Università di Genova

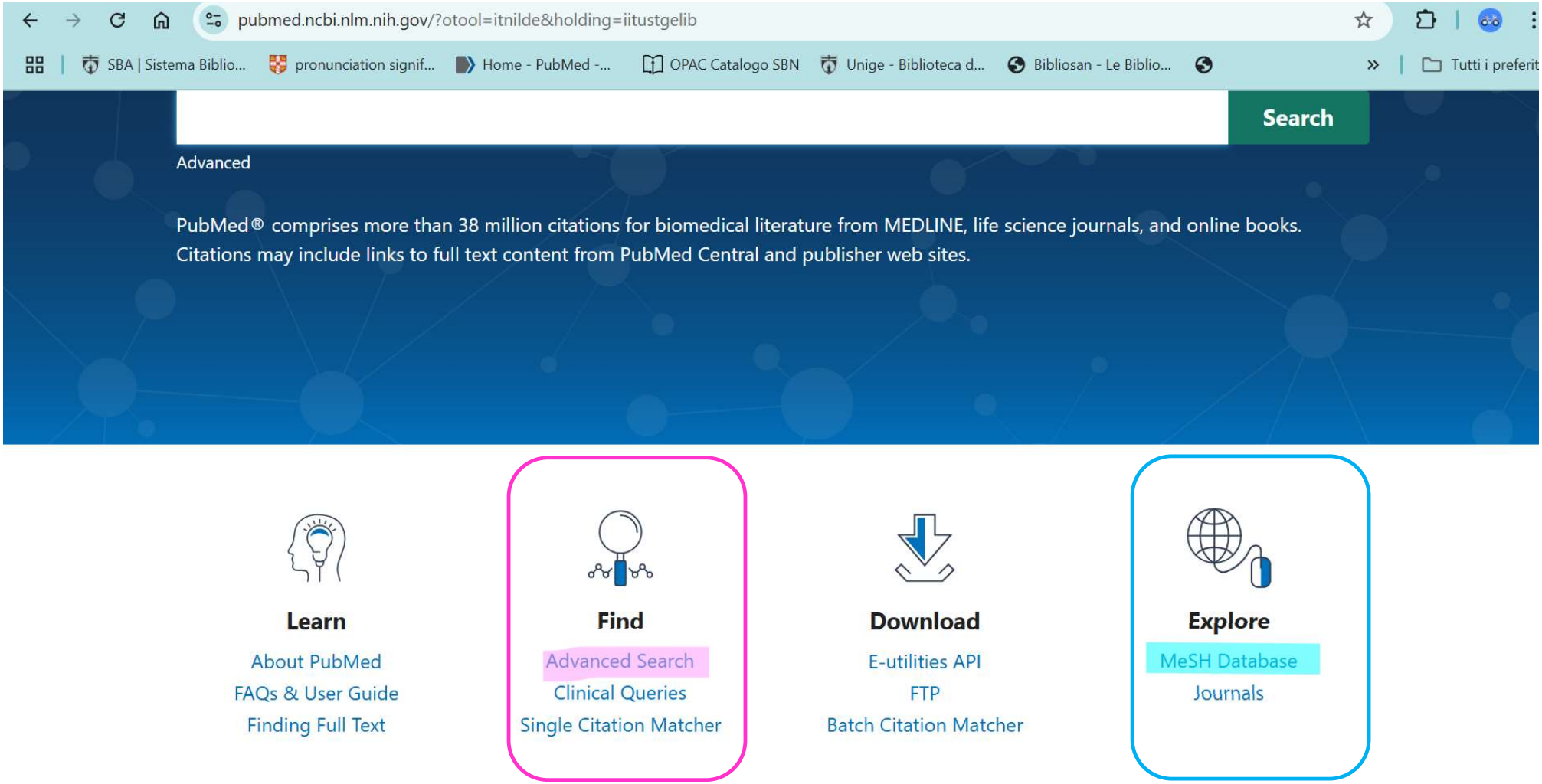
SBA
Sistema Bibliotecario di Ateneo
Biblioteca del Polo Biomedico
https://biblioteca.polobiomedico.unige.it

PubMed

June 11, 2025

NIH U.S. National Library of Medicine
National Network of Libraries of Medicine

giorgia.franchi@unige.it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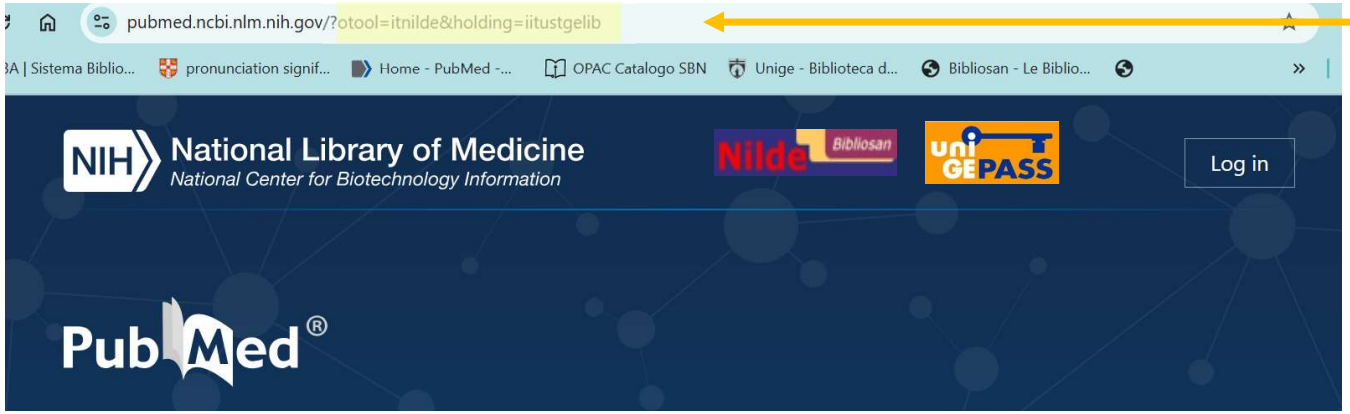
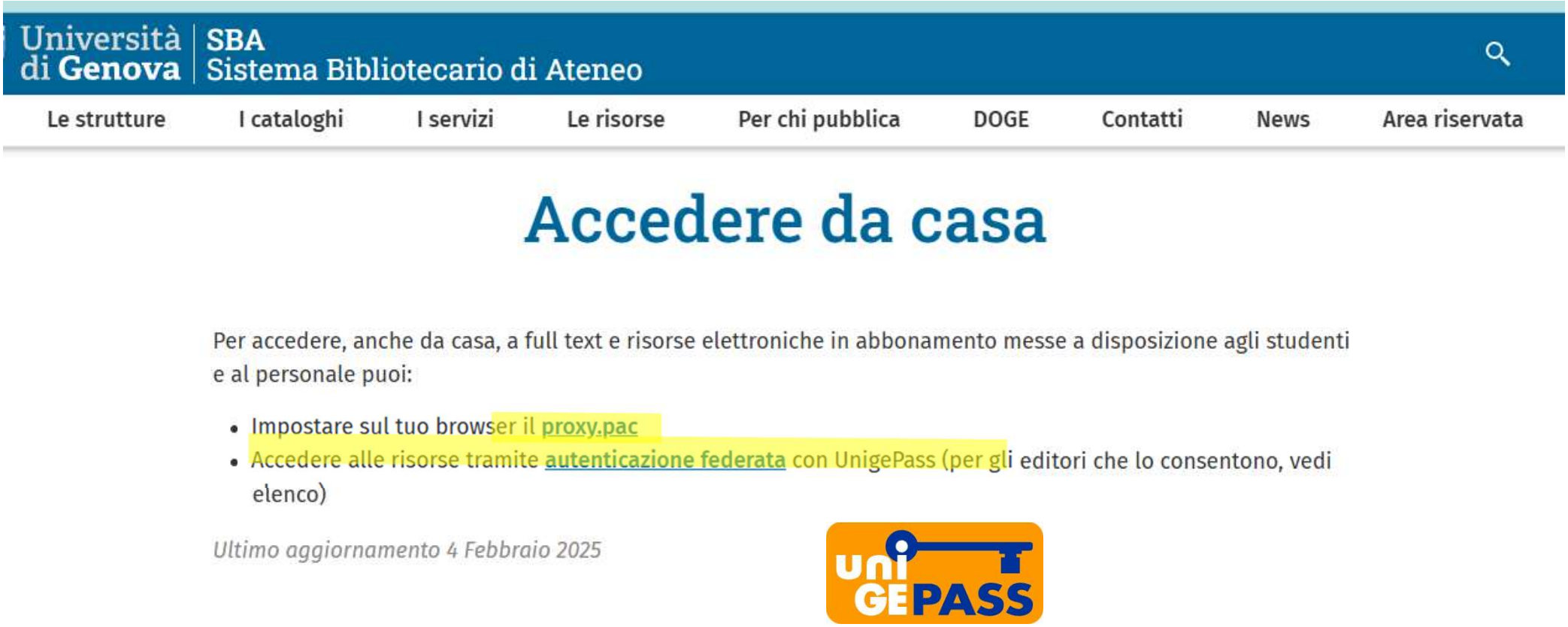


However, further library facilities for UniGE institutional users are available

To make full use of the subscription-based services is recommended to reach PubMed from the menu «Find Databases» available on the Library website

https://biblioteche.unige.it/accedere_da_casa



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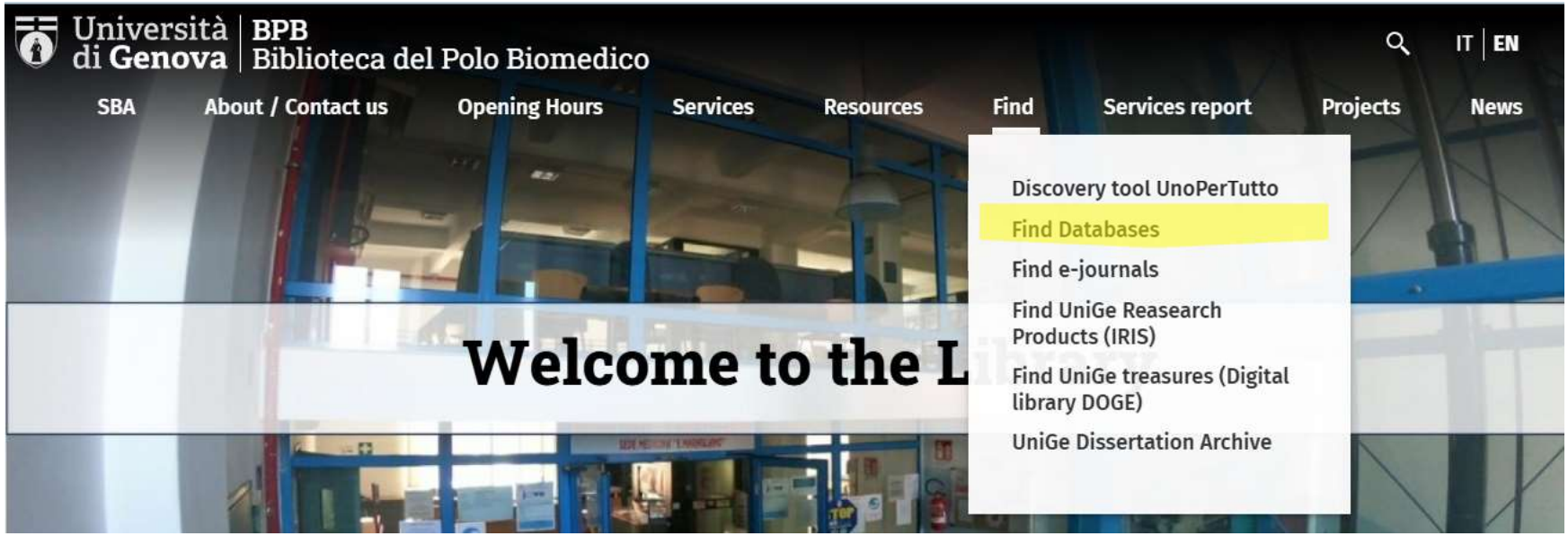
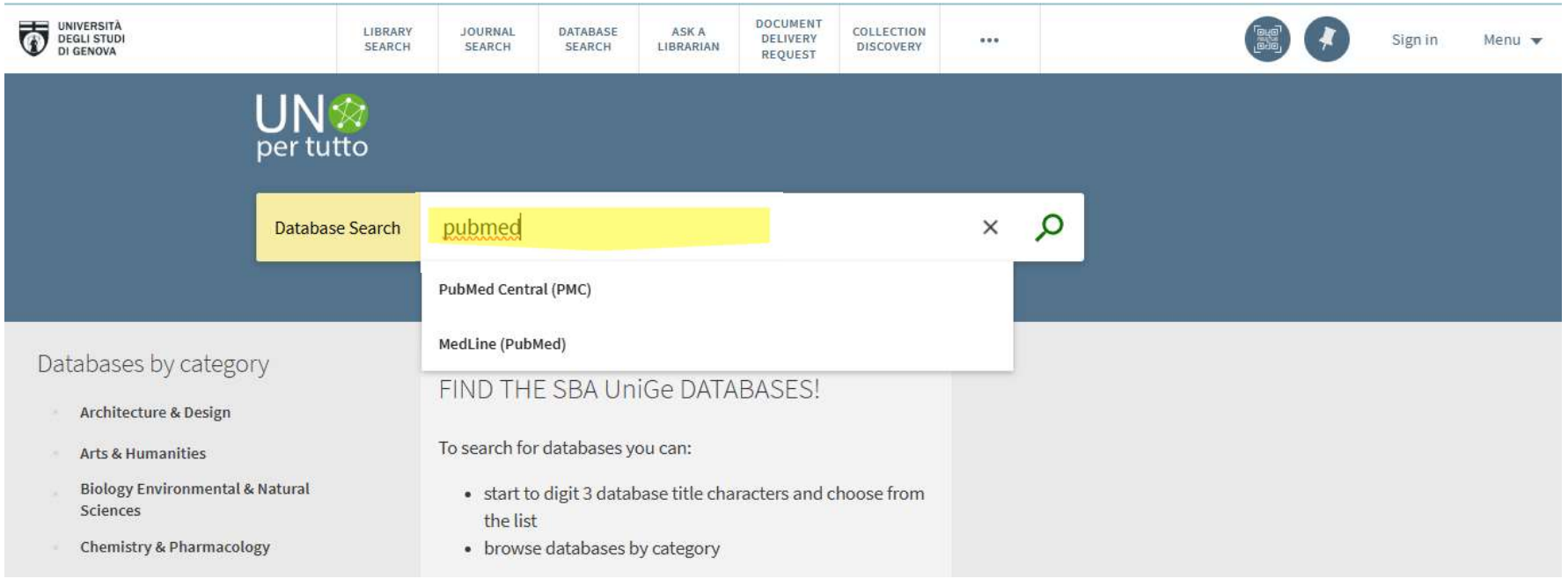
https://biblioteca.polobiomedico.unige.it

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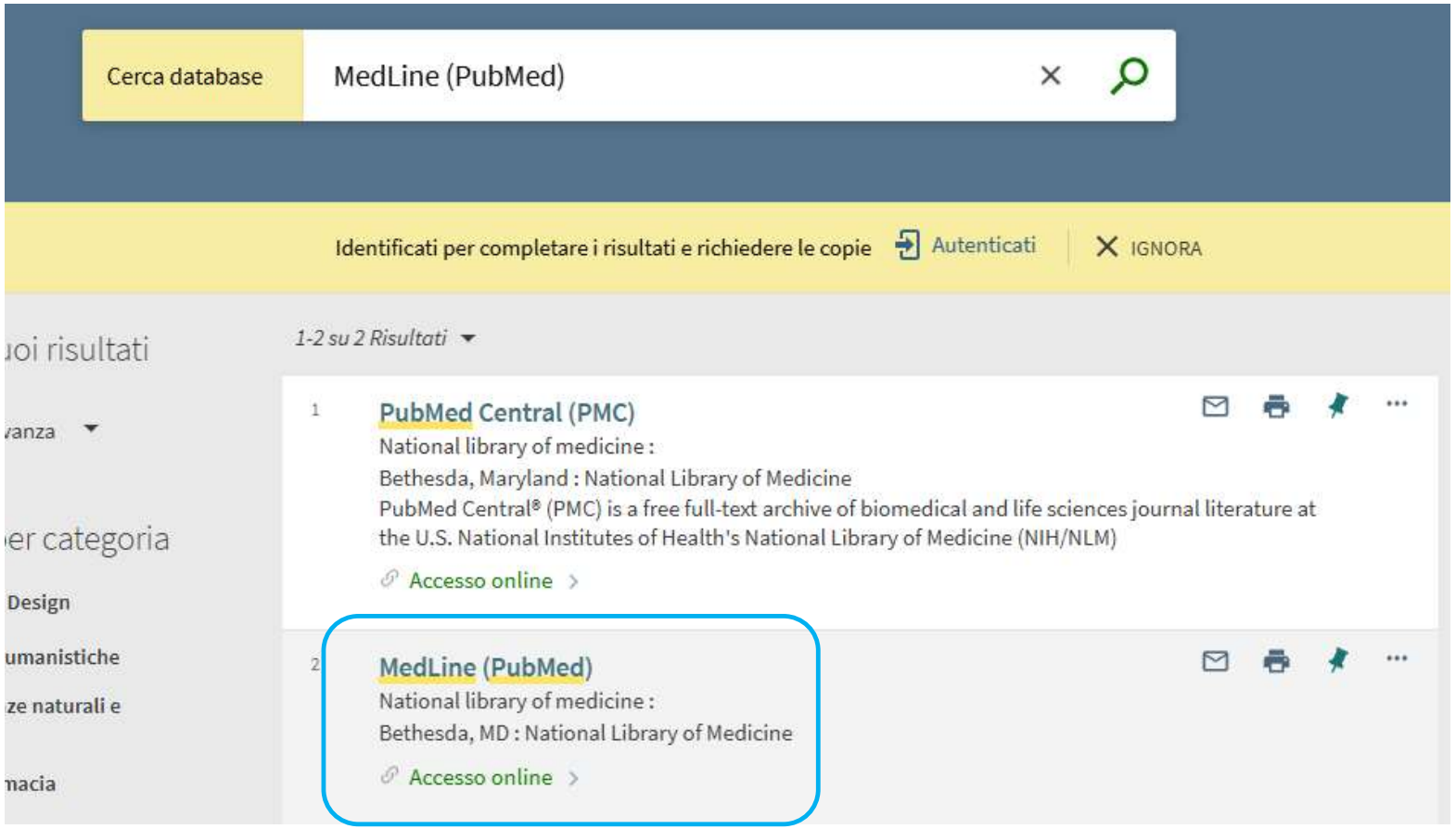
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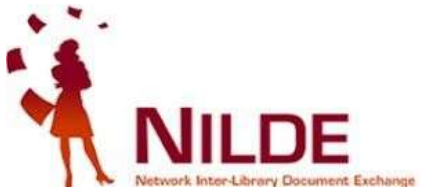
PubMed is a **bibliographic** (= literature citation) **database**

Accessing from the Library website allows you to get all customization for institutional users:

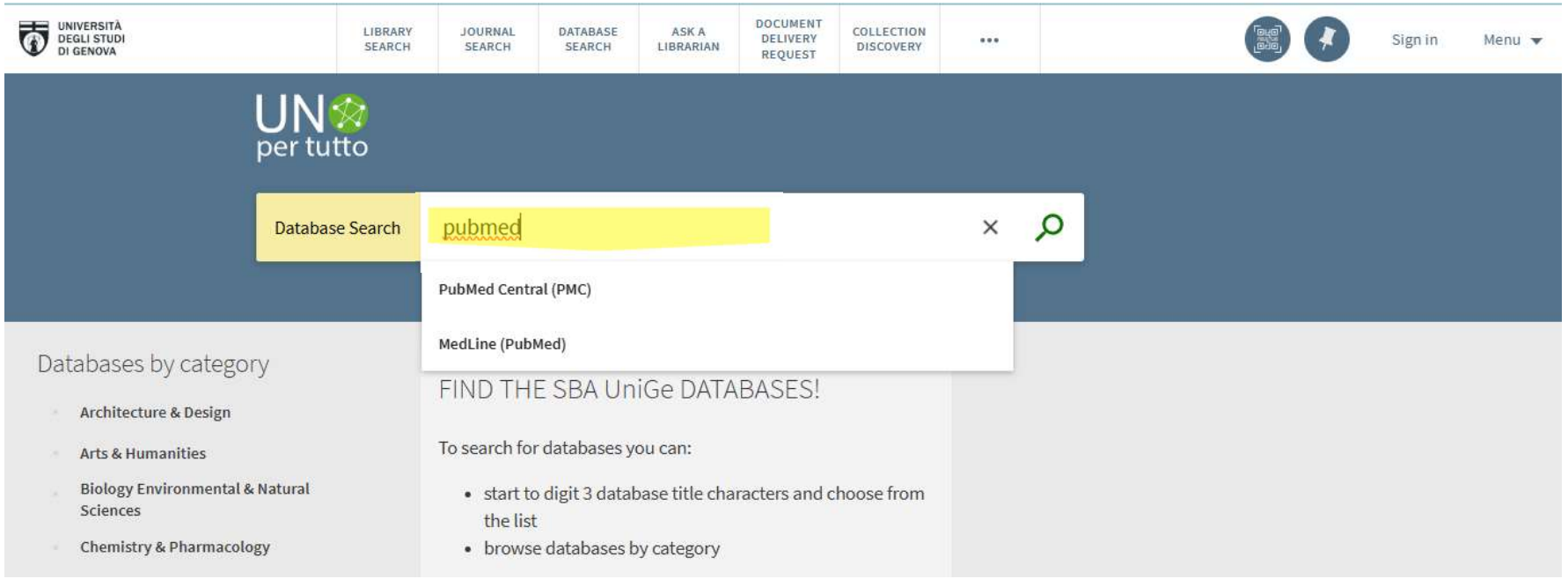
1. each bibliographic record is complete with external links to the publisher website with full text, when available
2. when not available you will find the link to NILDE (Network for Inter-Library Document Exchange): a web-based software for free document delivery service



https://nilde.bo.cnr.it

1. Register as a new institutional user
2. Access to PubMed from Unopertutto -> Find Databases
3. From the record in PubMed click on NILDE button
4. The citation will be automatically added in NILDE form complete with all bibliographic data needed
5. Send the request to the Library

Within max 2 days you will receive a NILDE feedback and an e-mail from the Library with the pdf attached file. In very rare cases the publication could be impossible to retrieve → you will be notified about the negative outcome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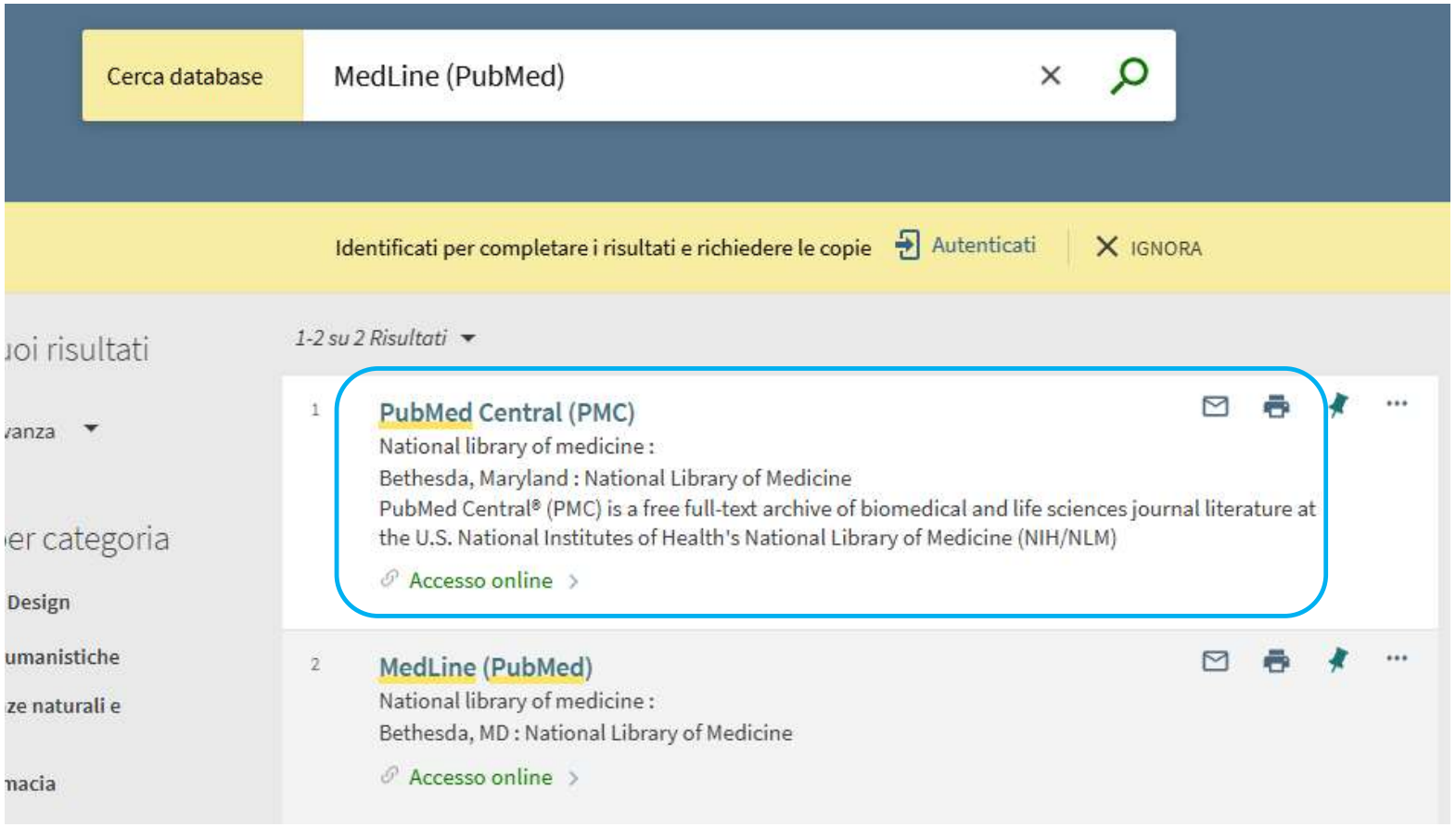
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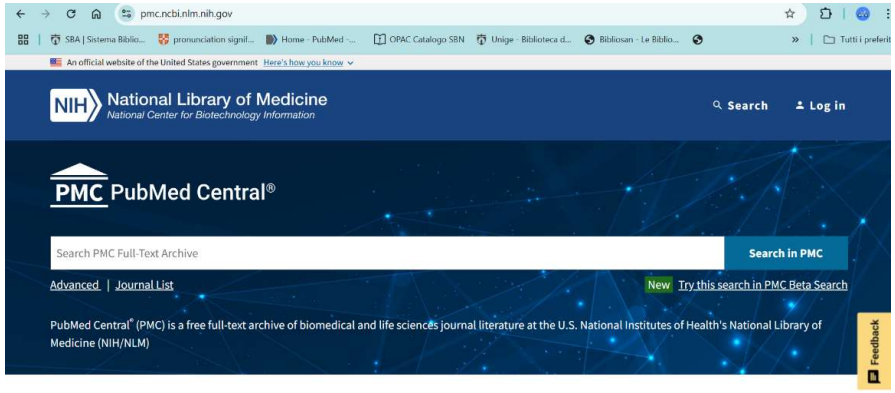


PubMed Central (PMC) is a **free**

full text archive of biomedical and life sciences journal literature

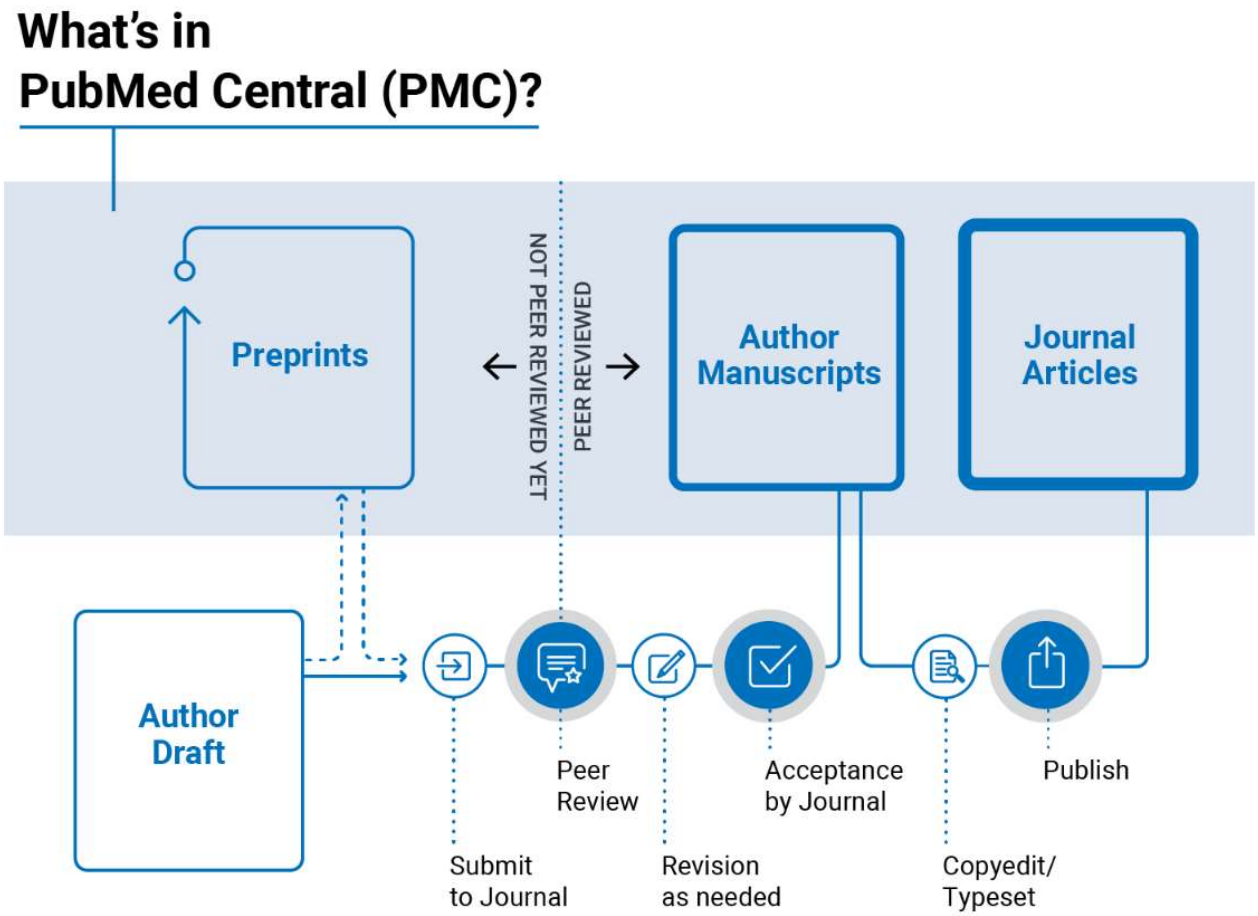


Image source: https://pmc.ncbi.nlm.nih.gov/about/intro

https://pmc.ncbi.nlm.nih.gov/about/intro

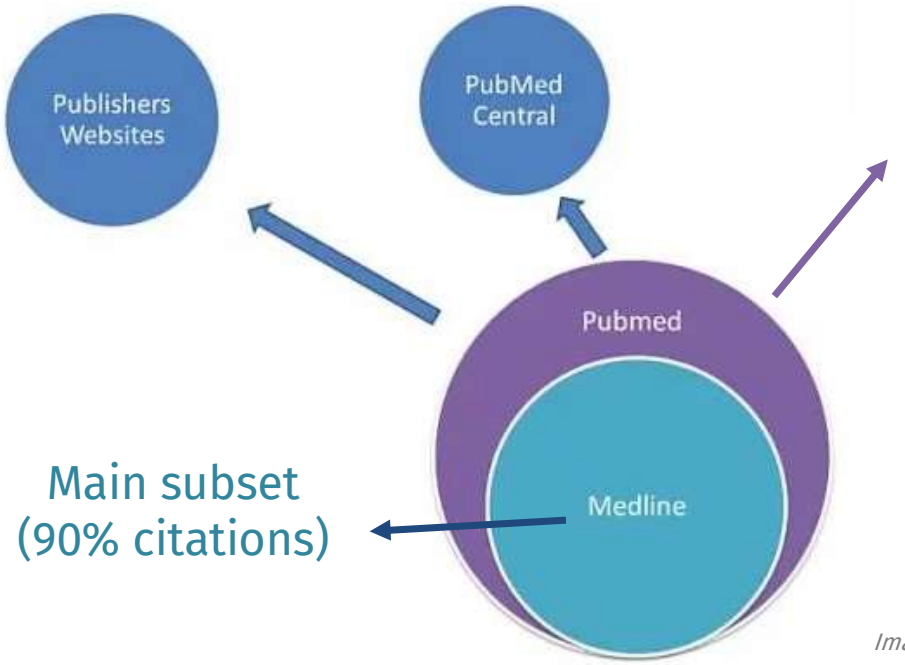
PubMed

- Features and contents
- Tools and research strategies
- Managing the results → My NCBI
- Retrieving full text
- Document Delivery via NILDE

Features and contents

- PubMed has been available since 1996
- Content: more than 4600 scientific journals and more than 37 million references and abstracts of *peer-reviewed* biomedical publications
- Topics: medicine, nursing, dentistry, health organization, pre-clinical sciences, life sciences
- Edited and daily updated by the National Library of Medicine (NLM)

https://pubmed.ncbi.nlm.nih.gov/about



In addition TO Medline in PubMed more contents are provided, including ebooks (NCBI Bookshelf) and other types of biomedical publications

Main subset (90% citations)

Image source: https://pmc.ncbi.nlm.nih.gov

MEDLINE, PubMed, and PMC: how are they different?

https://www.nlm.nih.gov/bsd/difference.html

PubMed = bibliographic database → provides citations (= bibliographic records)

- A bibliographic record is the description of a document and provides all information needed to identify and retrieve a publication
- Each record is composed of different fields
- Each field constitutes an access to the record
- Each field is characterised by *tags*, which are essential for retrieving accurate information. To limit your search to only the specified fields of the citations you can type field tags in the search bar within square brackets: *[ti], [au], [ta], [pmid], [issn], [mh] …*

Simple search

- Type one or more natural language words
- Autocomplete feature suggests terms that contain your input. This algorithm provides search-term predictions based on previous searches
- Words are automatically associated with AND
- Terms are searched in all fields of the record - unless you use fields tags
- Automatic Term Mapping happens in background

  (v. Search Details in Advanced Search)

ATM (Automatic Term Mapping)

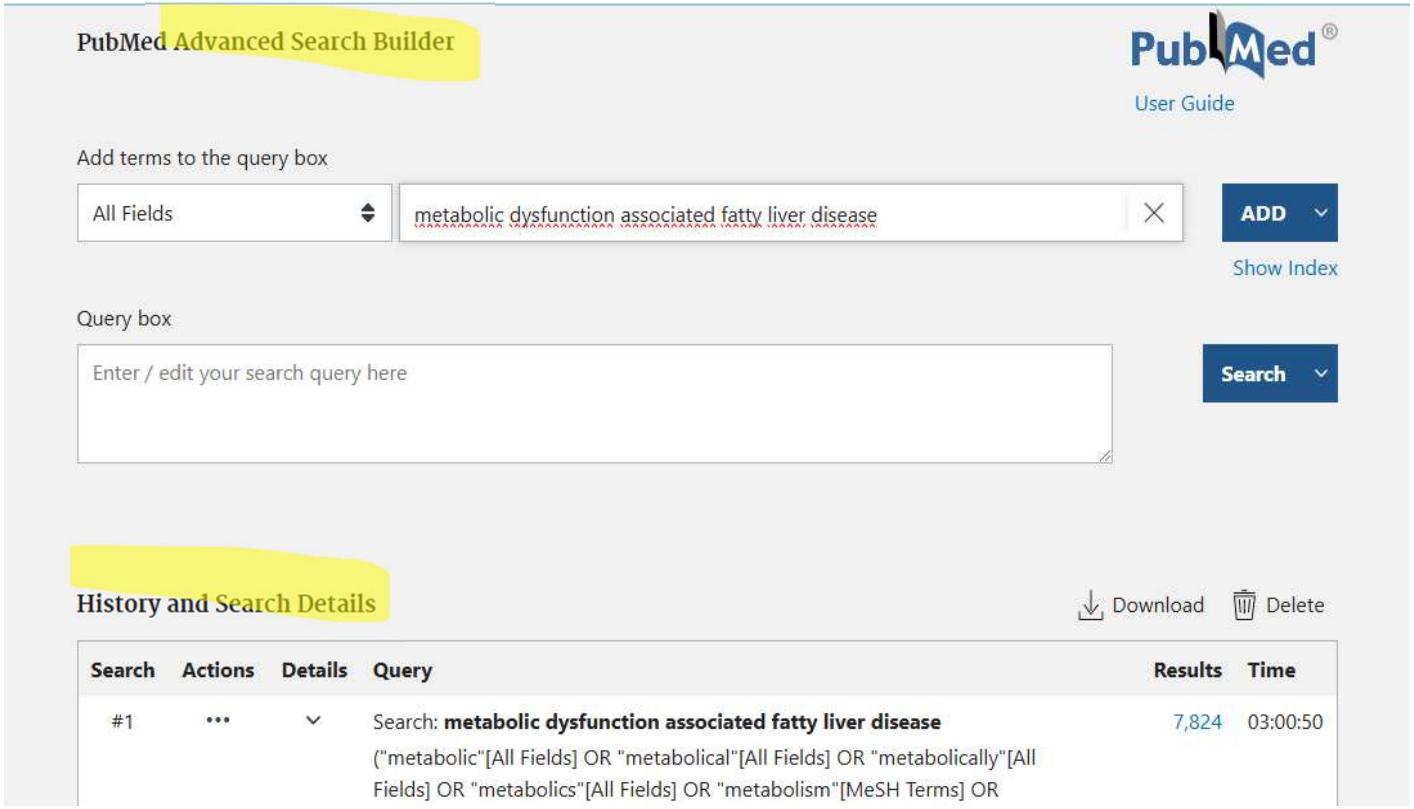
- ATM is a process that happens in the background of most PubMed searches
- The database takes the terms that you have entered into the search box and attempts to interpret them and map them to the appropriate MeSH Terms – if a corresponding heading is available
- In most everyday or casual searches, the ATM feature will help your search by not requiring you to put as many terms into the search box or build more complex search queries
- However, sometimes the ATM process can go in an unexpected or undesired direction → it is important to understand how the database is interpreting your search and always carefully check the search details

ATM (Automatic Term Mapping) in practice

When you enter a search, PubMed checks for that term its "Translation Tables“ running the search not just in all fields of the record but also in some specific indexes (journal titles, author names, MeSH)

To see how your terms are being mapped, you can view:

Advanced Search → Search History → Search Details

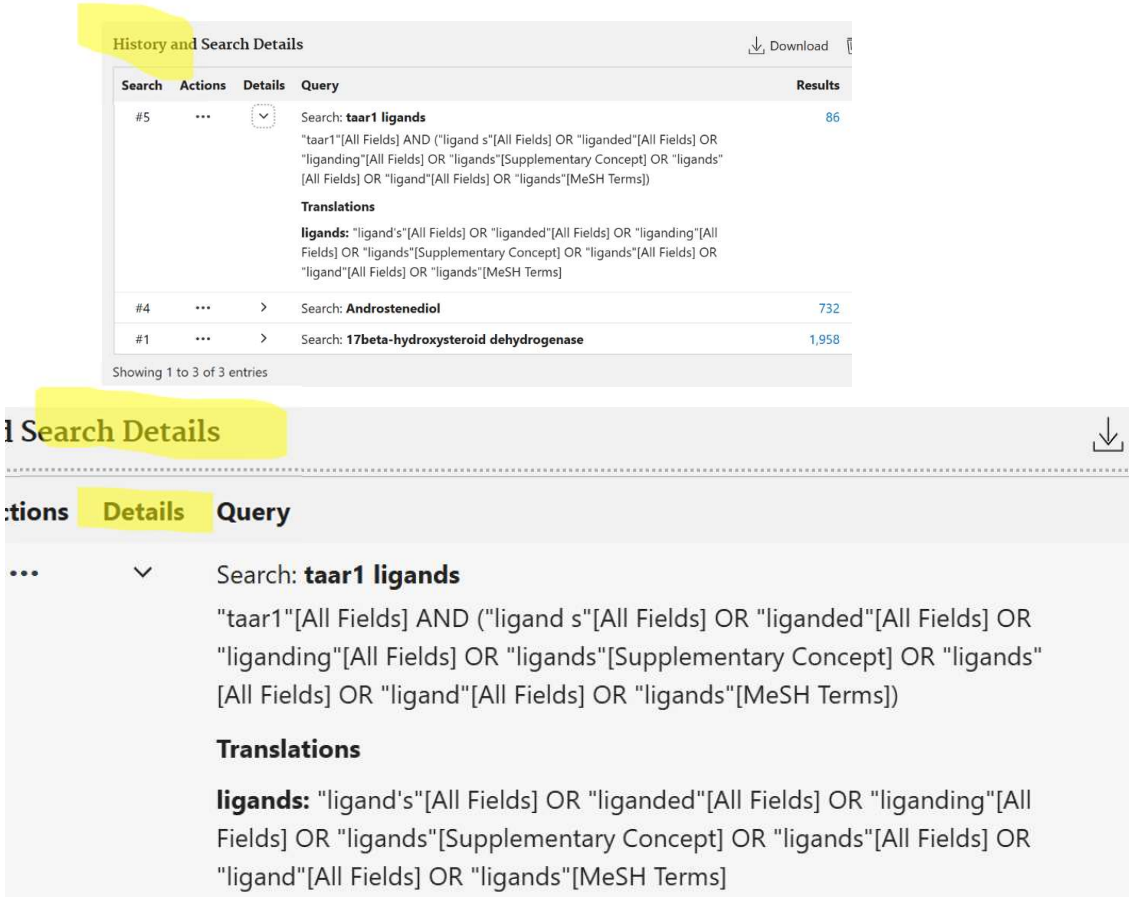


History and Search Details

You can:

- Display and manage performed searches and related results

- Display search terms you entered and the full search that was actually run by the database with all of the individual term translations that took place (ATM)



Sometimes ATM process can go in an unexpected or uncorrected direction →

Always check carefully the automatic search details! Are all terms relevant to your search?

l Search Details

tions **Details** **Query**

Search: **taar1 ligands**

"*taar1*"[All Fields] AND ("ligand s"[All Fields] OR "liganded"[All Fields] OR "liganding"[All Fields] OR "ligands"[Supplementary Concept] OR "ligands"[All Fields] OR "ligand"[All Fields] OR "ligands"[MeSH Terms])

Translations

ligands: "ligand's"[All Fields] OR "liganded"[All Fields] OR "liganding"[All Fields] OR "ligands"[Supplementary Concept] OR "ligands"[All Fields] OR "ligand"[All Fields] OR "ligands"[MeSH Terms]

You can delete terms not relevant → copy and paste the query details in the query box above → modify the search string (when modifying the search mind the brackets and boolean operators between terms)

Turning ATM off

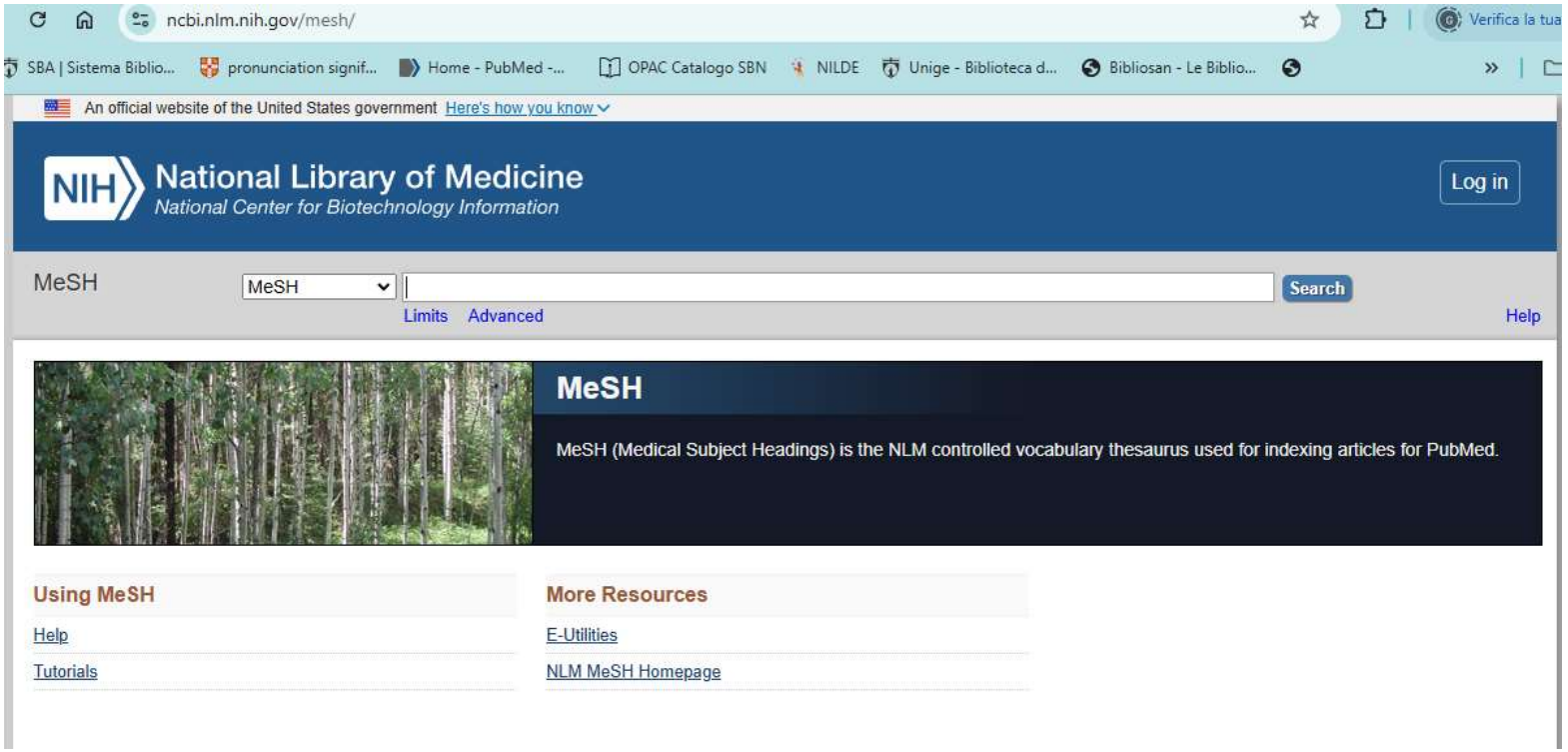
- You can also decide that you do not want PubMed to interpret your search terms, maybe because you may be running a more structured search where you would likely want to have more control over the search terms
- If you do not want PubMed to interpret your search terms you can turn the ATM feature off by using one of the following methods:

1. Putting the term into quotation marks (“…”)
2. Using truncation (*)
3. Using field tags […]

MeSH - Medical Subject Headings

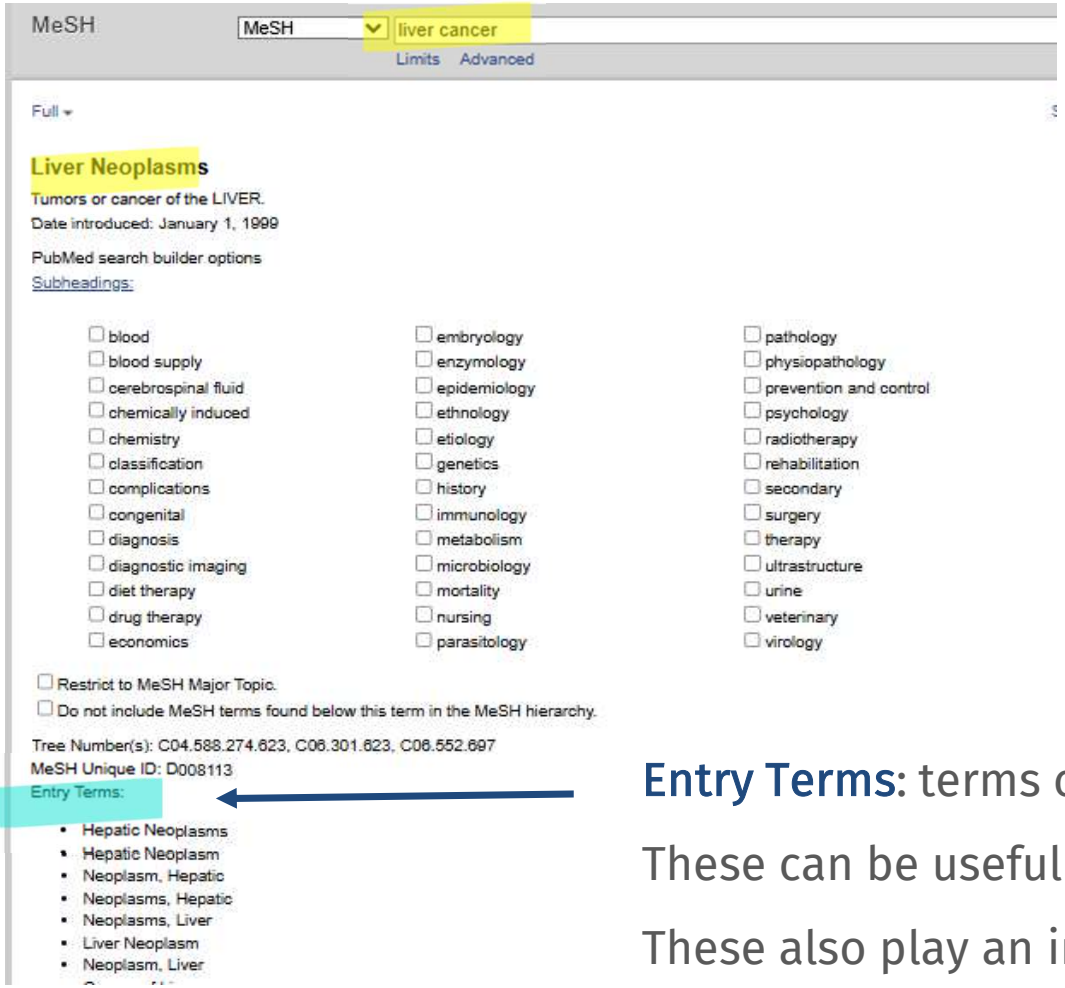
- When you search PubMed, ATM automatically identifies and includes relevant MeSH terms associated with your keywords
- MeSH = Medical Subject Headings → specific terms used by the National Library of Medicine to index citations of articles that are added to MEDLINE/PubMed and describe the topic of the articles
- Subject Headings more generally are the official terms of a thesaurus that a specific database uses to describe the content of items that are in it.
- Each database uses its own controlled vocabulary to describe its contents, and so MeSH is specific to MEDLINE/PubMed

MeSH = controlled and hierarchically-organized vocabulary produced by the NLM



https://www.nlm.nih.gov/mesh/intro_record_types.html

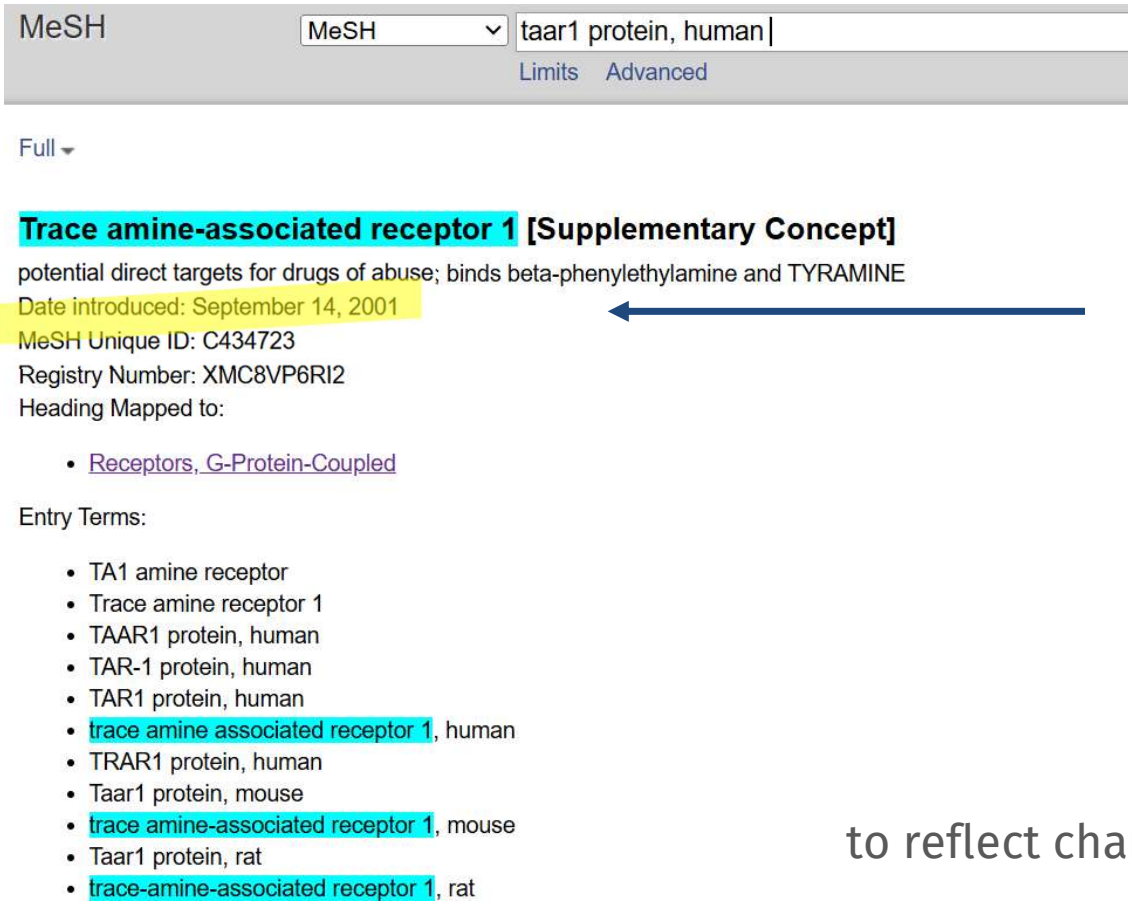
MeSH
Topic Searching in PubMed:
Using the Medical Subject Headings



Entry Terms: terms considered to be a synonym for the MeSH term

These can be useful to find other keyword synonyms to try

These also play an important role in the Automatic Term Mapping (ATM) process



Date Introduced: when a particular term was added to the MeSH vocabulary.

In fact, TAAR1 was discovered in 2001

MeSH is updated once a year

to reflect changes in the medical literature and terminology

MeSH is organized into a **tree structure** from least specific to most specific.

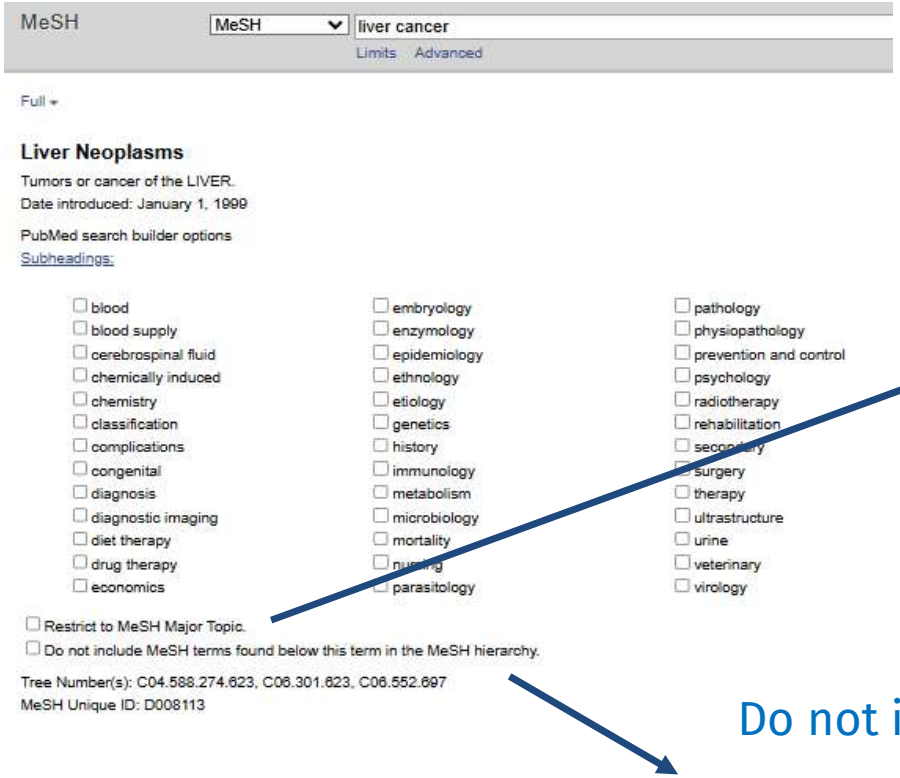
You can explore the branch that a given term is in by clicking on the links in the MeSH tree to find the best term(s) for your search

- Hepatic Cancers

All MeSH Categories
Diseases Category
Neoplasms
Neoplasms by Site
Digestive System Neoplasms
Liver Neoplasms
Adenoma, Liver Cell
Carcinoma, Hepatocellular
Liver Neoplasms, Experimental

← If a lot of other terms are underneath your term in the MeSH Hierarchy this can impact how the MeSH Explosion works

https://hslguides.osu.edu/pubmed/explosion



Restrict to MeSH major topic: it ensures your search retrieves only articles where the MeSH term is a major topic discussed, rather than a secondary focus

Do not include MeSH terms found below this term in MeSH hyerarchy: your search will only include the specific MeSH term you selected and not its more specific sub-terms within the hierarchy

Trace amine-associated receptor 1 [Supplementary Concept]

potential direct targets for drugs of abuse; binds beta-phenylethylamine and TYRAMINE
Date introduced: September 14, 2001
MeSH Unique ID: C434723
Registry Number: XMC8VP6RI2
Heading Mapped to:

- Receptors, G-Protein-Coupled

Entry Terms:

- TA1 amine receptor
- Trace amine receptor 1
- TAAR1 protein, human
- TAR-1 protein, human
- TAR1 protein, human
- trace amine associated receptor 1, human
- TRAR1 protein, human
- Taar1 protein, mouse
- trace amine-associated receptor 1, mouse
- Taar1 protein, rat
- trace-amine-associated receptor 1, rat

Previous Indexing:

- RECEPTORS, CELL SURFACE (2001-2003)

Previous Indexing: if articles on a given concept used to be indexed with a different term, you might find an alternative term listed here. This is especially important for newer terms to help find older or historical literature

Trace amine-associated receptor 1 [Supplementary Concept]

potential direct targets for drugs of abuse; binds beta-phenylethylamine and TYRAMINE

Date introduced: September 14, 2001

MeSH Unique ID: C434723

Registry Number: XMC8VP6RI2

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- TRAR1 protein, human
- Taar1 protein, mouse
- trace amine-associated receptor 1, mouse
- Taar1 protein, rat
- trace-amine-associated receptor 1, rat

Previous Indexing:

- RECEPTORS, CELL SURFACE (2001-2003)

Keyword search term is automatically linked to a MeSH term.

This mapping is done to improve the search by accounting for variations in language and ensuring a more comprehensive search by including relevant MeSH terms

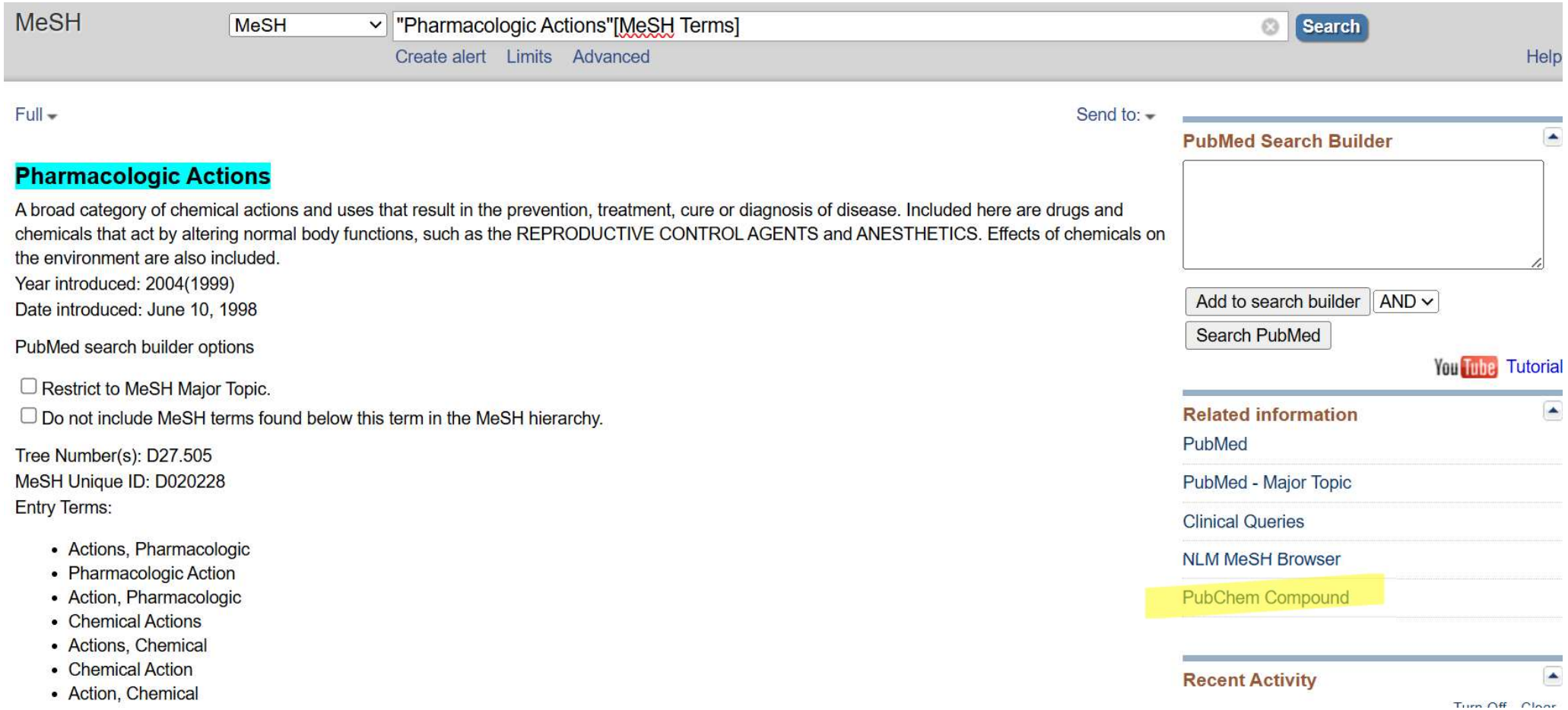
Supplementary Concept Records (SCRs):

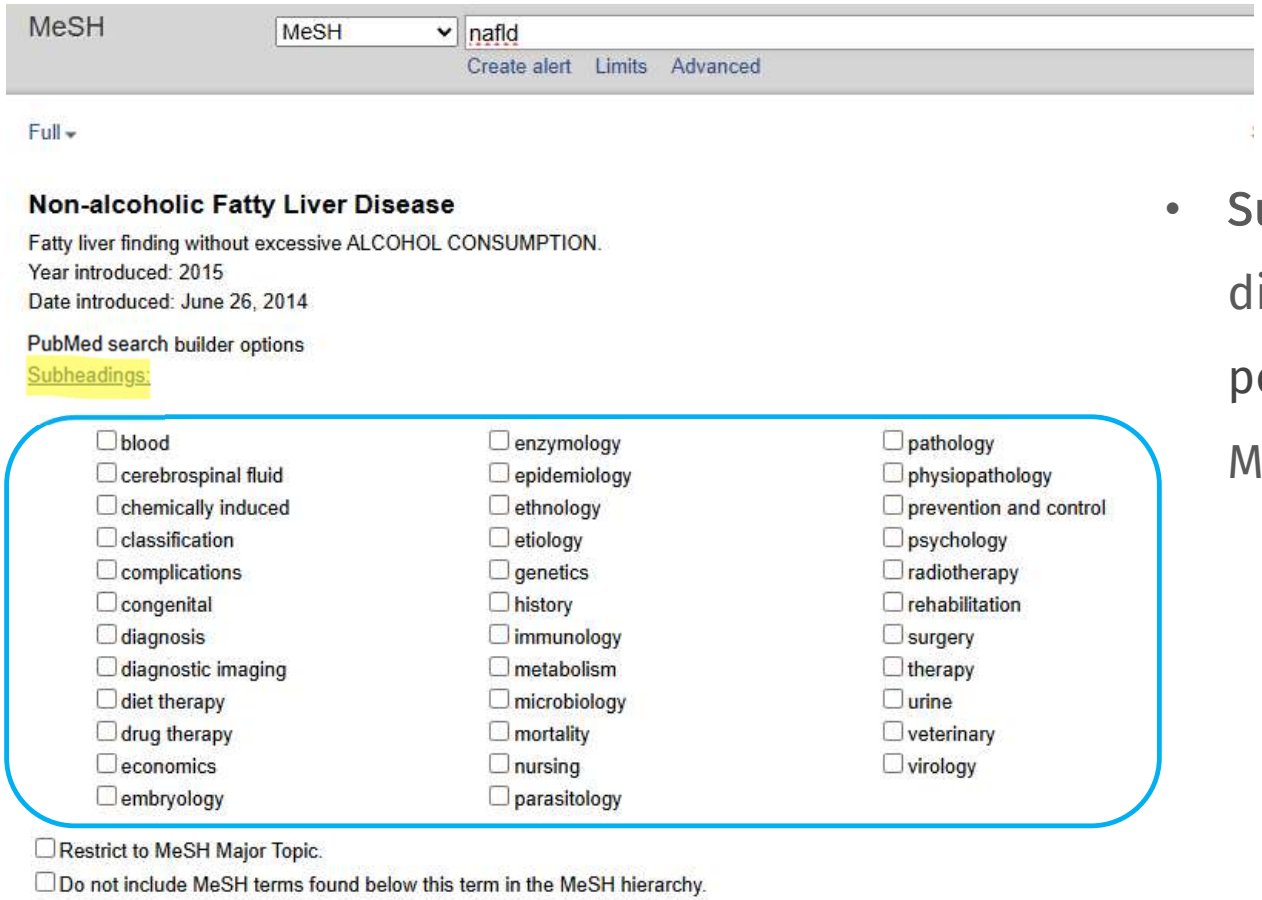
Terms in a separate thesaurus from MeSH, they are **updated daily** to allow for rapid addition of new concepts outside of the annual MeSH review process.

These records are primarily for substances like proteins, drugs, and chemicals, but can also include treatment protocols, organisms, and rare diseases

https://www.nlm.nih.gov/oet/ed/pubmed/mesh/mod01/03-400.html

Pharmacologic Actions





- **Subheadings (qualifiers)** : all the different specialized terms that could potentially be combined with a specific MeSH

MeSH terms

- 17-Hydroxysteroid Dehydrogenases / genetics
- Animals
- Hepatocytes / metabolism
- Liver / metabolism
- Mice
- Non-alcoholic Fatty Liver Disease* / drug therapy
- Non-alcoholic Fatty Liver Disease* / genetics
- Non-alcoholic Fatty Liver Disease* / metabolism
- Phosphorylation
- Serine / metabolism

MeSH terms: how does indexing work?

- Manual Indexing: before 2022
- Automatic Indexing:

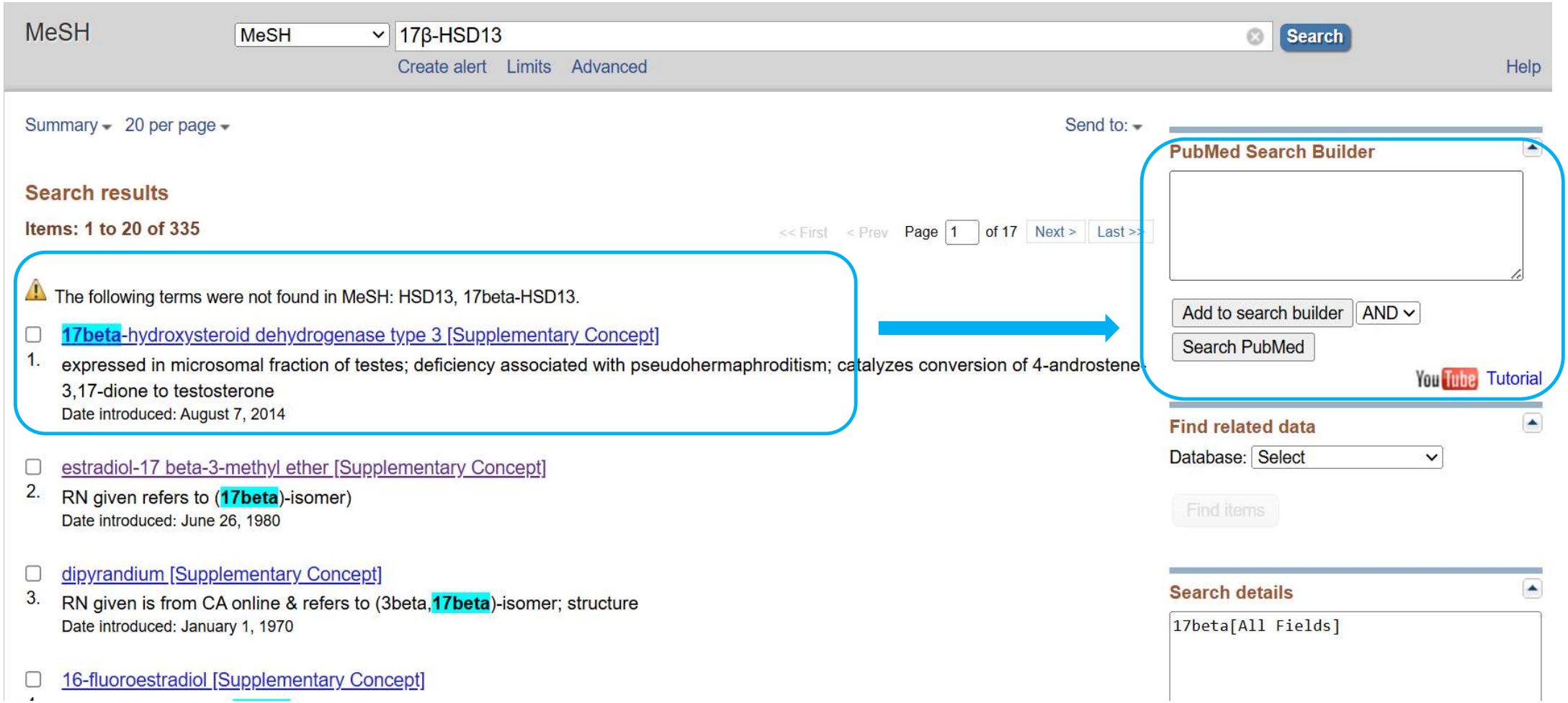
→ 2022-2024: MTIA (Medical Text Indexer-Automated) algorithm = complex system based on a dictionary of MeSH terms, synonyms and other phrases with rules created and refined by humans over the course of many years.

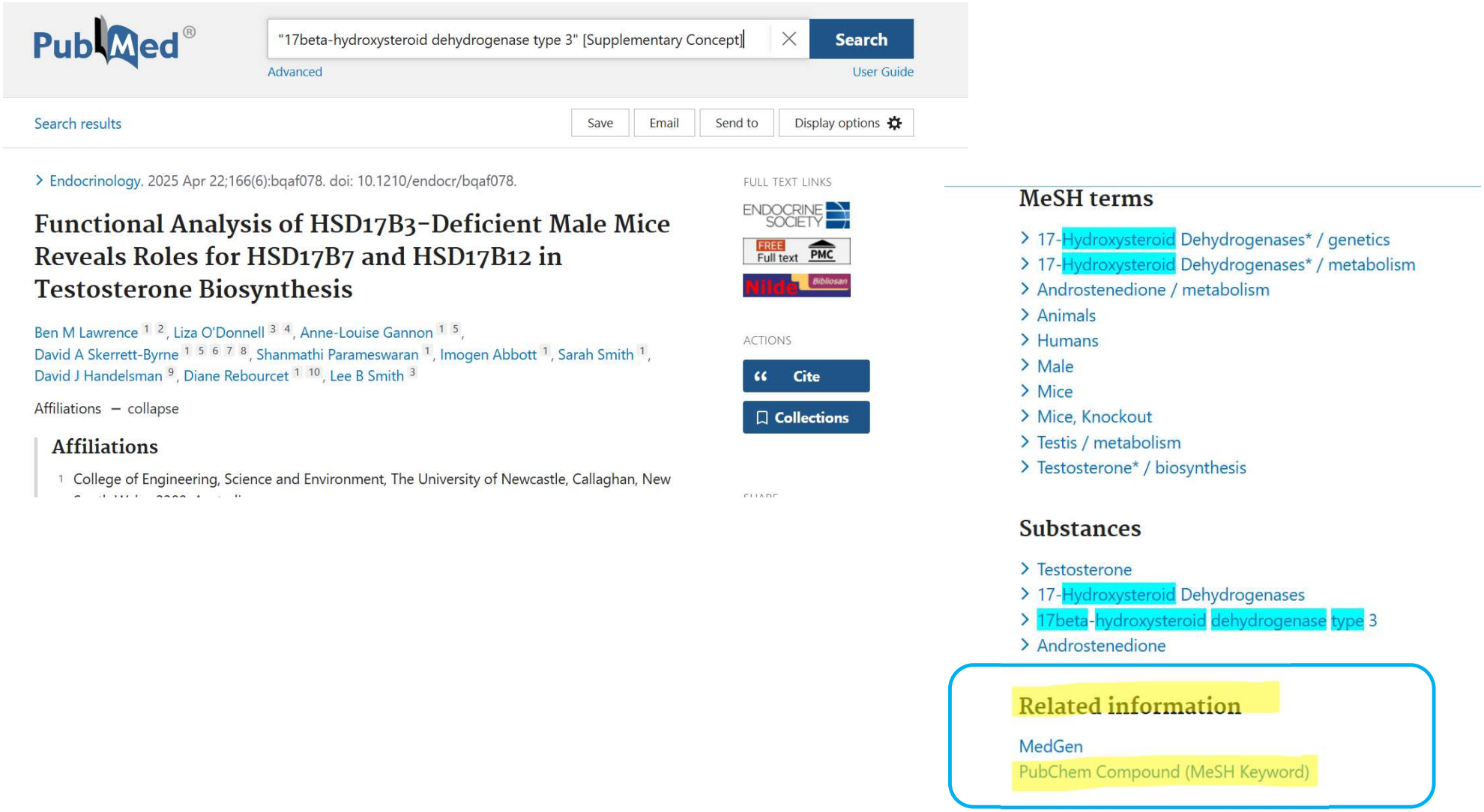
→ After 2024: MTIX (Medical Text Indexer-NeXt Generation) algorithm = a machine learning model known as a neural network (AI): MTIX was trained on millions of MEDLINE citations published between 2007 and 2022. From those examples, MTIX learns how the citation title, abstract, publication year, indexing year, and journal name relate to the indexed terms on that article. Once trained, MTIX can apply the knowledge it developed during training to new citations, determining which MeSH terms are statistically likely to be appropriate indexing for that new article.

Quality Assurance

Semi-automatic indexing (MTIA + human check) → human curators continue to play a significant role in quality assurance for MTIX

Roughly one-third of articles indexed via automation will also receive human curation, with focus on specific types of publications such as systematic reviews or clinical trials and citations that involve genes or proteins, some of the most frequent search topics in PubMed


MeSH
MeSH
17β-HSD13
Search
Create alert
Limits
Advanced
Help
Summary
20 per page
Send to:
Search results
Items: 1 to 20 of 335
<< First
< Prev
Page 1 of 17
Next >
Last >>
The following terms were not found in MeSH: HSD13, 17beta-HSD13.
17beta-hydroxysteroid dehydrogenase type 3 [Supplementary Concept]
1. expressed in microsomal fraction of testes; deficiency associated with pseudohermaphroditism; catalyzes conversion of 4-androstene-3,17-dione to testosterone
Date introduced: August 7, 2014
estradiol-17 beta-3-methyl ether [Supplementary Concept]
2. RN given refers to (17beta)-isomer)
Date introduced: June 26, 1980
dipyrandium [Supplementary Concept]
3. RN given is from CA online & refers to (3beta,17beta)-isomer; structure
Date introduced: January 1, 1970
16-fluoroestradiol [Supplementary Concept]
PubMed Search Builder
Add to search builder
AND
Search PubMed
YouTube Tutorial
Find related data
Database: Select
Find items
Search details
17beta[All Fields]


PubMed®
"17beta-hydroxysteroid dehydrogenase type 3" [Supplementary Concept]
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Display options
Endocrinology. 2025 Apr 22;166(6):bqaf078. doi: 10.1210/endocr/bqaf078.
Functional Analysis of HSD17B3–Deficient Male Mice Reveals Roles for HSD17B7 and HSD17B12 in Testosterone Biosynthesis
Ben M Lawrence [1 2], Liza O'Donnell [3 4], Anne-Louise Gannon [1 5], David A Skerrett-Byrne [1 5 6 7 8], Shanmathi Parameswaran [1], Imogen Abbott [1], Sarah Smith [1], David J Handelsman [9], Diane Rebourcet [1 10], Lee B Smith [3]
Affiliations – collapse
Affiliations
1 College of Engineering, Science and Environment, The University of Newcastle, Callaghan, New
FULL TEXT LINKS
ENDOCRINE SOCIETY
FREE Full text PMC
Nilde Bibliosan
ACTIONS
Cite
Collections
MeSH terms
17-Hydroxysteroid Dehydrogenases* / genetics
17-Hydroxysteroid Dehydrogenases* / metabolism
Androstenedione / metabolism
Animals
Humans
Male
Mice
Mice, Knockout
Testis / metabolism
Testosterone* / biosynthesis
Substances
Testosterone
17-Hydroxysteroid Dehydrogenases
17beta-hydroxysteroid dehydrogenase type 3
Androstenedione
Related information
MedGen
PubChem Compound (MeSH Keyword)

PubChem provides detailed chemical information → chemical substances, their properties and bioactivities

https://pubchem.ncbi.nlm.nih.gov

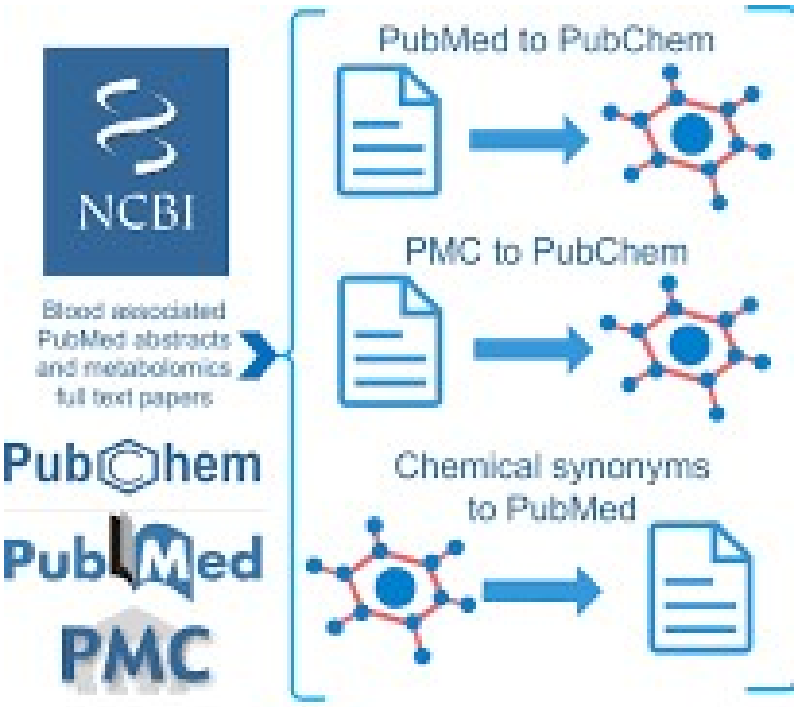


Image source: https://ehp.niehs.nih.gov

PubMed and PubChem are linked →

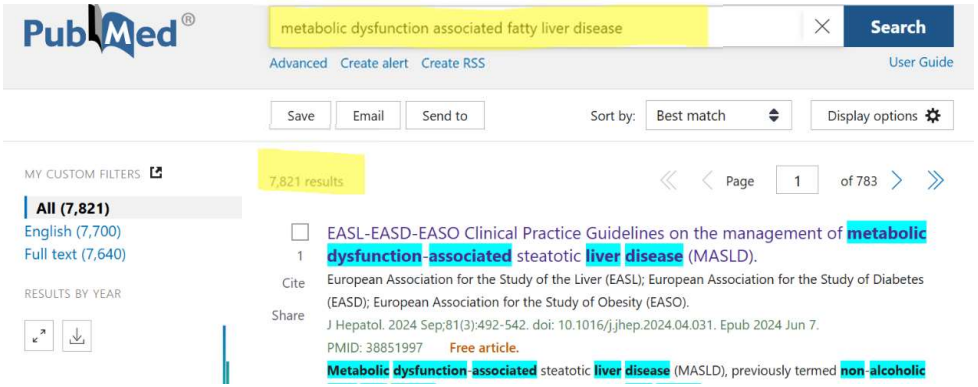
- PubMed records can contain PubChem IDs and PubChem records often link to relevant PubMed articles

- Many PubChem records include links to relevant PubMed articles that discuss the chemical, and this enables researchers to seamlessly navigate between chemical information and scientific publications

Cross-referencing is used to establish links between NCBI/NLM databases

Search tips

You can search by natural language words (Google-like search):



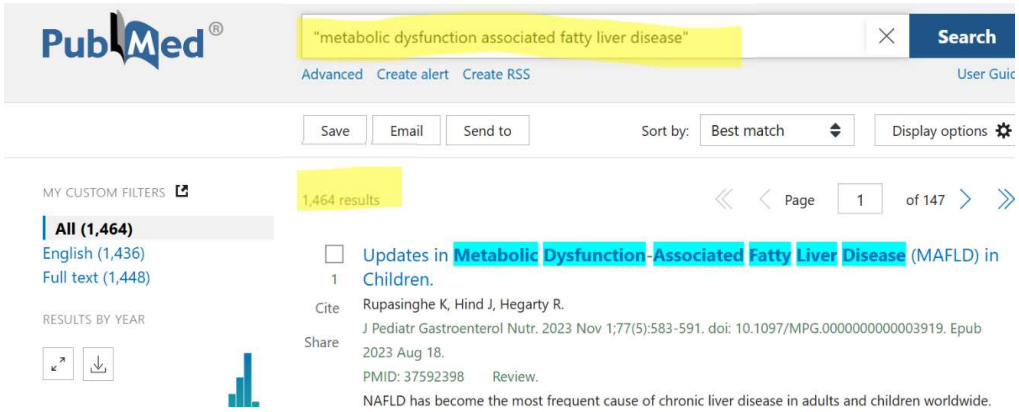
History and Search Details

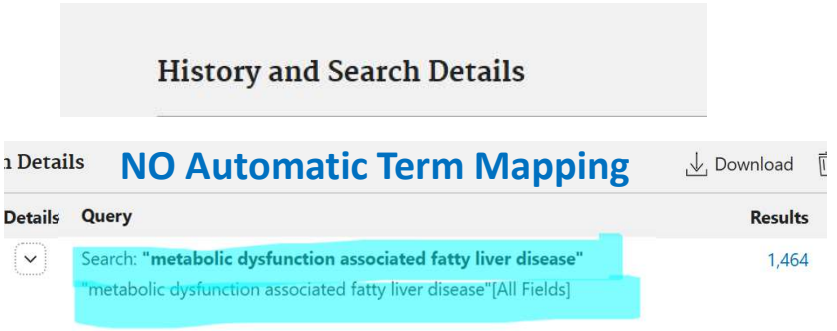
Details	Query	Results
	Search: **metabolic dysfunction associated fatty liver disease** ("metabolic"[All Fields] OR "metabolical"[All Fields] OR "metabolically"[All Fields] OR "metabolics"[All Fields] OR "metabolism"[MeSH Terms] OR "metabolism"[All Fields] OR "metabolisms"[All Fields] OR "metabolism" [MeSH Subheading] OR "metabolities"[All Fields] OR "metabolization"[All Fields] OR "metabolize"[All Fields] OR "metabolized"[All Fields] OR "metabolizer"[All Fields] OR "metabolizers"[All Fields] OR "metabolizes"[All Fields] OR "metabolizing"[All Fields]) AND ("dysfunctional"[All Fields] OR "dysfunctionals"[All Fields] OR "dysfunctioning"[All Fields] OR "dysfunctions"[All Fields] OR "physiopathology"[MeSH Subheading] OR "physiopathology"[All Fields] OR "dysfunction"[All Fields]) AND ("associate"[All Fields] OR "associated"[All Fields] OR "associates"[All Fields] OR "associating"[All Fields] OR "association"[MeSH Terms] OR "association"[All Fields] OR "associations"[All Fields]) AND ("non alcoholic fatty liver disease"[MeSH Terms] OR ("non alcoholic"[All Fields] AND "fatty"[All Fields] AND "liver"[All Fields] AND "disease"[All Fields]) OR "non alcoholic fatty liver disease"[All Fields] OR ("fatty"[All Fields] AND "liver" [All Fields] AND "disease"[All Fields]) OR "fatty liver disease"[All Fields])	7,821

Automatic Term Mapping

Search tips

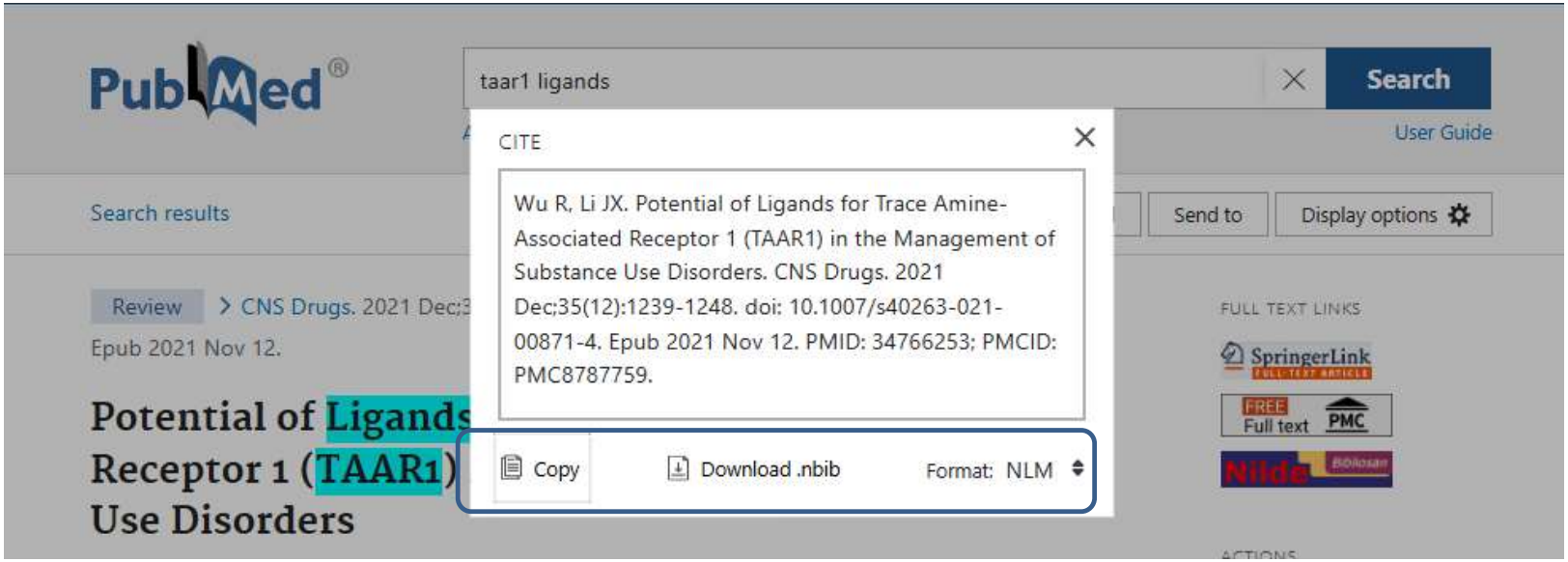
If you want that the words must appear as an exact phrase you have to surround your search terms with quotation marks (“…”) :





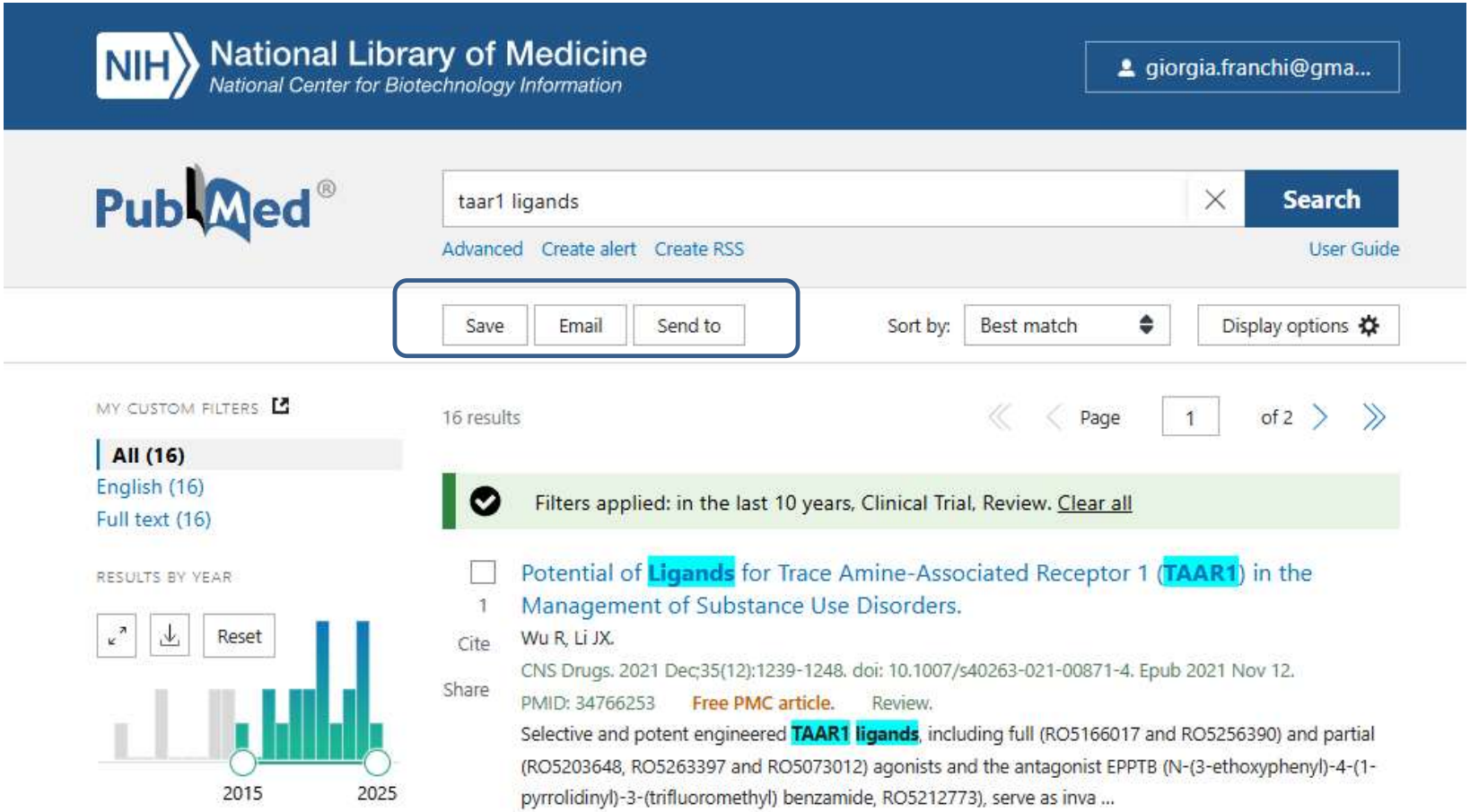
Cite

For each record different citation styles (AMA, MLA, APA e NLM) are shown

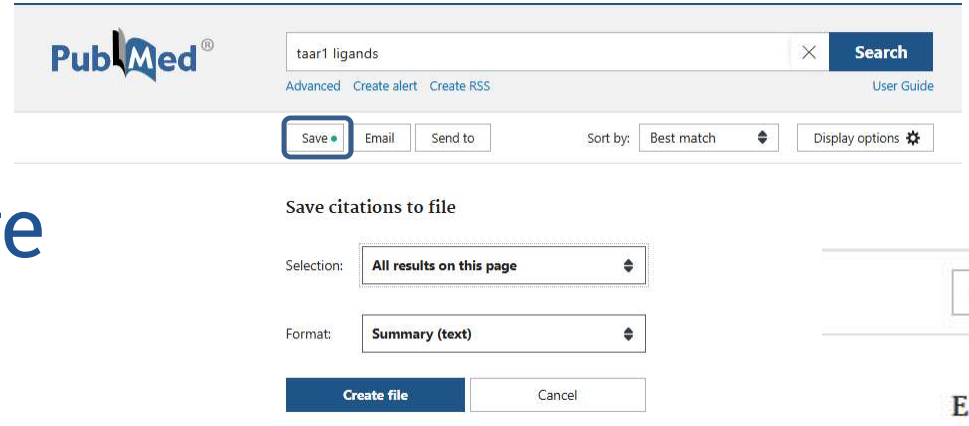


You can download the citation in **.nbib:** this file format is designed for importing citations into Reference Management Software like EndNote, Zotero and other citation management software.

Save, Email, Send to

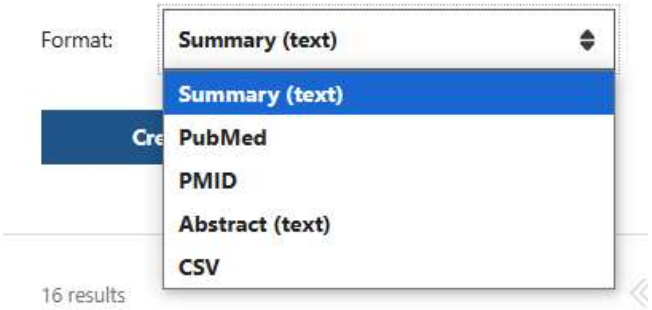


Save

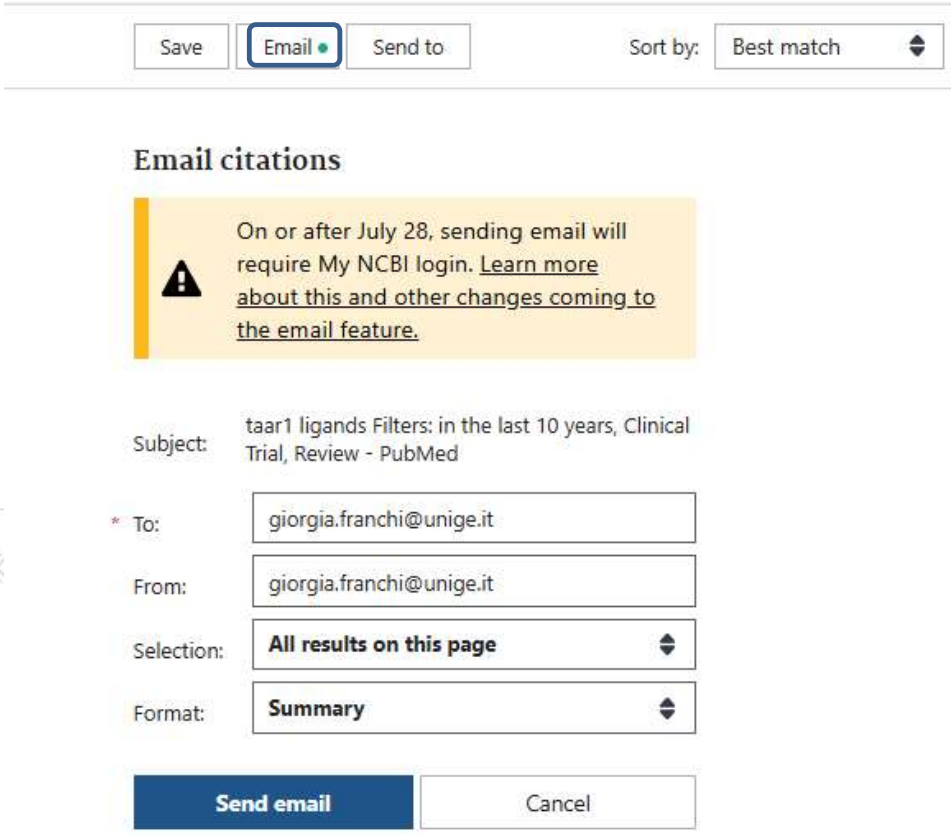


You can choose the format between:

- Summary
- PubMed
- PMID List
- Abstract
- CSV



Email

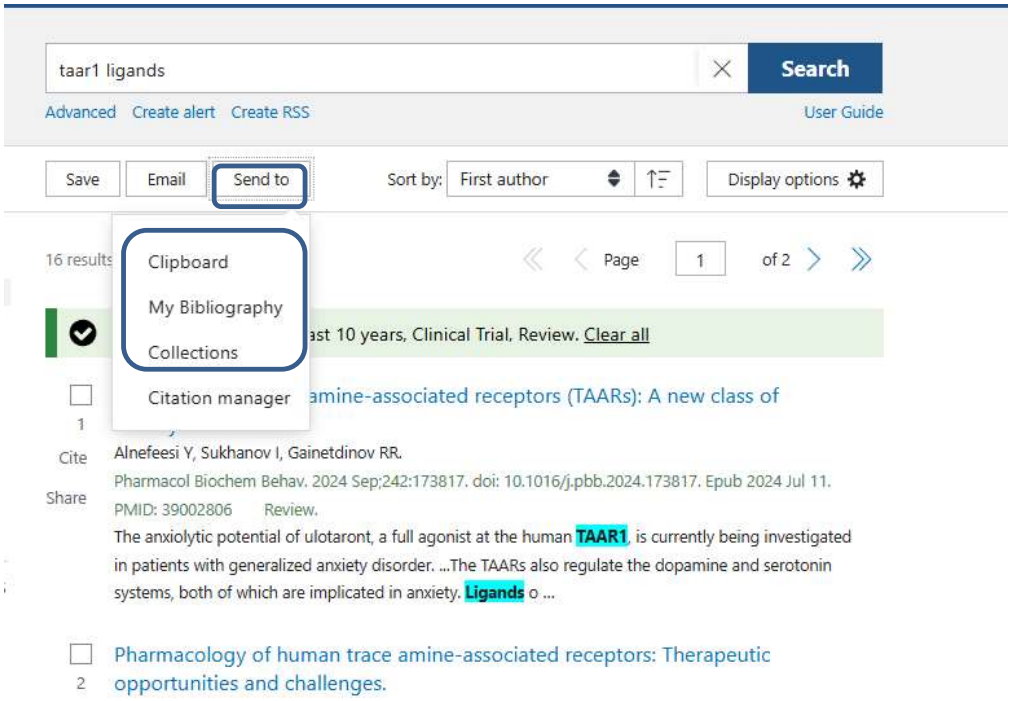


Send to

Clipboard → provides a place to collect up to 500 items from one or more searches. Items saved to the Clipboard will expire after 8 hour

My Bibliography → in My NCBI account

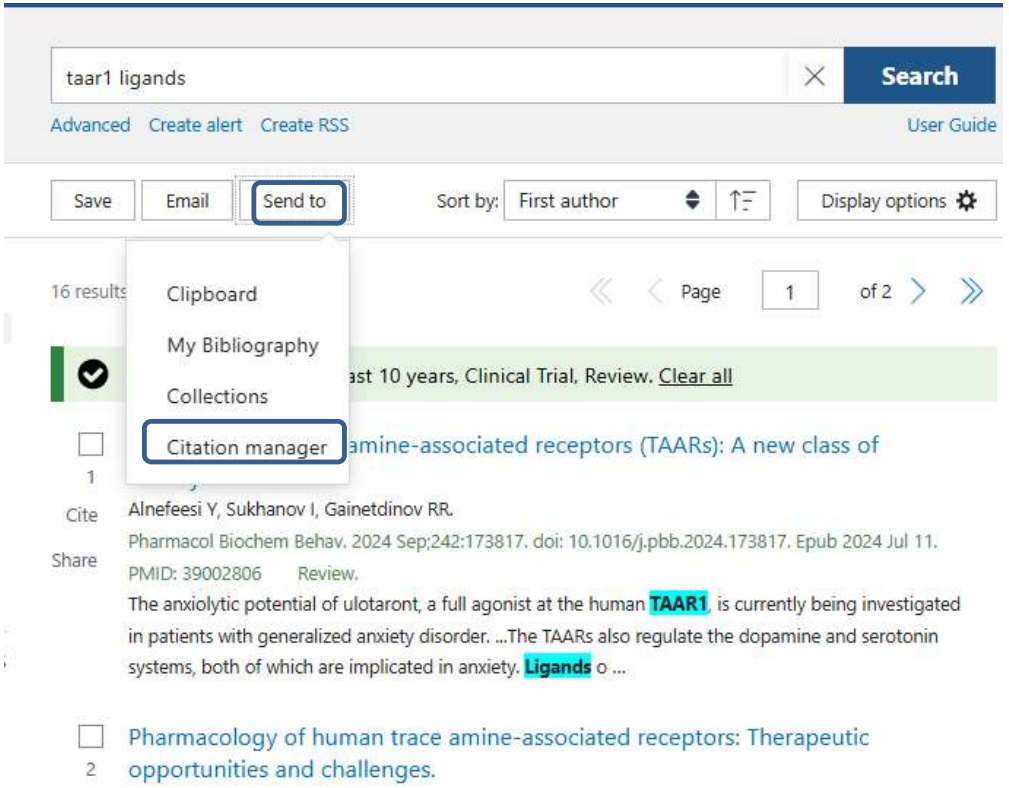
Collections → in My NCBI account



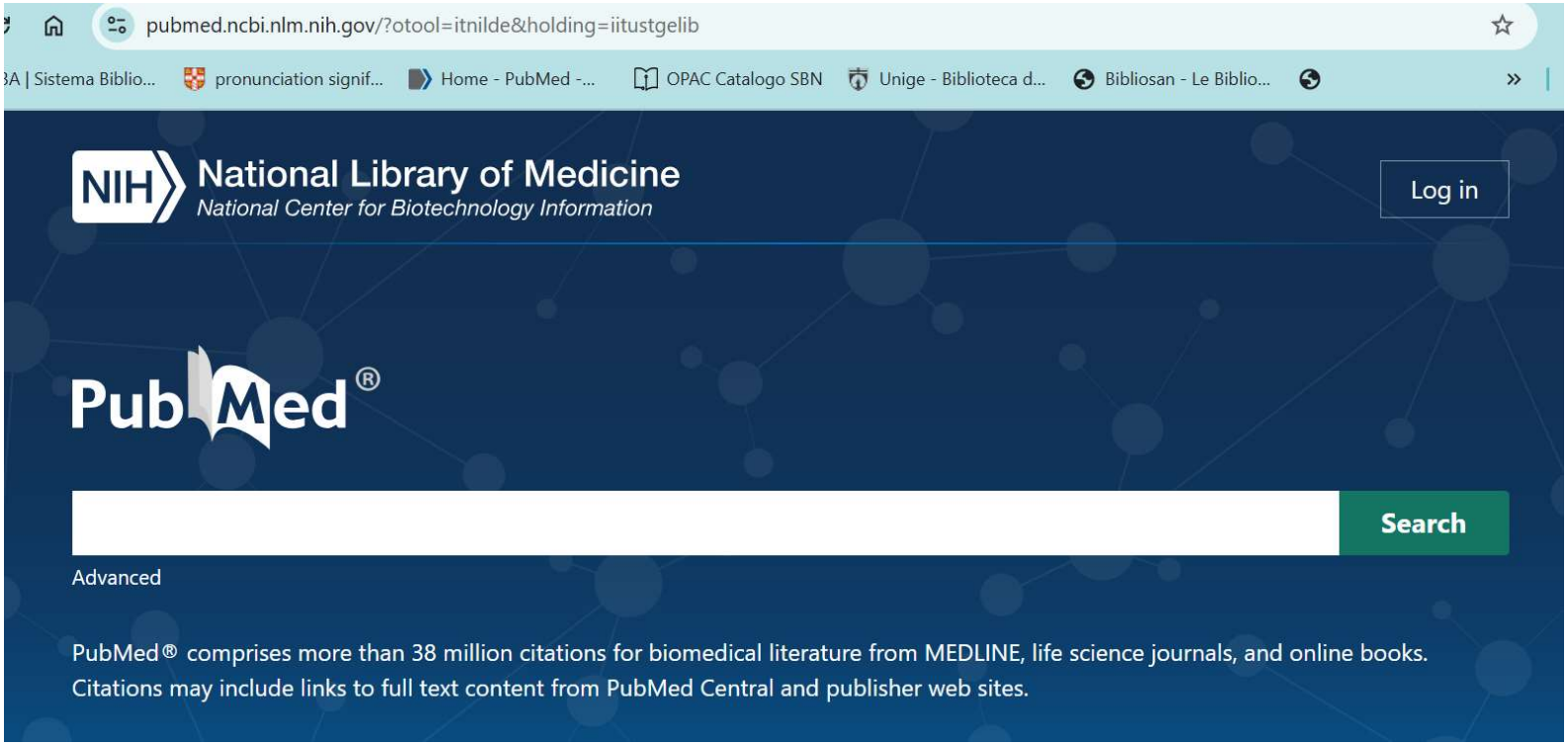
Send to

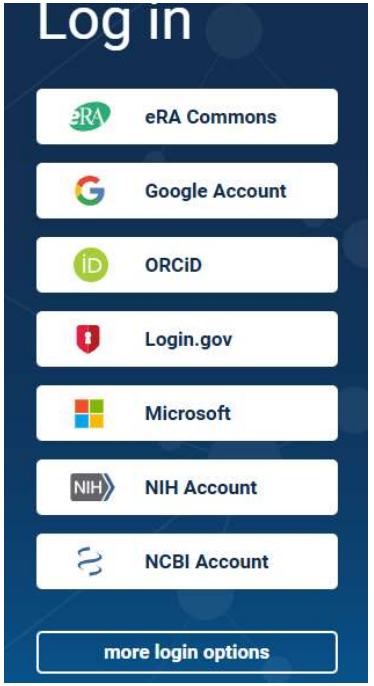
Citation manager → exports citations in **.nbib** (= a NLM proprietary format designed to contain specific fields of Medline records and used for importing citations into Reference Management Software like Zotero, EndNote, Mendeley, RefWorks)

.nbib format could be easily converted to **.ris** (research information systems) format

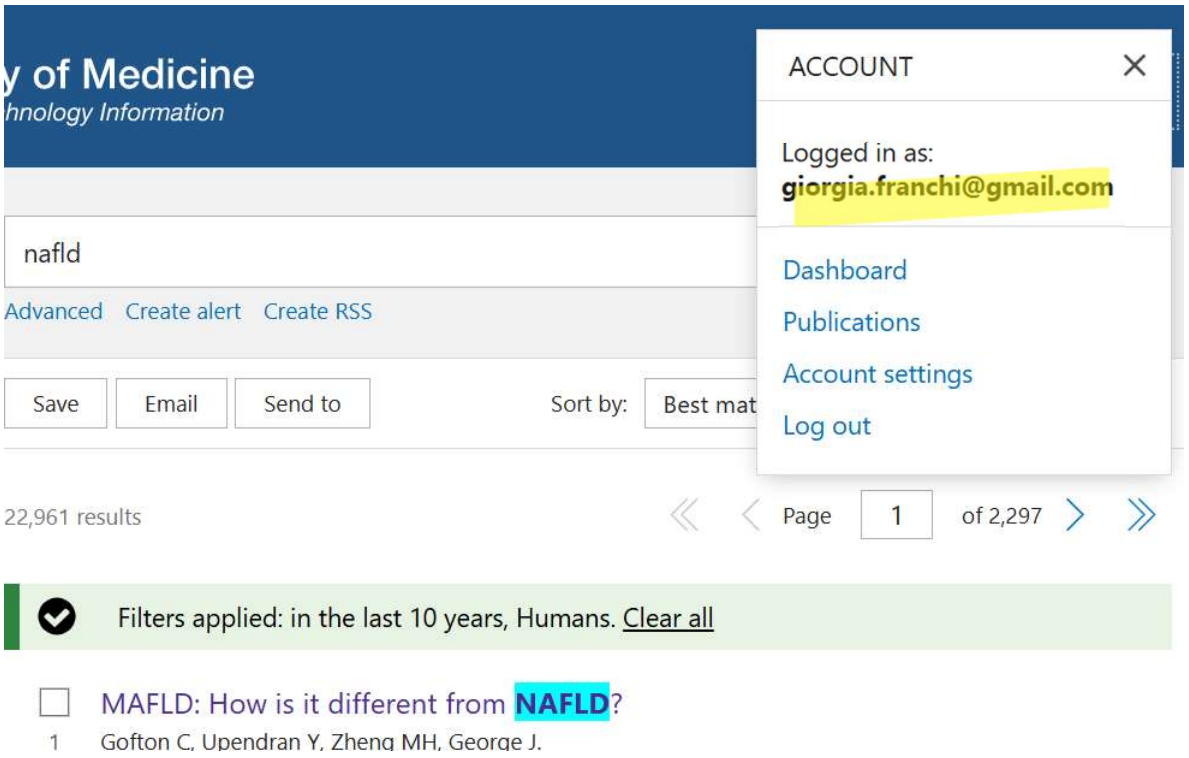


Within PubMed you can create a personalized account called a MyNCBI Account





My NCBI



A MyNCBI Account includes the following main features:

- Creating collections of articles
- Saving search strategies
- Setting up email search alerts
- Building your My Bibliography
- Choosing personalized display settings and limiters

My NCBI

Customize this page | NCBI Site Preferences | Video Overview | Help

My Bibliography

Your bibliography contains 9 items.
Your bibliography is **private**.

Manage My Bibliography »

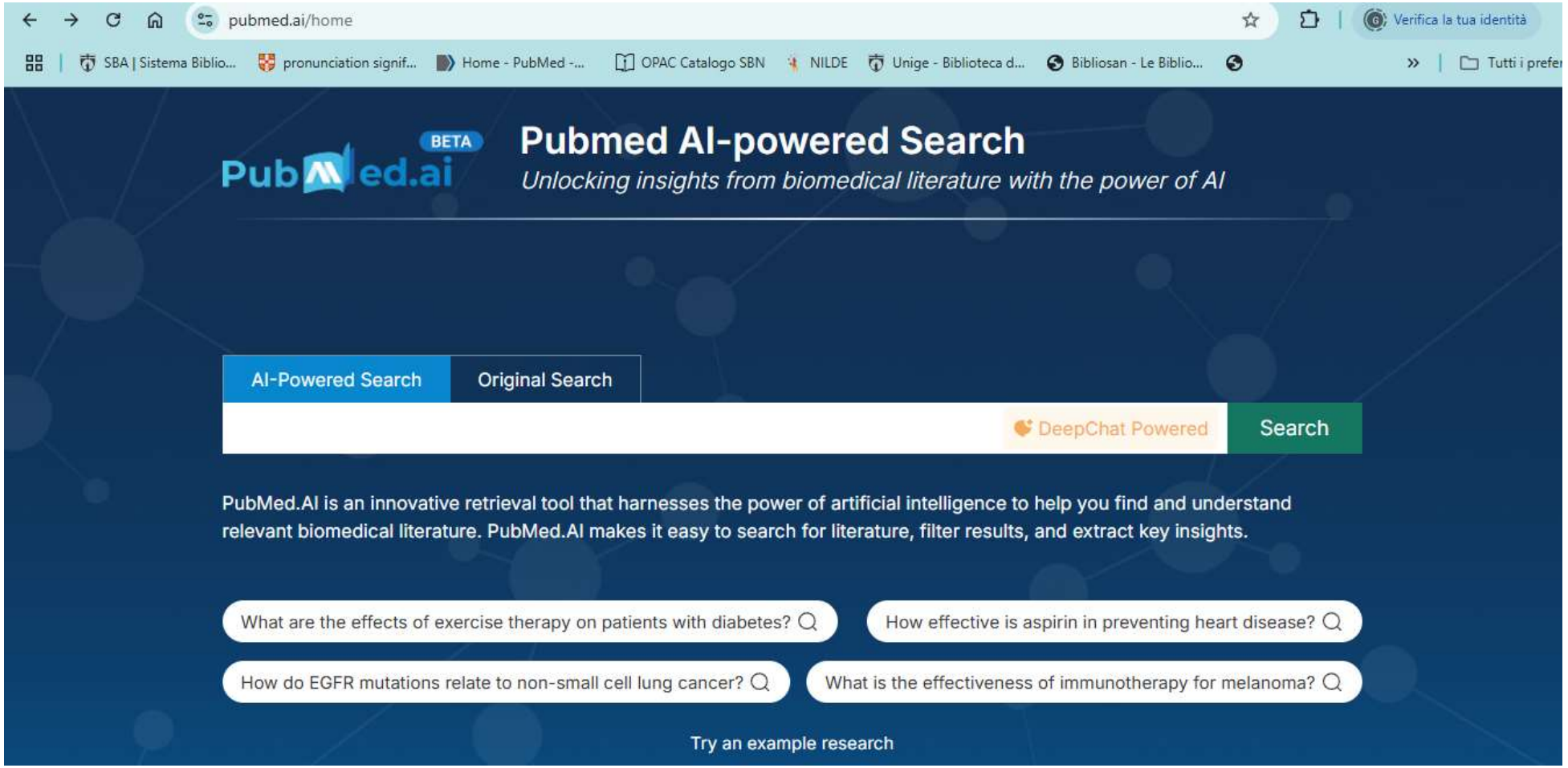
Recent Activity

Time	Database	Type	Term
Yesterday 10:41 AM	MeSH	record	Receptors, G-Protein-Coupled
Yesterday 10:41 AM	MeSH	record	Trace amine-associated receptor 1 [...
Yesterday 10:40 AM	MeSH	search	taar1 protein, human
Yesterday 10:40 AM	MeSH	search	taar 1
Yesterday 10:29 AM	MeSH	search	supplementary concept
Yesterday 09:47 AM	MeSH	record	Pharmacologic Actions
Yesterday 09:47 AM	MeSH	search	"Pharmacologic Actions"[MeSH Terms]
Yesterday 09:44 AM	MeSH	record	4-(3,4-dichlorophenyl)-4,5-dihydroo...
Yesterday 09:44 AM	MeSH	record	Oxazoles
Yesterday 09:43 AM	MeSH	search	taar1

Saved Searches

Search Name	What's New	Last Searched
PubMed Searches		
(Clostridium Infectionsdrug therapy[Mesh]) AND ...	0	4 months ago
clostridium difficile treatment MONOCLONAL ANTI...	0	4 months ago

Manage Saved Searches »


pubmed.ai/home
Verifica la tua identità
SBA | Sistema Biblio...
pronunciation signif...
Home - PubMed -...
OPAC Catalogo SBN
NILDE
Unige - Biblioteca d...
Bibliosan - Le Biblio...
Tutti i prefer
PubMed.ai
BETA
Pubmed AI-powered Search
Unlocking insights from biomedical literature with the power of AI
AI-Powered Search
Original Search
DeepChat Powered
Search
PubMed.AI is an innovative retrieval tool that harnesses the power of artificial intelligence to help you find and understand relevant biomedical literature. PubMed.AI makes it easy to search for literature, filter results, and extract key insights.
What are the effects of exercise therapy on patients with diabetes?
How effective is aspirin in preventing heart disease?
How do EGFR mutations relate to non-small cell lung cancer?
What is the effectiveness of immunotherapy for melanoma?
Try an example research

Useful Links

https://hslguides.osu.edu/pubmed

https://www.nlm.nih.gov/medline/medline_overview.html

https://pubmed.ncbi.nlm.nih.gov/help

https://pmc.ncbi.nlm.nih.gov/about/intro

https://pubchem.ncbi.nlm.nih.gov

https://www.ncbi.nlm.nih.gov/gene

https://www.ncbi.nlm.nih.gov/protein

https://meshb.nlm.nih.gov

MeSH 2025

https://www.nlm.nih.gov/oet/ed/pubmed/mesh/mod01/index.html