terms for searching in the MeSH Database.

Skilled subject analysts examine journal articles and assign to each the most specific MeSH terms applicable - typically ten to twelve. Applying the MeSH vocabulary ensures that articles are uniformly indexed by subject, whatever the author's words.

Notes on MeSH Terms and Major MeSH Topic search fields:

- To search the term only as a MeSH term, it must be tagged using the search field, e.g., [mh] for MeSH Terms or [majr] for MeSH Major Topic. A tagged term is checked against the MeSH translation table. And mapped to the appropriate MeSH term. Some concepts may map to two or more MeSH terms. To turn off this mapping, enclose the MeSH term in double quotes and tag with [mh], e.g., "cold" [mh].
- MeSH terms are arranged hierarchically by subject categories with more specific terms arranged beneath broader terms. MeSH terms in PubMed automatically include the more specific MeSH terms in a search. For more detailed information about MeSH vocabulary including the hierarchical structure, please see the MeSH home page.
- MeSH/Subheading Combinations: To directly attach MeSH Subheadings, use the format MeSH Term/Subheading, e.g., neoplasms/diet therapy. You may also use the two-letter MeSH Subheading abbreviations, e.g., neoplasms/dh. The [mh] tag is not required, however [majr] may be used, e.g., plants/genetics[majr]. Only one Subheading may be directly attached to a MeSH term. For a MeSH/Subheading combination, PubMed always includes the more specific terms arranged beneath broader terms for the MeSH term and also includes the more specific terms arranged beneath broader Subheadings. The broader Subheading, or one of its indentions', will be directly attached to the MeSH term or one of its indentions'. For example,

hypertension/therapy also retrieves hypertension/diet therapy; hypertension/drug therapy; hypertension, malignant/therapy; hypertension, malignant/drug therapy, and so on, as well as hypertension/therapy.

- To turn off the automatic inclusion of the more specific terms, use the syntax [field:noexp], e.g., hypertension [mh:noexp], or hypertension [majr:noexp], or hypertension/therapy [mh:noexp]. The latter example turns off the more specific terms in both parts, searching for only the one Subheading therapy attached directly to only the one MeSH term hypertension.
- If parentheses are embedded in a MeSH term, replace the parentheses with a space and tag with [mh] e.g., enter the MeSH term Benzo(a)pyrene as benzo a pyrene [mh].
- MeSH terms can be selected for searching in the MeSH database and from the Advanced search Search Builder Index.

### **NLM Unique ID [JID]**

The alpha-numeric identifier for the cited journal that was assigned by NLM's Integrated Library System LocatorPlus, e.g., 0375267 [jid].

### **Other Term [OT]**

Mostly non-MeSH subject terms (keywords). The Other Term data may be marked with an asterisk to indicate a major concept, however asterisks are for display only. You cannot search Other Terms with a major concept tag. The OT field is searchable with the Text Word [tw] and Other Term [ot] search tags.

### **Owner**

Acronym that identifies the organization that supplied the citation data. Search using owner + the owner acronym, e.g. ownernasa.

### **Pagination [PG]**

Enter only the first page number that the article appears on. The citation will display the full pagination of the article but this field is searchable using only the first page number.

### **Personal Name as Subject [PS]**

Use this search field tag to limit retrieval to where the name is the subject of the article, e.g., varmus h[ps]. Search names following the Author field format, e.g., varmus h[ps].

### **Pharmacological Action MeSH Terms [PA]**

Substances known to have a particular pharmacologic action. Each pharmacologic action term index is created with the drug/substance terms known to have that effect. This includes both MeSH terms and terms for Supplementary Concept Records.

### **Place of Publication [PL]**

Indicates the cited journal's country of publication. Geographic Place of Publication regions are not searchable. In order to retrieve records for all countries in a region (e.g., North America) it is necessary to OR together the countries of interest. Note: This field is not included in All Fields or Text Word retrieval.

### **PMCID & MID**

Search for PubMed Central or Manuscript Identifiers using the appropriate prefix followed by the ID number, e.g., PMC2600426.

**Publication Date [DP]**

The date that the article was published.

Dates or date ranges must be searched using the format YYYY/MM/DD [dp], e.g. 1998/03/06 [dp]. The month and day are optional (e.g., 1998 [dp] or 1998/03 [dp]).

To enter a date range, insert a colon (:) between each date (e.g., 1996:1998 [dp] or 1998/01:1998/04 [dp]).

Use the following format to search X days, months or years immediately preceding today's date where X = numeric value:

- “last X days”[dp]
- “last X months”[dp]
- “last X year”[dp]

Note:

- Journals vary in the way the publication date appears on an issue. Some journals include just the year, whereas others include the year plus month or year plus month plus day. And, some journals use the year and season (e.g., Winter 1997). The publication date in the citation is recorded as it appears in the journal.
- If an article is published electronically and in print on different dates both dates are searchable and may be included on the citation prefaced with an Epub or Print label. The electronic date will not be searchable if it is later than the print date, except when range searching.
- To search for electronic dates only use the search tag [EPDAT], for print dates only tag with [PPDAT].

**Publication Type [PT]**

Describes the type of material the article represents (e.g., Review, Clinical Trial, Retracted Publication, Letter); see the PubMed Publication Types, e.g., review[pt]. Publication Types are arranged hierarchically with more specific terms arranged beneath broader terms. Publication types automatically include the more specific publication types in a search.

**Secondary Source ID [SI]**

The SI field identifies secondary source databanks and accession numbers, e.g., GenBank, GEO, PubChem, ClinicalTrials.gov, ISRCTN. The field is composed of the source followed by a slash followed by an accession number and can be searched with one or both components, e.g., genbank [si], AF001892 [si], genbank/AF001892 [si].

The SI field and the NCBI sequence database links are not linked. The PubMed links to these databases are created from the reference field of the GenBank or GenPept flat file. These references include citations that discuss the specific sequence presented in these flat files.

**Subset [SB]**

Method of restricting retrieval by topic, citation status and journal/citation subsets, with the search tag [SB]. See also Limits and Finding Related Links for a Citation Using LinkOut.

**Substance Name [NM]**

The name of a chemical discussed in the article. Synonyms to the Supplementary Concept Substance Name will automatically map when tagged with [nm]. This field was implemented in mid-1980. Many chemical names are searchable as MeSH terms before that date.

**Text Words [TW]**

Includes all words and numbers in the title, abstract, other abstract, MeSH terms, MeSH Subheadings, Publication Types, Substance Names, Personal Name as Subject, Corporate Author, Secondary Source, and Other Terms (see Other Term [OT] above) typically non-MeSH subject terms (keywords), including NASA Space Flight Mission, assigned by an organization other than NLM.

**Title [TI]**

Words and numbers included in the title of a citation.

**Title/Abstract [TIAB]**

Words and numbers included in the title, abstract, and other abstract of a citation. English language abstracts are taken directly from the published article. If an article does not have a published abstract, NLM does not create one.

**Transliterated Title [TT]**

Words and numbers in title originally published in a non-English language, in that language. Non-Roman alphabet language title are transliterated. Transliterated title is not included in All Fields or Text Word retrieval so you must search terms using the [tt] search tag.

**Unique Identifier [PMID]**

PubMed Unique Identifier PMID.




To search for a PMID enter the number with or without the search field tag [pmid]. You can search for several PMIDs by entering each number in the search box separated by a space (e.g., 17170002 16381840); PubMed will OR the PMIDs together.

To search in combination with other terms, you must enter the search field tag, e.g., smith [au] AND (pubmed AND 16381840[pmid]).

**Volume [VI]**

The number of the journal volume in which an article is published.

**Searching PubMed****Section Contents**

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- Searching for a phrase
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- Combining search terms with Boolean operators (AND, OR, NOT)
- Searching in a specific field or index
- Finding a citation using the Single Citation Matcher
- Finding citations related to a citation
- Using Clinical Queries
- Finding systematic reviews

### A basic search



- 1 Identify the key concepts for your search.

Example
Find citations about bronchodilators for treating asthma in children.
The key concepts are bronchodilators, asthma and children

- 1 Enter terms into the search box.
- 2 Press the Enter key or click Search.

A spell checking feature suggests alternative spellings for search terms that may include misspellings.

A Citation Sensor displays results for searches that include terms characteristic of citation searching, e.g., author names, journal titles, publication dates, and article titles.

A Gene Sensor checks queries, and if it detects the symbol for a gene, links to the Gene database.

A Drug Sensor identifies drug names in queries and then links to the Bookshelf: PubMed Clinical Q&A.

Recent Activity displays your recent database searches and document views.

Additional sensors and discovery ads related to your search may display with your results.

### Searching by author



Enter the author's name in the format of last name followed by initials. Omit punctuation.

Examples
smith ja
jones k

#### More information about author searching:

- Click Advanced search and use the **Search Builder**. Select Author from the All Fields menu, enter an author's name, and then click the AND OR or NOT buttons to add the name to the search box. The author search box includes an autocomplete feature.
- Author names are automatically truncated to account for varying initials and designations such as Jr. To turn off the truncation, use double quotes around the author's name with the author search field tag [au], e.g., "smith j" [au].
- If only the author's last name is entered, tag the name with the author search field [au], to find the name in the author field only.
- Use the [1au] tag to search for the first personal author or [lastau] to search for the last personal author name in a citation.

Example
woods [au]

Full author names may be searched for citations published from 2002 forward if the full author name is available in the article. Enter a full author name in natural or inverted order, e.g., julia s wong or wong julia s.

Example
Joshua Lederberg
Garcia Algar, Oscar

#### More information about full author searching:

- A comma following the last name for searching is optional. For some names, however, it is necessary to distinguish which name is the last name by using the comma following the last name, e.g., james, ryan.
- Omit periods after initials and put all suffixes at the end, e.g., vollmer charles jr
- Initials and suffixes are not required, if you include a middle initial or suffix, you will only retrieve citations for articles that were published using the middle initial or suffix.
- To distinguish author initials that may match a full author name use the [fau] search tag, e.g., peterson do[fau].

### Searching by journal title



Enter in the search box one of the following:

- full journal title (e.g., molecular biology of the cell)
- title abbreviation (e.g., mol biol cell)
- ISSN number, a standardized international code (e.g., 1059-1524)

Example
new england journal of medicine

To find full journal names, use the Journals database, or mouseover a citation's journal abbreviation.

- 1 Click Journals Database on the PubMed homepage or Advanced search.
- 2 Enter the journal name and click Go.
- 3 Check the Suggestions if the journal name does not display in the results.
- 4 Choose PubMed under the Links menu to search for the journal.

#### More information about journal searching:

- Use the Single Citation Matcher that includes a journal autocomplete feature.
- Click Advanced search and use the **Search Builder**. Select Journal from the All Fields menu, enter a journal title, and then click the AND OR or NOT buttons to add the name to the search box. The journal search box includes an autocomplete feature.
- Tag the journal title by using the search field [ta] to limit your search to only the journal, e.g., gene therapy[ta], scanning [ta].
- Searching with the full journal title or abbreviation is recommended for complete retrieval of indexed items; older citations may not have an ISSN.
- If a journal title or abbreviation includes a special character (e.g., parentheses, brackets, &), enter the title or abbreviation without the special characters. For example, to search j hand surg [am], enter j hand surg am.
- Searching for a journal will automatically map to the official journal title and the title associated with an alternative title, if one exists. To turn off this automatic mapping enclose the journal in double quotes and tag with [ta], e.g., "science"[ta].

A list of journals included in PubMed is available by FTP.

#### Searching by date

- 1 Click Advanced search and use the **Search Builder**.
- 2 Select a date field from the All Fields menu, e.g., Publication Date, and enter a single date or a date range in the fill-in-the-blank boxes. Month and day are optional. If you want to search for a date range up to the current date, do not edit the to 'present' date box.
- 3 Click the AND OR or NOT buttons to add the date to the search box.
- 4 Click Search.

#### Searching by a single date in the search box

Enter dates using the format yyyy/mm/dd [date field]. There is a selection of date fields to use:

- Date of Publication [dp] - Date searching includes both print and electronic dates of publication. Searching for a single date does not include items when the electronic date of publication is after the print date.
- Electronic Date of Publication (if applicable) [epdat]
- Print Date of Publication (if applicable) [ppdat]
- Entrez Date [edat] - The date the citation first entered PubMed.
- MeSH Date [mhda] - The date the citation was indexed with MeSH terms.

- Create Date [crdt] – The date the citation record was first created.

The month and day are optional.

Example
1997/10/06 [edat]
1998/03/15 [dp]
1997 [edat]
1997/03 [dp]

### Searching for a date range in the search box

Enter date ranges using a colon (:) between each date followed by a [date field].

Example
1993:1995 [dp]
1997/01:1997/06 [edat]
2002:2009[crdt]

Comprehensive searches for a full year should be entered as 2000:2000[dp] rather than 2000 [dp] to retrieve citations with a different print and electronic year of publication.

Date range searching includes both print and electronic dates of publication.

### Searching for a relative date range

Use the following format to search for a relative date range:

- term="last X days"[Search Tag]
- term="last X months"[Search Tag]
- term="last X years"[Search Tag]

where X is the number of days, months or years immediately preceding today's date and [Search Tag] is the date search tag: [dp], [edat] or [crdt].

## Limits

You can limit your search by dates, type of article, languages, species, gender, subsets, ages, text options, and specific search fields.

- 1 Click **Limits**.
- 2 Choose any limit selections from the options available on the page.
- 3 If necessary, make changes to the search terms in the search box or enter a new search.
- 4 Click Search.

Note:

- When Limits are selected a **Limits Activated** message will display on the results page. To turn off limits click Remove and run a new search.
- The "in process" and "supplied by publisher" citations may be excluded for some limit selections because they have not yet completed the MEDLINE indexing process.

## Dates

Choose a date from the Published in the Last menu selections to limit your search results by publication date, or choose the Specify date range menu option to enter a specific date or date range.

## Type of Article

The publication type restricts your search based on the type of material the article represents, such as:

- Clinical Trial
- Editorial
- Letter
- Meta-Analysis
- Practice Guideline
- Randomized Controlled Trial
- Review

Scroll down in the Type of Article box to display the complete list of publication types.

This limit may exclude "in process" and "supplied by publisher" citations because they have not yet completed the MEDLINE indexing process.

## Languages

The languages limit restricts your search to articles written in a particular language.

Languages displays a list of the most frequently used languages:

- English
- French
- German
- Italian
- Japanese
- Russian
- Spanish

Scroll down in the Languages box to display the complete list of languages under the More Languages.

## Species

The species limit restricts your search to a human or animal study.

This limit will exclude "in process" and "supplied by publisher" citations because they have not yet completed the MEDLINE indexing process.

## Gender

Gender restricts your search to a specific gender for a human study.

This limit will exclude "in process" and "supplied by publisher" citations because they have not yet completed the MEDLINE indexing process.

## Subsets

### *Journal Groups & More Subsets*

The Journal/Citation subsets restrict retrieval to specialized journals or articles on specialized topics in other journals. The table lists the Journal subsets, along with the code used for searching. Some subsets are closed and no longer being assigned to current data.

To search for a Journal/Citation subset, enter in the search box: jsubset?, where ? represents the subset code.

Example
neoplasms AND jsubsets
This search will limit retrieval to citations from bioethics journals or selected bioethics citations from other journals.

The Journal/Citation subset does not require a search tag.

### *Topics*

The topics subsets restrict retrieval to specific subjects including:

- AIDS
- Bioethics
- Cancer
- Complementary Medicine
- History of Medicine
- Space Life Sciences
- Systematic Reviews
- Toxicology

Each topic subset limit uses its own specialized search strategy.

Alternatively, each topic subset can be searched using the respective search value of **aids**, **bioethics**, **cancer**, **cam**, **history**, **space**, **systematic** or **tox** followed by the [sb] search tag.

Example
asthma AND cam [sb]

Do not confuse the topic subsets for AIDS, Bioethics, Cancer, History of Medicine, and Space Life Sciences with the journal or other subsets (see below) for the same topics, i.e., jsubsetx, jsubsets, jsubsetq, and jsubsets.

### *PubMed Central Subset*

This subset restricts retrieval to citations that have a free full-text article available in PubMed Central (PMC).

To search for PubMed Central citations use Limits Subsets, or search pubmed pmc[sb].

Example
protein p53 AND pubmed pmc[sb]

Use the PMID : PMCID Converter to identify one type of ID with the other.

### **Citation Status Subsets**

The citation status indicates the processing stage of an article in the PubMed database (see PubMed Citation Status Subsets).

The status tags are displayed with each citation in the search results. To search for a particular citation status, enter one of the search terms below followed by the [sb] search tag

- publisher
- in process
- medline
- oldmedline
- pubmednotmedline

Example
n engl j med AND medline [sb]

To search for the total number of PubMed citations, enter all [sb] in the search box.

Note: The MEDLINE subset can be selected from More Subsets in Limits.

### **Ahead of Print Citations**

Publishers may submit citations for articles that appear on the Web prior to their publication in final or print format. To search for these ahead-of-print citations, enter `pubstatusaheadofprint`.

Example
pubstatusaheadofprint AND gene

Following publication of the completed issue, the date an article was published electronically is also displayed, e.g. Proc Natl Acad Sci U S A. 2003 Apr 1;100(7):3925-9. Epub 2003 Mar 24.

### **Ages**

The age limits restrict your search to a specific age group for a human study, and include:

- All Infant: birth-23 months
- All Child: 0-18 years
- All Adult: 19+ years
- Newborn: birth-1 month
- Infant: 1-23 months
- Preschool Child: 2-5 years
- Child: 6-12 years
- Adolescent: 13-18 years
- Young Adult: 19-24 years
- Adult: 19-44 years
- Middle Aged: 45-64 years
- Middle Aged + Aged: 45+ years
- Aged: 65+ years

- 80 and over: 80+ years

This limit will exclude "in process" and "supplied by publisher" citations because they have not yet completed the MEDLINE indexing process.

### Text Options

To limit your search results to only citations that include a link to full text, a link to free full text, or an abstract, click the appropriate check boxes.

Alternatively, you may search for citations with links to full text, free full text or include an abstract using the values: full text[*sb*], free full text[*sb*], or 'hasabstract'. No search field tag is required for hasabstract.

Example
neoplasms AND hasabstract

Note: Most citations in PubMed to articles published before 1975 do not include abstracts.

### Search Field Tags

Choose a specific search field tag to limit all terms in the search box to that field.

### Advanced Search

- Searching by a specific field
- Browsing the index of terms
- Combining searches using history
- Previewing the number of search results
- Displaying the search details

### Searching by a specific field

Use the Advanced search **Search Builder** to search for terms in a specific search field.

- To search by **author**, select Author from the All Fields menu, enter an author's name, and then click the **Add to Search Box** button to add the name to the search box. The author search box includes an autocomplete feature.
- To search by journal, select Journal from the All Fields menu, enter a journal name, and then click the Add to Search Box button to add the name to the search box. The journal search box includes an autocomplete feature..
- To search for other fields in a citation, use the pull-down menus to select a field before entering a term in the search builder box.
- Click the **Add to Search Box** button to add terms to the search box.
- Terms entered in the Search Builder search box will be added with the default Boolean operator AND unless OR, or NOT is chosen from the pull-down menu.
- If both the search box and the search builder box include terms, the system will combine the terms from both locations using the current Boolean operator in the pull-down menu.
- You may also search a specific field, and bypass the automatic term mapping, by adding the appropriate tag to a search term (Search Field Descriptions and Tags).
  - The search tag must be enclosed in square brackets.

- Case and spacing do not matter (e.g., crabs [mh] = Crabs[mh]).

Example
aromatherapy [mh]

## Browsing the index of terms

The Advanced Search **Search Builder Index** provides an alphabetical display of all terms in each PubMed search field. You can browse by all fields or within a specific field such as MeSH Terms.

- 1 Click **Advanced search**.
- 2 Use the **Search Builder** to select a search field from the All Fields menu.
- 3 Enter a term in the search box, and then click **Show Index**.
- 4 PubMed displays an alphabetic list of search terms. The number of citations for each term appears in parentheses. Click Previous or Next to move within the index.
- 5 Select a term. To select multiple terms (and OR them together), select on each term while holding down the Ctrl key (PC) or the Command key (Mac).
- 6 Click the Add to Search Box button to add terms to the search box. Repeat steps as necessary.
- 7 Click Search.

### More information about using the index:

PubMed processes all Boolean operators left to right. To change this order, enclose search terms to be processed first in parentheses, e.g., common cold AND (vitamin c OR zinc). PubMed will automatically OR (and add parentheses) for multiple terms selected from the Index.

## Previewing the number of search results

Use the **Preview** button in Advanced Search to preview the number of citations before displaying the search results:

- 1 Click **Advanced search**.
- 2 Enter your search term(s) in the search box.
- 3 Click **Preview** to display the number of results in **Search History**.
- 4 To display the citations, click the Search History result link.

## Combining searches using History

Previous searches can be combined or used in subsequent searches using the search statement number from the Advanced Search **Search History**.

- 1 Click Advanced search.
- 2 In the Search History section, click the search statement number to display the options menu that includes Boolean operators to AND, OR or NOT your search to the search box. Alternatively you can enter a number sign followed by the search number, e.g., #1, in the search box. Other menu options include:
  - Delete the search from the History
  - View display the results for the search
  - Details to display the search details
  - Save in

- 3 Add additional search terms into the search box or combine with other searches.
- 4 Click Search.

Examples
#2 AND #6
#3 AND (drug therapy OR diet therapy)
#5 gene therapy

#### More information about the History:

- The Search History will be lost after 8 hours of inactivity.
- Click Clear History to delete all searches from History.
- PubMed will move a search statement number to the top of the History if a new search is the same as a previous search.
- History search numbers may not be continuous because some numbers are assigned to intermediate processes, such as displaying a citation in another format.
- The maximum number of searches held in History is 100. Once the maximum number is reached, PubMed will remove the oldest search from the History to add the most current search.
- A separate Search History will be kept for each database, although the search statement numbers will be assigned sequentially for all databases.
- PubMed uses cookies to keep a history of your searches. For you to use this feature, your Web browser must be set to accept cookies.
- Citations in the Clipboard are represented by the search number #0, which may be used in Boolean search statements. For example, to limit the citations you have collected in the Clipboard to English language citations, use the following search: #0 AND english [la]. This does not change or replace the Clipboard contents.

### Searching for a phrase

PubMed does not perform adjacency searching. However, many phrases are recognized by the MeSH Translation Table used in PubMed's Automatic Term Mapping (ATM). For example, if you enter fever of unknown origin, PubMed recognizes this phrase as a MeSH concept. If a phrase is not recognized you can bypass ATM and search for a phrase using the following formats:

Examples
<ul style="list-style-type: none"> <li>• Enclose the phrase in double quotes: "kidney allograft"</li> <li>• Use a search tag: kidney allograft[tw]</li> <li>• Use a hyphen: first-line</li> <li>• Truncate: kidney allograft*</li> </ul>

#### More information for phrase searching:

- If you use a hyphen or quotes and the phrase is not found, the hyphen or quotes are ignored and the phrase is processed using automatic term mapping. Phrases may appear in a PubMed record but not be in the phrase index.
- When you enter your search terms as a phrase PubMed will not perform automatic term mapping that includes the MeSH term and any specific terms indented under that term in the MeSH hierarchy. For example, "health planning" will include citations that are indexed to the MeSH term, Health Planning, but will not include the more specific

terms, e.g., Health Care Rationing, Health Care Reform, Health Plan Implementation, that are included in the automatic MeSH mapping.

- Truncating a word in a multi-word search may result in an unexpected phrase search. For example the search, fetus infection\* maternal will treat fetus infection\* as a phrase. Check **Advanced search** Details to see the search translation.

### Truncating search terms

To search for all terms that begin with a word, enter the word followed by an asterisk (\*), the wildcard character.

Example
flavor*
Finds terms that begin with the root term flavor, such as flavored, flavorful, flavoring, etc.

#### More information about truncation:

- PubMed searches for the first 600 variations of a truncated term. If a truncated term (e.g., tox\*) produces more than 600 variations, a warning message displays to lengthen the root word to search for all endings.
- Truncation turns off automatic term mapping and the process that includes the MeSH term and any specific terms indented under that term in the MeSH hierarchy. For example, heart attack\* will not map to the MeSH term Myocardial Infarction or include any of the more specific terms, e.g., Myocardial Stunning; Shock, Cardiogenic.
- Truncating a word in a multi-word search may result in an unexpected phrase search. For example the search, fetus infection\* maternal will treat fetus infection\* as a phrase.

### Finding a citation using the Single Citation Matcher

The Single Citation Matcher has a fill-in-the-blank form for searching for a citation when you have some bibliographic information, e.g., journal name, volume, page number.

- 1 Click Single Citation Matcher on the **PubMed home** or **Advanced search** pages.
- 2 Enter the citation information.
- 3 Click Go.

#### More information about using the Single Citation Matcher:

- The journal box includes an autocomplete feature that suggests titles as you enter a title abbreviation or full title. Titles displayed by the autocomplete menu are in ranked order based on the number of citations in PubMed.
- After selecting a journal with special characters (e.g., ampersand, colon) when using the Back button to return to the Single Citation Matcher you must clear and reenter the title.
- The author box also includes an autocomplete feature that suggests author names in ranked order based on the number of citations. Full author names may be searched for citations published from 2002 forward if the full author name is available in the article.
- Click either the 'Only as first author' or 'Only as last author' check box to limit an author name to the first or last author.

## Combining search terms with Boolean operators (AND, OR, NOT)

PubMed applies an AND operator between concepts, e.g., “vitamin c common cold” is translated as vitamin c AND common cold. Enter Boolean operators in uppercase characters to combine or exclude search terms:

- **AND** retrieves results that include all the search terms.
- **OR** retrieves results that include at least one of the search terms.
- **NOT** excludes the retrieval of terms from your search.

Examples
Find citations on DNA that were authored by Dr. Crick in 1993: dna [mh] AND crick [au] AND 1993 [dp]
Find citations on the effects of heat or humidity on multiple sclerosis: (heat OR humidity) AND multiple sclerosis
Find citations about arthritis excluding the Publication Type Letter: arthritis NOT letter [pt]

PubMed processes searches in a left-to-right sequence. Use parentheses to “nest” concepts that should be processed as a unit and then incorporated into the overall search.

Example
common cold AND (vitamin c OR zinc)

### More information about using Boolean operators:

Boolean operators must be used when combining tagged search terms as follows: **search term [tag] BOOLEAN OPERATOR search term [tag]**. (See Search Field Descriptions and Tags)

- In a multi-word search PubMed will use Automatic Term Mapping to identify concepts. For example, for the search *air bladder fistula*, PubMed will search "air bladder" as a phrase. If you do not want this automatic phrase parsing, enter each term separated by the Boolean operator AND, e.g., air AND bladder AND fistula.
- Click **Advanced search** Details to see how PubMed translated your search strategy.

## Finding citations related to a citation

Consult the **Related citations** displayed on the abstract format.

The **Related citations See all...** link will retrieve a pre-calculated set of PubMed citations that are closely related to the selected article. The related citations will be displayed in ranked order from most to least relevant, with the “linked from” citation displayed first.

### More information about Related citations:

- PubMed creates the set of related citations by comparing words from the title, abstract, and MeSH terms using a word-weighted algorithm.
- Select PubMed from the **Find Related Data** portlet to retrieve related citations for your result set.
- Limits are not activated for related citation results, however, subsequent searches will include limits selected prior to displaying related citation results.
- You can refine the list of related citations using **Advanced search** History where the related citations retrieval is represented as "Link to PubMed from (PMID of document)." Use this Search number in a search. The related citations retrieval list is

displayed in ranked order from most to least relevant; however, refining the list removes the ranked order and may remove citations that are most relevant.

- Use the ELink utility to retrieve related citations for large sets of citations.

### Using Clinical Queries

PubMed Clinical Queries provides specialized searches for clinicians:

- **Search by Clinical Study Category** - clinical search filters based on the work of Haynes RB et al.
- **Finding Systematic Reviews** - a customized search strategy to retrieve a broad set of citations that build consensus on biomedical topics and include: systematic reviews, meta-analyses, reviews of clinical trials, evidence-based medicine, consensus development conferences, guidelines, and citations from journals specializing in clinical review studies.
- **Medical Genetics Searches** - search filters developed in conjunction with the staff of GeneReviews: Genetic Disease Online Reviews at GeneTests, University of Washington, Seattle.

### Search by clinical study category

The Clinical Study Category is a specialized search method with built-in search filters that limit retrieval to citations to articles reporting research conducted with specific methodologies, including those that report applied clinical research.

To find citations using the Clinical Study Category:

- 1 Click **Clinical Queries** from the PubMed **homepage** or **Advanced search**.
- 2 Click Search by Clinical Study Category
- 3 Enter your search term in the search box
- 4 Select a Category: therapy, diagnosis, etiology, or prognosis
- 5 Select a Scope: “narrow, specific search or broad, sensitive search
- 6 Click Go

Example
Find research on diagnosing cystic fibrosis.
On the Clinical Queries page click Search by Clinical Study Category.
Enter cystic fibrosis in the search box.
Click “diagnosis” under Category and “narrow, specific search” under Scope, click Go.

### Finding systematic reviews

In PubMed, Systematic Reviews cover a broad set of articles that build consensus on biomedical topics. This feature is provided to help clinicians locate systematic reviews and similar articles. A list of related sources on this topic is available.

To find Systematic Reviews:

- 1 Click **Clinical Queries** from the PubMed **homepage** or **Advanced search**
- 2 Click Find Systematic Review
- 3 Enter your search terms in the search box
- 4 Click Go

Example
Find Systematic Reviews on inhalation therapy for pneumonia.
On the Clinical Queries page click Find Systematic Reviews.
Enter the search terms inhalation therapy pneumonia into the search box, click Go.

Alternatively, enter search terms followed by AND systematic[sb] into the search box. For example, lyme disease AND systematic[sb].

### Medical genetics searches

In PubMed, Medical Genetics Searches finds citations related to various topics in medical genetics.

- 1 Click Clinical Queries from the PubMed homepage.
- 2 Select Medical Genetics Searches
- 3 Enter search terms in the search box
- 4 Change the search categories, if applicable
- 5 Click Go.

Example
Find information on genetic counseling for sickle cell anemia.
On the Clinical Queries page, click Medical Genetic Searches.
Enter the search terms sickle cell anemia into the search box.
Under Category, click on All to deselect all the categories, click Genetic Counseling, click Search.

### Understanding Your Search Results

Search results initially display in a summary format in the order they were entered in PubMed as last in, first out. You can change the display format.

A default of 20 citations is displayed per page. If there are more than 20 citations, they will be displayed on subsequent pages.

To display the abstract for a journal article, click the title link for each citation. Some citations do not have abstracts and include the note “No abstract available.”

### Anatomy of Summary Results

- [C-type Lectins](#). **Title**
1. Cummings RD, McEver RP. **Authors**  
 In: Varki A, Cummings RD, Esko JD, Freeze HH, Stanley P, Bertozzi CR, Hart GW, Etzler ME, editors. Essentials of Glycobiology. 2nd edition, Cold Spring Harbor (NY): Cold Spring Harbor Laboratory Press; 2009. Chapter 31.  
 PMID: 20301263 [PubMed] **Books & Documents** [Free text](#) **Link to Free Full-Text**
- [Teaching medical students about chronic disease: patient-led teaching in rheumatoid arthritis](#). **Journal Abbreviation**
2. Phillipotts C, Creamer P, Andrews T.  
 Musculoskeletal Care. 2010 Mar 19. [Epub ahead of print]  
 PMID: 20301228 [PubMed - as supplied by publisher]
- [miR-125b-2 is a potential oncomiR on human chromosome 21 in megakaryoblastic leukemia](#).
3. Klusmann JH, Li Z, Böhmer K, Maroz A, Koch ML, Emmrich S, Godinho FJ, Orkin SH, Reinhardt D. **Publication Date**  
 Genes Dev. 2010 Mar 1;24(5):478-90. **Pages**  
 PMID: 20194440 [PubMed - Indexed for MEDLINE] **Free PMC Article** [Free text](#)  
[Related citations](#) **Volume & Issue Number**

For additional information see: [Displaying and Sorting Your Search Results](#)

## Displaying and Sorting Your Search Results

### Section Contents

Use **Display Settings** for:

- Changing the citation format
- Changing the number of items per page
- Sorting your search results

Use **Send to** for:

- Saving citations in a File
- Saving citations temporarily in your Clipboard
- Saving citations permanently in My NCBI
- E-mailing citations
- Ordering journal articles
- Printing search results

Use the results page controls to:

- Move to another page

### Changing the citation display format

Results are initially displayed in the Summary format, except results for a single citation display the Abstract format. You can change the display for all or selected citations by selecting a format from **Display Settings**.

To change the display format only for selected citations, click the check box to the left of each citation before selecting a display format.

See PubMed Citation Display Formats for a description of all the formats.

Use the MEDLINE format to export citations into a citation management program.

### Changing the number of citations shown per page

From **Display Settings**, select the number of **items per page** to display. You can change the number of citations displayed on a single page from 5 to 200 items.

### Sorting your search results

From **Display Settings**, select a **sort by** option. Sort options include: Recently Added, Publication Date, First Author, Last Author, Journal, and Title.

#### More information about sorting:

- Citations in PubMed are displayed in reverse date added order: last in, first out. The Recently Added date is the date that a record was initially added to PubMed, not the publication date, which is the date an article was published.
- Publication Date sorts the most recent citations first, the secondary sort is journal.
- Publication dates without a month are set to January, multiple months (e.g., Oct-Dec) are set to the first month, and dates without a day are set to the first day of the month. Dates with a season are set as: winter = January, spring = April, summer = July and fall = October.
- First author, last author and journal sort A to Z; the secondary sort is publication date.
- Results for related data, e.g., related citations, display in ranked order and display the sort by option: Sorted by Link Ranking.

### Printing Search Results

Use the print function of your Web browser.

To print citations from different searches, save the citations in PubMed's Clipboard, and then print.

See also:

- Changing the number of citations shown per page
- Changing the citation display format

### Move to another page of search results

The results display the number of citations retrieved and the number of pages necessary to display all the results. Use **Display Settings** to change the number of citations shown per page.

Click **Next** or **Prev** to move back or forward to adjacent pages and **Last** or **First** to display the first and last page of your results.

## Finding Related Resources for a Citation

### Section Contents

- Discovering related data in NCBI databases

- Finding related resources using LinkOut
- Displaying References for a PubMed Central article
- Finding PubMed Central articles that have cited an article
- Finding Bookshelf books that have cited an article
- Reporting broken or problem links

### Discovering related data in NCBI databases

Related NCBI databases for summary results are available from the **Find Related Data** portlet. Select a database and then choose an option, if applicable. PubMed typically only processes the first 5,000 to 10,000 items; the complete list of database options and the maximum items processed is available.

Use the **All links from this record** Abstract format portlet to link to other related NCBI databases for the selected citation.

The Abstract format supplemental information, available for MEDLINE indexed citations, links to PubMed, MeSH and other NCBI databases, if available.

**Note:** To simultaneously search all NCBI databases choose All Databases from the Search pull-down menu, enter a search term, and then click Search.

### Finding related resources using LinkOut

Most PubMed records include LinkOut resources to a variety of Web sites including publishers, aggregators, libraries, biological databases, and sequence centers. LinkOut resources link to providers' sites to obtain the full-text of articles or related information, e.g., consumer health. There may be a charge to access the text or information.

To display the LinkOut resources open the **LinkOut** section included at the end of the Abstract format. The LinkOut section is available when you display a single record in the Abstract format.

To find citations with links to free full-text articles, click the **Filter your results** Free Full Text link.

To find citations with links to full-text articles, enter search terms followed by AND full text [sb].

#### More information about Links:

- LinkOut resource categories have been selected by the LinkOut provider.
- The current list of LinkOut providers is available.
- A publisher's icon link may display on the Abstract format if they have electronically provided their citation data to PubMed. Links are only available for publishers that are participating in LinkOut; publishers are responsible for providing working links.
- Use My NCBI to customize your to display only links of interest to you.

### Displaying References for a PubMed Central article

An Abstract format **References for this PMC Article** link is available when there is a full text article in PMC for a PubMed citation. The link displays the PubMed references for the PMC article.

## Finding PubMed Central articles that have cited an article

An Abstract format **Cited by PubMed Central articles** portlet displays for PubMed citations cited by PubMed Central articles. The Cited in PubMed Central portlet lists the articles in PubMed Central for the cited PubMed citation.

## Finding Bookshelf books that have cited an article

An Abstract format **Cited in Books** link is available for PubMed citations cited in the bibliography of a Book in the Bookshelf.

## Reporting broken or problem links

LinkOut links are supplied by the LinkOut providers. Publishers who electronically supply their data to PubMed may include an icon that links to a site providing the full-text. Corrections and changes to links are made by the providers and are their responsibility.

To report problem links or inquire about electronic journal subscriptions, contact the provider directly. Contact information is typically available at a provider's Web site.

## Displaying the Search Details

PubMed may modify or add additional search terms to your search to optimize retrieval.

Click **Advanced search Details** or see the **Search details** portlet to view your search as it was translated using automatic term mapping and search rules.

### More information about Details:

- The Query Translation box shows the search strategy used to run the search.
  - To edit the search in the Query Translation box, add or delete terms and then click Search.
  - Click URL to display the current search as a URL to bookmark for future use. Searches created using History numbers can not be saved using the URL feature.
  - You may also save your search using .
- The Result number link displays the total number of citations for the search.
- Translations details how each term was translated using PubMed's search rules and syntax.
- User Query shows the search terms as you entered them in the search box and any syntax errors with the query.
- If your last action was displaying a related citation set or selected items in another format, Details will indicate this rather than the last query.

## Saving and E-mailing Results and Searches

### Section Contents

- Saving citations temporarily using the Clipboard or indefinitely using
- Saving citations as a text file
- Exporting citations into a reference management program
- E-mailing citations
- Saving searches with

- Saving searches as RSS (Really Simple Syndication) feeds
- Creating a URL to bookmark your search

### Saving citations temporarily using the Clipboard

The Clipboard gives you a place to collect selected citations from one or several searches. The Clipboard will be lost after 8 hours of inactivity on PubMed or on any of the other databases.

You may also save your search results indefinitely using .

To add citations to the Clipboard:

- 1 In your search results, use the citation check boxes to select citations. To save all your citations do not click any check boxes.
- 2 Use **Send to**, and select **Clipboard**.
- 3 To view your selections, click the **Clipboard portlet items link**.

To delete citations from the Clipboard:

- Use the **Remove from clipboard** link to delete individual items, or use the check boxes to select items to delete, and then click the **Remove selected items** link.
- To delete all citations from the Clipboard, do **not** select any items, click the **Remove all** link.

#### More information about the Clipboard:

- Citations in the Clipboard display **item in clipboard**.
- The Clipboard portlet displays the total number of items in the Clipboard. A link to the Clipboard is also available from the homepage PubMed Tools.
- The maximum number of items that can be sent to the Clipboard is 500. If you select Clipboard from **Send to** without selecting citations, PubMed will add all (up to 500 citations) of your search results to the Clipboard.
- The Clipboard will not add a citation that is currently in the Clipboard; it will not create duplicate entries.
- PubMed uses cookies to add your selections to the Clipboard. For you to use this feature, your Web browser must be set to accept cookies.
- Citations in the Clipboard are represented by the search number #0, which may be used in Boolean search statements. For example, to limit the citations you have collected in the Clipboard to English language articles, use the following search: #0 AND english [la]. This does not affect or replace the Clipboard contents.

### Saving citations as a text file

- 1 In your search results, use the citation check boxes to select citations. You may move to other pages to continue your selections. If you do not make any selections, PubMed will save the entire retrieval.
- 2 From **Send to**, select **File**.
- 3 Your Web browser will prompt you to save the PubMed search results in a file on your computer.

#### More information about saving citations to a file:

- Saving a large retrieval may take several minutes.

- The default for the Send to File feature is to save the entire retrieval unless you select specific citations. For example, if you use the Send to File feature for results displaying 1 to 20 of 2,356, your saved file will contain all 2,356 citations.
- To save citations in HTML format, use the Save as... function of your browser. Change the file extension to html. When saving as HTML, only those citations displayed on the page will be saved so you may want to consider changing the number of items per page.

### Exporting citations into a reference management program

To export citations into a reference management program such as EndNote, Reference Manager, and ProCite:

- 1 In your search results, use the citation check boxes to select citations. To export all the citations do not select any citations.
- 2 From **Send to**, select **File**.
- 3 Select MEDLINE from the Format menu.
- 4 Import this saved file into your reference management program.

Questions regarding these commercial software packages should be directed to the respective companies.

### E-mailing citations

- 1 In your search results, use the check boxes to select citations. To e-mail all citations displayed on the page, do not make any selections.
- 2 From **Send to**, select **E-mail**.
- 3 Choose selections for Format, Sort by Number to send, and start from citation.
- 4 Enter an e-mail address. You may also enter additional text that will be included in the e-mail.
- 5 Click E-mail. The system returns you to your results page and displays a confirmation e-mail sent message.

Note: Use to create an automatic e-mail update for searches.

Your PubMed results will be sent from the NCBI automatic mail server, Sent by Entrez [nobody@ncbi.nlm.nih.gov], with a "Subject" of PubMed Search Results. Do not reply to this message. This is not a functioning customer service e-mail address.

#### More information about e-mailing citations:

- You may e-mail up to 200 items at a time to a single e-mail address.
- The search will be included in your results email, or a notation indicating the number of selected items.

### Saving searches as RSS (Really Simple Syndication) feeds

You can create a search as an RSS feed. An RSS reader is required to use this service.

To retrieve new items for your search since the last time you were connected to your RSS reader:

- 1 Run a search in PubMed.
- 2 Click **RSS** located above the **Search box**.

- 3 You may edit the **feed name** and limit the **number of items displayed**, and then click Create RSS. If the number of citations retrieved is greater than the number of items displayed the feed will include a link to display the complete PubMed retrieval.
- 4 Click the XML icon to display the XML and copy and paste the URL into the subscribe form in your RSS reader. Web browsers and RSS readers may use different options to copy the feed.

PubMed RSS feeds use the My NCBI “What’s New” strategy for updating searches.

### Creating a URL to bookmark your search

You can create a URL with your search terms that can be bookmarked in your Web browser for future use. Documentation is also available for creating a web link to PubMed.

- 1 Run a search and then click the **Advanced search Details** link.
- 2 Click URL below the Query Translation box.
- 3 Bookmark the URL using your Web browser function. You can also copy the URL from the Web browser’s URL address box.

#### More information about creating a bookmark:

- Searches that were created using a search statement number in **Advanced search History** (e.g., #1 OR #2 AND human[mh]) can not be saved using the URL feature because search statements are lost when History expires.
- After saving the bookmark, you may want to use your Web browser's edit functions to rename the bookmark.

## My NCBI

My NCBI saves , , your , and features an option to automatically update and **e-mail search results** from your saved searches.

My NCBI including storing and changing your **e-mail address**, **highlighting** search terms, open the **abstract display supplemental data** by default, and turn off the **auto suggest** feature.

Additional features include search results, managing , and setting , **document delivery service** and **outside tool** preferences.

Click , located at the top right of the page header, to sign into My NCBI or register for an account.

## How to Get the Journal Article

PubMed does not include full text journal articles. Here are some tips for obtaining articles.

#### Section Contents

- Many articles are available for free.
- If you are a physician, researcher, or health professional, utilize your affiliation with a medical library or institution.
- If you are a member of the general public or not affiliated with a medical library or institution, try finding free copies, check with your local library, or go directly to the publisher.

## Free copies of some articles may be obtained in these ways:

### Free full text Filter

Use the **Filter your results** portlet, and click the **Free Full Text** filter link to limit your results to content that is available for free on the Web.

### PubMed Central

Follow this link on PubMed citations to PubMed Central:



PubMed Central is the U.S. National Institutes of Health (NIH) free digital archive of biomedical and life sciences journal literature.

Click the **Free text** Summary results link to go directly to the PubMed Central article, book, or book chapter.

### Free from the publisher

Click the free full text icon on the abstract format.

See also:

- Direct from publisher as some publishers will provide free access to articles after you register as a guest.
- Free Biomedical Literature Resources

**Note:** When you click a full text link in PubMed, you leave PubMed and are directed to the full text at an external provider's site. NLM/NCBI does not hold the copyright to this material, and cannot give permission for its use. Users should review all copyright restrictions set forth by the full text provider before reproducing, redistributing, or making commercial use of material accessed through LinkOut.

Please see the Copyright and Disclaimers page for additional information.

### If you are affiliated with a hospital, university, or other institution

- Your local medical library is your best option. If you see icons for your library on the abstract view this indicates that your library provides a link to the article, or has the journal in its collection.

Example library icons:



If your library does not have access to the article you need, ask a librarian about ordering the article from other institutions.

- If you need articles on a routine basis consider using the **Send to Order** option.

First, you must register with a delivery service.

- 1 The default article order service is the NLM-sponsored Loansome Doc service. This allows you to order the full-text of an article from participating medical libraries. Local fees and delivery methods will vary. This service is recommended for health professionals associated with a medical library.

- 2 If you are not affiliated with a medical library or want to change your document delivery provider to another service use Document Delivery in .

After registering for Loansome Doc or another document ordering service use **Send to Order** to place the order:

- 1 Click the check box next to each citation to order. You may move to other pages within your results to select additional citations.
- 2 Use **Send to**, select **Order**.
- 3 Follow the on-screen directions.

Note: For information on the medical libraries in your area (or country) that provide articles via Loansome Doc check the frequently asked questions (FAQ) including: How do I find an ordering library?

### Local library

Some local libraries have copies of medical journals or can get a copy of an article for you. Ask your local librarian about inter-library loan options and if there will be a charge.

For information on the medical libraries in your area (or country) that provide articles via the NLM-sponsored Loansome Doc service check the frequently asked questions (FAQ) including: How do I find an ordering library?

### Direct from publisher

Journal publishers or related organizations may provide access to articles for a fee or sometimes free following your registration as an individual or guest. When available, icons to these sources can be found on the Abstract format.

Additional links to articles may be available under LinkOut on the Abstract display.

Example abstract icons:



## Other Services Including the MeSH and Journals Databases

### Section Contents

Searching by using the MeSH database

Searching for journals in the Journals database

Using the Text version of PubMed

Creating a Web link to search PubMed

Using the E-utilities programming tools

Using the Batch Citation Matcher




Using Batch Entrez

## Searching by using the MeSH Database

MeSH (Medical Subject Headings) is NLM's controlled vocabulary thesaurus used for indexing MEDLINE articles.

Use the **MeSH database** to find MeSH terms including Subheadings, Publication Types, Supplementary Concept Records (substance names) and Pharmacological Actions - and build a PubMed search strategy. The MeSH database can be searched by MeSH term, MeSH Entry Term, Subheading, Publication Type, Substance Name, or words within a MeSH Scope Note. Subheadings and Publication Types are included in the MeSH term searches.

Please see the following MeSH Database animated tutorials:

- Searching with the MeSH Database **Quick Tour** 
- Combining MeSH Terms **Quick Tour** 
- Subheadings and other features of the MeSH Database **Quick Tour** 

**What are the Suggestions?** The database displays MeSH or Entry Term suggestions based on an algorithm that compares letter combinations in words. You can use the MeSH or Entry Term suggestion link to go directly to a record. A new set of suggestions will be displayed based on the selected term.

### More information about the MeSH database:

- Search results are displayed in relevance-ranked order, therefore, when a user's search exactly matches a MeSH Term, that Term is displayed first.
- Click the MeSH term from the Summary display or choose Full from the Display menu to view additional information and search specifications, such as Subheadings, Restrict Search to Major Topic headings only or Do Not Explode this term.
- Year Introduced is the year the term was added to the MeSH. If more than one year is shown, the term was available for indexing back to the earliest year noted. Articles are indexed using the vocabulary in place at the time of indexing, therefore, the Year Introduced for a term and the date of publication of a citation indexed with that term may not agree.

The MeSH database Links menu includes the following links:

- PubMed - retrieves citations for the MeSH term in PubMed.
- PubMed – Major Topic – retrieves citations for the MeSH terms as a Major Topic of the article in PubMed.
- Clinical Queries - enters the MeSH term in the Clinical Queries search box.
- NLM MeSH Browser - links to the NLM MeSH Browser for more information about the MeSH term.

The display menu option PubMed Links retrieves PubMed citations for the selected MeSH terms or the MeSH terms displayed on the page.

**Search Box:** The MeSH database provides a Search Box that can be used to build a PubMed search. From any display format:

- 1 Click the MeSH term check box, including specifications if using the Full display, e.g., Subheadings.
- 2 Use the Send to menu to select one of the following:
- 3 Search Box with AND
- 4 Search Box with OR
- 5 Search Box with NOT
- 6 To add additional terms to this strategy, continue searching the database and add terms to the Search Box using the Send to Search Box feature.
- 7 When you have completed your search click Search PubMed.

### Searching for journals in the Journals database

The Journals Database includes information about the journals in PubMed and the other NCBI databases.

**What are the Suggestions?** In addition to the search results, this database provides suggestions. The suggestions are based on an algorithm that scores the relatedness of phrases included in a user's journal query. Click on a journal under Suggestions to go directly to a specific journal record. Suggestions are generated from an index (multi) that is a combination of indices which may result in a journal being repeated in the list of suggestions.

Searching in the Journals database:

- 1 Enter the full or partial journal name in the search box
- 2 Click Go.
- 3 Click the journal title for a specific journal, or choose Full from the Display menu, to view additional information.

Building a PubMed search for multiple journals:

- 1 Run a search and use the check boxes to select the journals.
- 2 Select Search box with OR from the Send to menu.
- 3 To add additional journals continue searching the database and adding the journals to the Search Box using the Send to Search Box feature, and then click Search PubMed.

Note: To search PubMed for all journals displayed in a journal search choose PubMed Links from the Display menu.

#### More information about the Journals database:

- The Journals database includes journals in the other NCBI databases as well as PubMed. To limit journal searches to only PubMed journals or currently indexed MEDLINE journals, click the appropriate check boxes in Limits.
- Click the NLM ID to link to journal information in the NLM Catalog.
- If a journal includes parentheses or brackets, e.g., J Hand Surg [Am], enter the abbreviation or title without the special characters, j hand surg am.
- Search results are displayed in alphabetical order except when a user's search exactly matches a journal title, then that title will display first.

#### Other journal resources include:

- PubMed journals with links to full-text
- List of all journals included in PubMed via FTP

- List of Serials Indexed for Online Users
- NLM Catalog database

Untagged journal terms are searched in all fields. The following tags are also available to limit your search to a specific field:

Acid Free	ISO Abbreviation [ISO]	PMC Holdings
End Year [EYR]	ISSN [ISSN]	Start Year [SYR]
Currently Indexed	ISSN Type [IS]	Subject Terms [ST]
Indexing Subset [XS]	Languages [LA]	Subset [SB]
Indexed for Subset	NLM ID [NLMID]	Title [TI]
Indexing Treatment	Place of Publication [PL]	Title Abbreviation [TA]

### Acid Free

Some or all of the journal issues are printed on acid-free paper. Search as acidfree.

### End Year [EYR]

The last year of the publication. To enter a date range, insert a colon (:) between each date, e.g., 1996:1998 [eyr].

### Currently Indexed

Search for journals that are currently indexed for MEDLINE with currentlyindexed and those that are not currently indexed with notcurrentlyindexed. Search for the version of the journal indexed as currentlyindexedprint or currentlyindexedelectronic.

### Indexing Subset [XS]

Used for internal processing at NLM.

### Indexed For Subset

To search for an indexed for journal subset, enter in the search box jsubset?, where ? represents the subset value.

### Indexing Treatment

Search for selectively or fully indexed journals as: currentindexingtreatmentfull or currentindexingtreatmentselective.

### ISO Abbreviation [ISO Abbr]

The International Organization for Standardization (ISO) journal abbreviation.

### International Standard Serial Number [ISSN]

The journal's ISSN number.

### ISSN Type [IS]

Search for all print or electronic ISSNs as print[is] or electronic[is].

### Languages [LA]

The language the journal is published.

### NLM Unique ID [NLM ID]

The NLM Integrated Library System alpha-numeric identifier for the journal.

**Place of Publication [PL]**

The journal's country of publication.

**PubMed Central Holdings**

Search for journals currently in PubMed Central (PMC) as: journals pmc[sb] and for forthcoming PMC journals as: journalspmcforthcoming.

**Start Year [SYR]**

The first year of the publication. To enter a date range, insert a colon (:) between each date, e.g., 1996:1998 [syr].

**Subject Terms [ST]**

Subject terms are assigned by NLM for MEDLINE journals to describe a journal's overall scope. The complete list of subject terms is available.

**Subsets [SB]**

To search for journals included in a specific database, enter journals xxx[sb], where xxx is the database, e.g., journals nuccore[sb]

**Title [Title]**

The full journal title.

**Title Abbreviation [Title Abbr]**

The journal title abbreviation.

**Using the Text version of PubMed**

Use the Text version of PubMed.

The Text version is helpful for users who require special adaptive equipment to access the Web. It provides basic PubMed search and retrieval functionality.

The Text version will probably also work well with a handheld, mobile or personal digital assistance ( PDA). Additional NLM projects including access to PubMed using devices such as Palm Powered and Pocket PC handheld computers is available from the NLM Mobile page.

**Creating a Web link to search PubMed**

See Creating a Web Link to the NCBI Databases.

**Using the E-utilities programming tools**

Entrez Programming Utilities are tools that provide access to data outside of the regular Web search interface. This may be helpful for retrieving search results for future use in another environment.

**Using the Batch Citation Matcher**

Use the Batch Citation Matcher to retrieve PubMed PMIDs for multiple citations in batch mode. The Matcher requires you enter the bibliographic information (journal, volume, page, etc.) in a specific citation format.

## Using Batch Entrez

Use Batch Entrez to upload a file of PMIDs directly to PubMed.

## Appendices

### Section Contents

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### How PubMed works: automatic term mapping

Untagged terms that are entered in the search box are matched (in this order) against a MeSH (Medical Subject Headings) translation table, a Journals translation table, the Full Author translation table, Author index, the Full Investigator (Collaborator) translation table and an Investigator (Collaborator) index.

When a match is found for a term or phrase in a translation table the mapping process is complete and does not continue on to the next translation table.

## 1. MeSH translation table

The MeSH Translation Table contains:

- MeSH terms
- The See-Reference mappings (also known as entry terms) for MeSH terms
- MeSH Subheadings
- Publication Types
- Pharmacologic action terms
- Terms derived from the Unified Medical Language System (UMLS) that have equivalent synonyms or lexical variants in English
- Supplementary concept (substance) names and their synonyms.

If a match is found in this translation table, the term will be searched as MeSH (that includes the MeSH term and any specific terms indented under that term in the MeSH hierarchy), and in all fields.

For example, if you enter child rearing in the search box, PubMed will translate this search to: "child rearing"[MeSH Terms] OR ("child"[All Fields] AND "rearing"[All Fields]) OR "child rearing"[All Fields]

If you enter a MeSH Term that is also a Pharmacologic Action PubMed will search the term as [MeSH Terms], [Pharmacologic Action], and [All Fields].

If you enter an entry term for a MeSH term the translation will also include an all fields search for the MeSH term associated with the entry term. For example, a search for odontalgia will translate to: "toothache"[MeSH Terms] OR "toothache"[All Fields] OR "odontalgia"[All Fields] because Odontalgia is an entry term for the MeSH term toothache.

Substance name mappings do not include a mapping for individual terms in a phrase, e.g., IL-22 will not include IL[All Fields AND 22[All Fields].

MeSH term mappings that include a standalone number or single character do not include a mapping for individual terms in a phrase, e.g., Protein C will **not** include Protein[All Fields] or C[All Fields].

### More information about automatic term mapping:

- Click the **Advanced search Details** link to verify how your terms are translated. If you want to report a translation that does not seem accurate for your search topic, please e-mail the information to the NLM Help Desk.

## 2. Journals translation table

The Journals translation table contains the:

- full journal title
- title abbreviation
- ISSN number.

These will automatically map to the journal abbreviation that is used to search journals in PubMed and in all fields. For example, a search for endocrine pathology will translate to: "Endocr Pathol"[Journal] OR ("endocrine"[All Fields] AND "pathology"[All Fields]) OR "endocrine pathology"[All Fields]

### 3. Full Author translation table

The full author translation table includes full author names for articles published from 2002 forward, if available. Enter a full author name in natural or inverted order, e.g., julia s wong or wong julia s.

#### More information about full author searching:

- A comma following the last name for searching is optional. For some names, however, it is necessary to distinguish which name is the last name by using the comma following the last name, e.g., james, ryan.
- Omit periods after initials and put all suffixes at the end, e.g., vollmer charles jr
- Initials and suffixes are not required, if you include a middle initial or suffix, you will only retrieve citations for articles that were published using the middle initial or suffix.
- To distinguish author initials that may match a full author name use the [fau] search tag, e.g., peterson do[fau].

### 4. Author index

If the term is not found in the above tables, except for Full Author, and is not a single term, PubMed checks the author index for a match. When combining multiple authors, to avoid a match with full author names, include initials or use the [au] search tag, e.g., ryan[au] james [au].

### 5. Full Investigator (Collaborator) translation table

The full investigator (collaborator) translation table includes full names, if available. Enter a full investigator name in natural or inverted order, e.g., harry janes or janes harry.

### 6. Investigator (Collaborator) index

If the term is not found in the above tables, except for Full Author, and is not a single term, PubMed checks the investigator index for a match.

### 7. If no match is found?

PubMed breaks apart the phrase and repeats the above automatic term mapping process until a match is found. PubMed ignores stopwords in searches.

If there is no match, the individual terms will be combined (ANDed) together and searched in all fields.

## Consumer Health

The National Library of Medicine cannot provide specific medical advice. NLM urges you to consult a qualified health care professional for answers to your medical questions. NLM does not have pamphlets or other materials to mail.

MedlinePlus will direct you to information to help answer health questions. MedlinePlus brings together authoritative information from NLM, the National Institutes of Health (NIH), and other government agencies and health-related organizations. Preformulated searches are included in MedlinePlus and give easy access to medical journal articles. MedlinePlus also has extensive information about drugs, an illustrated medical encyclopedia, interactive patient tutorials, and latest health news.

## Error Messages

### System Error Messages

Please provide your IT staff with the technical browser advice for NCBI Web pages to ensure your browser, firewall, and servers are enabled for JavaScript, cookies, pop-ups, and HTTP 1.1. Antivirus software may affect page caching which can result in unexpected page expired messages. Also, nlm.nih.gov should be added as a browser exception and be considered a trusted site by your system and network. You may have to delete your browser's cache (temporary files) before trying again.

### Typographical Errors

Citations that carry the tag, [PubMed - in process] or [PubMed - as supplied by publisher] have not yet gone through NLM's quality control procedures and indexing process. It is during this process that errors are identified and corrected. **It is not necessary to notify NLM of an error at this stage.** However, if the error is still present when the above tags are no longer on the citation, please report it to the NLM Help Desk and include the information below (or as much as possible).

- The journal name, volume, issue, and page number.
- The article title, or the PMID number (e.g., PMID: 1234567).
- The correct name using the format, last name initials (e.g., Jones JA).

Your report will be forwarded to NLM's Quality Assurance for further investigation. If a change to the database is warranted, the citation will be corrected. **Please understand that due to the large volume of requests we are unable to answer individual error reports.**

NLM leases its data to vendors around the world. Other products and services will not necessarily immediately reflect corrections made to records at NLM. If you search MEDLINE through a vendor's system, please contact your vendor about their maintenance schedules.

The National Library of Medicine (NLM) displays the **author's name** as it appears in the article at the time of publication, only the last name plus the first two initials (e.g., Fauci AS) are used. If the author's name was printed incorrectly at the time of publication, then the journal in which the article appeared must publish an erratum before NLM will make the correction in MEDLINE. If this is the case, please contact the journal publisher.

It is NLM's policy that errata are acknowledged only if they are printed in a citable form; that is, an **erratum notice** must appear on a numbered page in the journal that originally published the article. Error notices that are inserted unbound into a journal issue or "tipped in" will not be considered part of the permanent bibliographic record. NLM does not make changes in the database in response to letters from authors or editors, unless such letters indicate that a substantive published erratum is forthcoming.

For additional information on how NLM handles errors, please review the NLM Errata, Retraction, Duplicate Publication, and Comment Policy fact sheet.

## PubMed Coverage

PubMed provides access to bibliographic information that includes MEDLINE, as well as:

- The out-of-scope citations (e.g., articles on plate tectonics or astrophysics) from certain MEDLINE journals, primarily general science and chemistry journals, for which the life sciences articles are indexed for MEDLINE.
- Citations that precede the date that a journal was selected for MEDLINE indexing.

- Some additional life science journals that submit full text to PubMed Central and receive a qualitative review by NLM.

For additional information, please see the NLM Fact Sheet: What's the Difference Between MEDLINE and PubMed?

### **MEDLINE**

MEDLINE is the NLM's premier bibliographic database that contains references to journal articles in the life sciences with a concentration on biomedicine. MEDLINE records are indexed with NLM's Medical Subject Headings (MeSH). The database contains citations from the late 1940s to the present, with some older material. New citations that have been indexed with MeSH terms, publication types, GenBank accession numbers, and other indexing data are available daily (Tuesday through Saturday) and display with the tag [PubMed - indexed for MEDLINE]. See also the MEDLINE/PubMed Resources Guide.

### **In Process Citations**

PubMed's in-process records provide basic citation information and abstracts before the citations are indexed with NLM's MeSH Terms and added to MEDLINE. New in-process records are available in PubMed daily (Tuesday through Saturday) and display with the tag [PubMed - in process].

### **Publisher-Supplied Citations**

Citations received electronically from publishers appear in PubMed with the tag [PubMed - as supplied by publisher]. New publisher supplied citations are available in PubMed Tuesday through Saturday. Most citations progress to in-process, and then to the indexed for MEDLINE. However, not all citations will be indexed for MEDLINE and therefore will retain either the tag [PubMed - as supplied by publisher] or [PubMed]. Publishers may submit citations for articles that appear on the Web in advance of the journal issue's release. These ahead-of-print citations also display the tag [Epub ahead of print].

## **Cookies**

A "cookie" is information stored by a Web site server on your computer. See the NLM Privacy Policy for additional information.

In the case of PubMed, it is information about your interactions that may be needed later to perform a function. Cookies placed by PubMed are removed from your computer after a set time period unless you choose to use a persistent cookie with the My NCBI automatic sign in function.

To use these interactive features you need to enable cookies on your computer. Consult your browser's help for information on enabling cookies.

If you have problems using cookie-dependent features of PubMed, even after enabling cookies, possible reasons may include:

- Cookies are blocked by your provider or institution. Check with your Internet provider and/or the system administrator at your institution to see if cookies can be accepted. Even if you have them enabled in your Web browser, if they are blocked by your provider or institution (e.g., by a firewall, proxy server, etc.), cookie-dependent features of PubMed won't work.
- Your computer's date and time settings are incorrect. Check your computer's time settings to ensure that they are correct.

## MeSH Subheadings

See the MeSH Subheadings and scope notes and allowable categories on the NLM website.

## MEDLINE display format

The MEDLINE Display Format tags table defines the data tags that compose the PubMed MEDLINE format. The tags are presented in alphabetical order. Some of the tags (e.g., CIN) are not mandatory and therefore will not be found in every PubMed MEDLINE format. Other tags (e.g., AU, MH, RN) may occur multiple times in one record. This format is available for exporting citations into a reference management software program.

Not all fields are searchable in PubMed. See Search Field Descriptions and Tags.

## NLM Author Indexing Policy

NLM's author indexing policy is as follows:

- 1966 - 1984: MEDLINE did not limit the number of authors.
- 1984 - 1995: The NLM limited the number of authors to 10, with "et al" as the eleventh occurrence.
- 1996 - 1999: The NLM increased the limit from 10 to 25. If there were more than 25 authors, the first 24 were listed, the last author was used as the 25th, and the twenty-sixth and beyond became "et al."
- 2000 - Present: MEDLINE does not limit the number of authors.

### Note:

Until 1990, only five transliterated (Japanese and Cyrillic) authors were included on each citation. Since 1990, the first ten transliterated authors have been entered. Chinese ideograms for co-authors are not transliterated at all if the journal lists only a single transliterated name in the table of contents.

## PubMed Character Conversions

PubMed uses certain characters to have special meaning in searches, while others are converted to spaces, please see the PubMed character conversions.

## Clinical Queries Filters

### Medical Genetics

### Systematic Reviews

### Clinical Queries using Research Methodology Filters

Category	Optimized For	Sensitive/ Specific	PubMed Equivalent
therapy	sensitive/broad	99%/70%	((clinical[Title/Abstract] AND trial[Title/Abstract]) OR clinical trials [MeSH Terms] OR clinical trial[Publication Type] OR random*[Title/Abstract] OR random allocation[MeSH Terms] OR therapeutic use[MeSH Subheading])
	specific/narrow	93%/97%	(randomized controlled trial[Publication Type] OR (randomized[Title/Abstract] AND controlled[Title/Abstract] AND trial[Title/Abstract]))
diagnosis	sensitive/broad	98%/74%	(sensitivity*[Title/Abstract] OR sensitivity and specificity[MeSH Terms] OR diagnos*[Title/Abstract] OR diagnosis[MeSH:noexp] OR diagnostic * [MeSH:noexp] OR diagnosis,differential[MeSH:noexp] OR diagnosis [Subheading:noexp])
	specific/narrow	64%/98%	(specificity[Title/Abstract])
etiology	sensitive/broad	93%/63%	(risk*[Title/Abstract] OR risk*[MeSH:noexp] OR risk * [MeSH:noexp] OR cohort studies[MeSH Terms] OR group*[Text Word])
	specific/narrow	51%/95%	((relative[Title/Abstract] AND risk*[Title/Abstract]) OR (relative risk [Text Word]) OR risks[Text Word] OR cohort studies[MeSH:noexp] OR (cohort[Title/Abstract] AND stud*[Title/Abstract]))
prognosis	sensitive/broad	90%/80%	(incidence[MeSH:noexp] OR mortality[MeSH Terms] OR follow up studies[MeSH:noexp] OR prognos*[Text Word] OR predict*[Text Word] OR course*[Text Word])
	specific/narrow	52%/94%	(prognos*[Title/Abstract] OR (first[Title/Abstract] AND episode[Title/Abstract]) OR cohort[Title/Abstract])
clinical prediction guides	sensitive/broad	96%/79%	(predict*[tiab] OR predictive value of tests[mh] OR scor*[tiab] OR observ*[tiab] OR observer variation[mh])
	specific/narrow	54%/99%	(validation[tiab] OR validate[tiab])

The Clinical Queries search filters are based on the work of Haynes RB et al.

### Medical Genetics Search Filters

Category	PubMed Equivalent
Diagnosis	(Diagnosis AND Genetics)
Differential Diagnosis	(Differential Diagnosis[MeSH] OR Differential Diagnosis[Text Word] AND Genetics)
Clinical Description	(Natural History OR Mortality OR Phenotype OR Prevalence OR Penetrance AND Genetics)
Management	(therapy[Subheading] OR treatment[Text Word] OR treatment outcome OR investigational therapies AND Genetics)
Genetic Counseling	(Genetic Counseling OR Inheritance pattern AND genetics)
Molecular Genetics	(Medical Genetics OR genotype OR genetics[Subheading] AND genetics)
Genetic Testing	(DNA Mutational Analysis OR Laboratory techniques and procedures OR Genetic Markers OR diagnosis OR testing OR test OR screening OR mutagenicity tests OR genetic techniques OR molecular diagnostic techniques AND genetics)
All	((Diagnosis AND genetics) OR (Differential Diagnosis[MeSH] OR Differential Diagnosis[Text Word] AND genetics) OR (Natural History OR Mortality OR Phenotype OR Prevalence OR Penetrance AND genetics) OR (therapy [Subheading] OR treatment[Text Word] OR treatment outcome OR investigational therapies AND genetics) OR (Genetic Counseling OR Inheritance pattern AND genetics) OR (Medical Genetics OR genotype OR genetics[Subheading] AND genetics) OR (DNA Mutational Analysis OR Laboratory techniques and procedures OR Genetic Markers OR diagnosis OR testing OR test OR screening OR mutagenicity tests OR genetic techniques OR molecular diagnostic techniques AND genetics))

The genetics searches were developed in conjunction with the staff of GeneReviews: Genetic Disease Online Reviews at GeneTests, University of Washington, Seattle.

## Computation of Related Citations

The neighbors of a document are those documents in the database that are the most similar to it. The similarity between documents is measured by the words they have in common, with some adjustment for document lengths. To carry out such a program, one must first define what a word is. For us, a word is basically an unbroken string of letters and numerals with at least one letter of the alphabet in it. Words end at hyphens, spaces, new lines, and punctuation. A list of 132 common, but uninformative, words (also known as stopwords) are eliminated from processing at this stage. Next, a limited amount of stemming of words is done, but no thesaurus is used in processing. Words from the abstract of a document are classified as text words. Words from titles are also classified as text words, but words from titles are added in a second time to give them a small advantage in the local weighting scheme. MeSH terms are placed in a third category, and a MeSH term with a subheading qualifier is entered twice, once without the qualifier and once with it. If a MeSH term is starred (indicating a major concept in a document), the star is ignored. These three categories of words (or phrases in the case of MeSH) comprise the representation of a document. No other fields, such as Author or Journal, enter into the calculations.

Having obtained the set of terms that represent each document, the next step is to recognize that not all words are of equal value. Each time a word is used, it is assigned a numerical weight. This numerical weight is based on information that the computer can obtain by automatic processing. Automatic processing is important because the number of different terms that have to be assigned weights is close to two million for this system. The weight or value of a term is dependent on three types of information: 1) the number of different documents in the database that contain the term; 2) the number of times the term occurs in a particular document; and 3) the number of term occurrences in the document. The first of these pieces of information is used to produce a number called the global weight of the term. The global weight is used in weighting the term throughout the database. The second and third pieces of information pertain only to a particular document and are used to produce a number called the local weight of the term in that specific document. When a word occurs in two documents, its weight is computed as the product of the global weight times the two local weights (one pertaining to each of the documents).

The global weight of a term is greater for the less frequent terms. This is reasonable because the presence of a term that occurred in most of the documents would really tell one very little about a document. On the other hand, a term that occurred in only 100 documents of one million would be very helpful in limiting the set of documents of interest. A word that occurred in only 10 documents is likely to be even more informative and will receive an even higher weight.

The local weight of a term is the measure of its importance in a particular document. Generally, the more frequent a term is within a document, the more important it is in representing the content of that document. However, this relationship is saturating, i.e., as the frequency continues to go up, the importance of the word increases less rapidly and finally comes to a finite limit. In addition, we do not want a longer document to be considered more important just because it is longer; therefore, a length correction is applied. This local weight computation is based on the Poisson distribution and the formula can be found in Lin J and Wilbur WJ.

The similarity between two documents is computed by adding up the weights (local wt1  $\times$  local wt2  $\times$  global wt) of all of the terms the two documents have in common. This provides an indication of how related two documents are. The resultant score is an example of a vector score. Vector scoring was originated by Gerard Salton and has a long history in text retrieval. The interested reader is referred to Salton, *Automatic Text Processing*, Reading, MA: Addison-Wesley, 1989 for further information on this topic. Our approach differs from other approaches in the way we calculate the local weights for the individual terms. Once the similarity score of

a document in relation to each of the other documents in the database has been computed, that document's neighbors are identified as the most similar (highest scoring) documents found. These closely related documents are pre-computed for each document in PubMed so that when you select Related citations, the system has only to retrieve this list. This enables a fast response time for such queries.

### Batch Citation Matcher Help

To retrieve PubMed PMIDs or PubMed Central IDs:

- 1 Enter each citation string on a separate line below, or create a file, using the following format:

**journal\_title|year|volume|first\_page|author\_name|your\_key|**

Fields must be separated by a vertical bar with a final bar at the end of the string.

- 2 Enter your email address. Email messages may take several minutes to process and be sent to your email address.
- 3 If you created a file, click Browse to select it from your system directory.

If a match is not found the citation string will display one of the following:

- INVALID\_JOURNAL - The journal name is not a valid. See the journal lists or the Journals database to find the correct journal abbreviation.
- NOT\_FOUND - The journal name is valid but the complete citation did not find a match.
- AMBIGUOUS - The information provided matches more than one citation. Citation information with 3 or fewer matches include the PMIDs and more than 3 matches include the total PMID match count. Use the Single Citation Matcher or ESearch to retrieve all citations for searched fields.

Notes:

- Select PMC from the database pull-down menu to change the default from PubMed.
- Enter author names without punctuation as smith jc. Initials are optional.
- Your key is any string you choose to tag the citation, it is returned unaltered.
- The journal title field may include the full journal title or the title abbreviation.
- Each citation field is searched starting with the journal title until a unique match is found.
- The journal title is a required field however you may omit other fields. If you omit fields you must retain the vertical bars in the citation string. For example, if you omit the volume number 88 from the first example below it should be entered as:

**proc natl acad sci u s a|1991|3248|mann bj|P32022-1|**

#### Example input:

proc natl acad sci u s a|1991|88|3248|mann bj|P32022-1|

proc natl acad sci u s a|1992|89|3271|gould se|P26261-1|

proc natl acad sci u s a|1999|89|3271|gould se|P26261-1|

res microbiol|1992|143|467|ivey dm|P25966-1|

science|1987|235|182|palmenberg ac|P12296-2|

eschatology|1993|12|22|public jq|C12233-2|

virology|1993|193|492|hardy me|Q02945-1|

virus genes|1992|6|393||P27423-1|

yeast|1992|8|253|sasnauskas k|P24813-1|

**Example output:**

proc natl acad sci u s a|1991|88|3248|mann bj|P32022-1|2014248

proc natl acad sci u s a|1992|89|3271|gould se|P26261-1|1565618

proc natl acad sci u s a|1999|89|3271||P26261-1|NOT\_FOUND

res microbiol|1992|143|467|ivey dm|P25966-1|1448623

science|1987|235|182|palmenberg ac|P12296-2|3026048

eschatology|1993|12|22||C12233-2|NOT\_FOUND;INVALID\_JOURNAL

virology|1993|193|492|hardy me|Q02945-1|8382410

virus genes|1992|6|393||P27423-1|1335631

yeast|1992|8|253|sasnauskas k|P24813-1|1514324

## Journal/Citation Subsets

Subset Code	Journal/Citation Subset
AIM	Abridged Index Medicus is a list created in 1970 of approximately 120 core clinical English language journals that corresponds to "Core clinical journals" subset in Limits.
D	Dentistry journals
E	Citations from bioethics journals or selected bioethics citations from other journals
H	Health administration journals, non-Index Medicus
IM	Index Medicus journals
K	Consumer health journals
N	Nursing journals
Q	History of medicine journals and selected citations from other journals
QIS	Citations from non-Index Medicus journals in the field of history of medicine
S	Citations from space life sciences journals and selected space life sciences citations from other journals
T	Health technology assessment journals, non-Index Medicus
X	AIDS/HIV journals (selected citations from other journals 1980-2000)

## Status Subsets

Status Tag	How to Search	Citation Status
PubMed - as supplied by publisher	publisher[sb] NOT pubstatusnihms NOT pubstatuspmcsd NOT pmcbook	Citations recently added to PubMed via electronic submission from a publisher, and are soon to proceed to the next stage, PubMed - in process (see below). This tag is also on citations received before late 2003 if they are from journals not indexed for MEDLINE, or from a journal that was accepted for MEDLINE after the citations' publication date. These citations have not been reviewed for accurate bibliographic data.
PubMed - in process	in process[sb]	Citations will be reviewed for accurate bibliographic data and indexed, i.e., the articles will be reviewed and MeSH vocabulary will be assigned (if the subject of the article is within the scope of MEDLINE).
PubMed - indexed for MEDLINE	medline[sb]	Citations that have been indexed with MeSH Terms, Publication Types, Substance Names, etc., and have been reviewed for accurate bibliographic data.
PubMed	pubstatusnihms AND publisher[sb]	Author manuscripts for articles in PubMed Central that would not normally be included in PubMed because they are from journals that are either not currently indexed or are selectively indexed in MEDLINE or do not participate in PMC.
PubMed	pubstatuspmcsd AND publisher[sb]	Records for selective deposit articles in PMC. These are articles published in non-MEDLINE journals and the publisher has chosen to deposit in PMC only those articles that fall under an open access or a similar program covering selected articles from a range of journals.
PubMed	pmcbook	Book and book chapter citations available on the NCBI Bookshelf.
PubMed	pubmednotmedline[sb]	Citations that have been reviewed for accurate bibliographic data but will not receive MEDLINE indexing, because they are for articles in non-MEDLINE journals, or they are for articles in MEDLINE journals but the articles are out of scope or they are from issues published prior to the date the journal was selected for indexing, or citations to articles from journals that deposit their full text articles in PubMed Central but have not yet been recommended for indexing in MEDLINE.
PubMed - OLDMEDLINE	oldmedline[sb]	This tag identifies citations in the OLDMEDLINE subset.

## Display Formats

Display Format	Format Description
Summary	This format may include: Authors, Corporate Authors, Title (Titles originally published in a language other than English are translated and displayed in brackets), Journal source, Review Publication Type, language if the article is not in English, "No abstract available" notation, PMID, Comment/Correction links, and citation status. Summary also displays when the full article is available free in PubMed Central.
Abstract	This format may include: Journal Source, Comment/Correction links, Title, language if article is not in English, Authors, Collaborators, Corporate Author, Author Affiliation, Abstract (if present), Publication Types (except for the Journal Article publication type), MeSH Terms, Personal Name as Subject, Chemical Substances, Secondary Source databank accession numbers, Grant numbers, PMID, and citation status. Search links are available from Journal Title Abbreviations, Authors, MeSH Terms, Publication Types, Substances, Grant Support, Secondary Source ID, and Personal Name as Subject. Click a field search link to display a menu with NCBI database search options. Identifiers may also link to other databases such as ClinicalTrials.gov and ISRCTN. <b>Note:</b> The Abstract (text) format does not include supplemental MeSH data.
MEDLINE	Two-character tagged field format (Table 8) for the complete record. Use this format to export citations into reference management programs.
XML	EXtensible Markup Language tagged format is a standard maintained by the World Wide Web Consortium (W3C). PubMed XML output conforms to several DTDs. Users running scripts to downloading data in XML should use the Entrez Programming Utilities rather than the Web version of PubMed. A document describing the MEDLINE XML data element descriptions is available.
PMID List	Use this format with Send to File to list only PMIDs.

## MeSH Subheadings

Abbreviation	MeSH Subheading	Abbreviation	MeSH Subheading
AB	Abnormalities	MA	Manpower
AD	Administration and Dosage	ME	Metabolism
AE	Adverse Effects	MT	Methods
AG	Agonists	MI	Microbiology
AA	Analogs and Derivatives	MO	Mortality
AN	Analysis	NU	Nursing
AH	Anatomy and Histology	OG	Organization and Administration
AI	Antagonists and Inhibitors	PS	Parasitology
BI	Biosynthesis	PY	Pathogenicity
BS	Blood Supply	PA	Pathology
BL	Blood	PK	Pharmacokinetics
CF	Cerebrospinal Fluid	PD	Pharmacology
CS	Chemical Synthesis	PH	Physiology
CI	Chemically Induced	PP	Physiopathology
CH	Chemistry	PO	Poisoning
CL	Classification	PC	Prevention and Control
CO	Complications	PX	Psychology
CN	Congenital	RE	Radiation Effects
CT	Contraindications	RA	Radiography
CY	Cytology	RI	Radionuclide Imaging
DF	Deficiency	RT	Radiotherapy
DI	Diagnosis	RH	Rehabilitation
DU	Diagnostic Use	SC	Secondary
DH	Diet Therapy	SE	Secretion
DE	Drug Effects	ST	Standards
DT	Drug Therapy	SN	Statistics and Numerical Data
EC	Economics	SD	Supply and Distribution
ED	Education	SU	Surgery
EM	Embryology	TU	Therapeutic Use
EN	Enzymology	TH	Therapy
EP	Epidemiology	TO	Toxicity
ES	Ethics	TM	Transmission
EH	Ethnology	TR	Transplantation
ET	Etiology	TD	Trends
GE	Genetics	US	Ultrasonography
GD	Growth and Development	UL	Ultrastructure
HI	History	UR	Urine

IM	Immunology	UT	Utilization
IN	Injuries	VE	Veterinary
IR	Innervation	VI	Virology
IS	Instrumentation		
IP	Isolation and Purification		
LJ	Legislation and Jurisprudence		

## Publication Types

<b>See complete list of Publication Types. Publication types found in PubMed are listed below.</b>
Addresses
Bibliography
Biography
Case Reports
Classical Article
Clinical Conference
Clinical Trial
Clinical Trial, Phase I
Clinical Trial, Phase II
Clinical Trial, Phase III
Clinical Trial, Phase IV
Collected Works
Comment
Comparative Study
Congresses
Consensus Development Conference
Consensus Development Conference, NIH
Controlled Clinical Trial
Corrected and Republished Article
Dictionary
Directory
Duplicate Publication
Editorial
English Abstract
Evaluation Studies
Festschrift
Government Publications
Guideline
Historical Article
In Vitro
Interactive Tutorial
Interview
Introductory Journal Article
Journal Article
Lectures
Legal Cases
Legislation

Letter
Meta-Analysis
Multicenter Study
News
Newspaper Article
Overall
Patient Education Handout
Periodical Index
Portraits
Practice Guideline
Publication Components
Publication Formats
Publication Type Category
Published Erratum
Randomized Controlled Trial
Research Support, American Recovery and Reinvestment Act
Research Support, N.I.H., Extramural
Research Support, N.I.H., Intramural
Research Support, Non-U.S. Gov't Research Support, U.S. Gov't, Non-P.H.S.
Research Support, U.S. Gov't, P.H.S.
Retracted Publication
Retraction of Publication
Review
Scientific Integrity Review
Study Characteristics
Support of Research
Technical Report
Twin Study
Validation Studies
Webcasts

## Stopwords

	Stopwords
A	a, about, again, all, almost, also, although, always, among, an, and, another, any, are, as, at
B	be, because, been, before, being, between, both, but, by
C	can, could
D	did, do, does, done, due, during
E	each, either, enough, especially, etc
F	for, found, from, further
H	had, has, have, having, here, how, however
I	i, if, in, into, is, it, its, itself
J	just
K	kg, km
M	made, mainly, make, may, mg, might, ml, mm, most, mostly, must
N	nearly, neither, no, nor
O	obtained, of, often, on, our, overall
P	perhaps, pmid
Q	quite
R	rather, really, regarding
S	seem, seen, several, should, show, showed, shown, shows, significantly, since, so, some, such
T	than, that, the, their, theirs, them, then, there, therefore, these, they, this, those, through, thus, to
U	upon, use, used, using
V	various, very
W	was, we, were, what, when, which, while, with, within, without, would

## MEDLINE Display

	More Details:	MEDLINE/PubMed Data Element (Field) Descriptions
Tag	Name	Description
AB	Abstract	English language abstract taken directly from the published article
AD	Affiliation	Institutional affiliation and address of the first author
AID	Article Identifier	Article ID values supplied by the publisher may include the pii (controlled publisher identifier), doi (digital object identifier), or book accession
AU	Author	Authors
BTI	Book Title	Book Title
CI	Copyright Information	Copyright statement provided by the publisher
CIN	Comment In	Reference containing a comment about the article
CN	Corporate Author	Corporate author or group names with authorship responsibility
CON	Comment On	Reference upon which the article comments
CP	Chapter	Book chapter
CRDT	Create Date	The date the citation record was first created
CRF	Corrected and republished from	Final, correct version of an article
CRI	Corrected and republished in	Original article that was republished in corrected form
CTDT	Contribution Date	Book contribution date
CTI	Collection Title	Collection Title
DA	Date Created	Used for internal processing at NLM
DCOM	Date Completed	Used for internal processing at NLM
DEP	Date of Electronic Publication	Electronic publication date
DP	Publication Date	The date the article was published
DRDT	Date Revised	Book Revision Date
EDAT	Entrez Date	The date the citation was added to PubMed; the date is set to the publication date if added more than 1 year after the date published
EFR	Erratum For	Cites the original article needing the correction
EIN	Erratum In	Reference containing a published erratum to the article
ED	Editor	Book editors
EN	Edition	Book edition
FAU	Full Author Name	Full Author Names
FED	Full Editor Name	Full Editor Names
FIR	Full Investigator	Full investigator or collaborator name
FPS	Full Personal Name as Subject	Full Personal Name of the subject of the article
GN	General Note	Supplemental or descriptive information related to the document
GR	Grant Number	Research grant numbers, contract numbers, or both that designate financial support by any agency of the US PHS or other funding agencies
GS	Gene Symbol	Abbreviated gene names (used 1991 through 1996)
IP	Issue	The number of the issue, part, or supplement of the journal in which the article was published
IR	Investigator	Investigator or collaborator

IRAD	Investigator Affiliation	Affiliation investigator or collaborator
IS	ISSN	International Standard Serial Number of the journal
ISBN	ISBN	International Standard Book Number
JID	NLM Unique ID	Unique journal ID in NLM's catalog of books, journals, and audiovisuals
JT	Full Journal Title	Full journal title from NLM's cataloging data
LA	Language	The language in which the article was published
LID	Location ID	The pii or doi that serves the role of pagination
LR	Last Revision Date	The date a change was made to the record
MH	MeSH Terms	NLM's Medical Subject Headings (MeSH) controlled vocabulary
MHDA	MeSH Date	The date MeSH terms were added to the citation. The MeSH date is the same as the Entrez date until MeSH are added
OAB	Other Abstract	Abstract supplied by an NLM collaborating organization
OCI	Other Copyright Information	Copyright owner
OID	Other ID	Identification numbers provided by organizations supplying citation data
ORI	Original Report In	Cites the original article associated with the patient summary
OT	Other Term	Non-MeSH subject terms (keywords) assigned by an organization identified by the Other Term Owner
OTO	Other Term Owner	Organization that provided the Other Term data
OWN	Owner	Organization acronym that supplied citation data
	PB	Book name of publisher
PG	Pagination	The full pagination of the article
PHST	Publication History Status Date	Publisher supplied dates regarding the article publishing process
PL	Place of Publication	Journal's (country only) or book's place of publication
PMCR	PMC Release	Availability of PubMed Central article
PMID	PubMed Unique Identifier	Unique number assigned to each PubMed citation
PRIN	Partial Retraction In	Partial retraction of the article
PROF	Partial Retraction Of	Article being partially retracted
PS	Personal Name as Subject	Individual is the subject of the article
PST	Publication Status	Publication status
PT	Publication Type	The type of material the article represents
RF	Number of References	Number of bibliographic references for Review articles
RIN	Retraction In	Retraction of the article
RN	EC/RN Number	Number assigned by the Enzyme Commission to designate a particular enzyme or by the Chemical Abstracts Service for Registry Numbers
ROF	Retraction Of	Article being retracted
RPF	Republished From	Article being cited has been republished or reprinted in either full or abridged form from another source
RPI	Republished In	Article being cited also appears in another source in either full or abridged form
SB	Subset	Journal or citation subset values representing specialized topics
SFM	Space Flight Mission	NASA-supplied data space flight/mission name and/or number

SI	Secondary Source Identifier	Identifies secondary source databanks and accession numbers of molecular sequences discussed in articles
SO	Source	Composite field containing bibliographic information
SPIN	Summary For Patients In	Cites a patient summary article
STAT	Status Tag	Used for internal processing at NLM
TA	Journal Title Abbreviation	Standard journal title abbreviation
TI	Title	The title of the article
TT	Transliterated Title	Title of the article originally published in a non-English language, in that language
UIN	Update In	Update to the article
UOF	Update Of	The article being updated
VI	Volume	Volume number of the journal
VTI	Volume Title	Book Volume Title

## Journal Lists

<b>PubMed Journals</b>	<b>NCBI Molecular Biology Database Journals</b>	<b>PubMed and NCBI Molecular Biology Database Journals</b>
Uncompressed	Uncompressed	Uncompressed
GNU zip	GNU zip	GNU zip
UNIX Compress	UNIX Compress	UNIX Compress
PKZIP	PKZIP	PKZIP