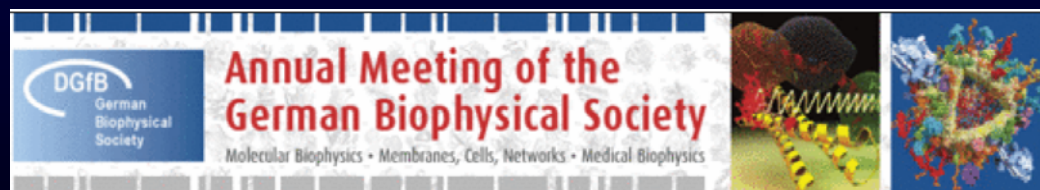


Scientific writing & Literature Searches



How to compare your results with previous studies...

- Commercial scientific databases like Web of Science or Scopus (→ *show online*)
 - Most comprehensive
 - including various tools for narrowing your search to a reasonable number of results while getting all articles you need, use of boolean operators allows good search terms
 - include links for download of the article with different possibilities offered by your institution/university (direct download, ordering in different ways)
 - BUT: not available everywhere (only via institutional subscription, i.e. probably no use at your home depending on your remote access to you institute/University)
 - **USEFUL FOR DETAILED COMPREHENSIVE SEARCHES**

How to compare your results with previous studies...

- basic vs. advanced search in Web of Science

The screenshot shows the basic search interface on the Web of Science website. The URL is <https://www.webofscience.com/wos/woscc/basic-search>. The page features a search bar with the text "Search in: Web of Science Core Collection" and "Editions: All". Below the search bar, there are tabs for "DOCUMENTS", "CITED REFERENCES", and "STRUCTURE". A search input field contains the text "Example: liver disease india singh trace metals". There are buttons for "+ Add row", "+ Add date range", "Advanced search", "Clear", and "Search". At the bottom, there is a promotional banner for a personalized homepage dashboard with a "Sign in to access" button.

The screenshot shows the advanced search interface on the Web of Science website. The URL is <https://www.webofscience.com/wos/woscc/advanced-search>. The page features a search bar with the text "Search in: Web of Science Core Collection" and "Editions: All". Below the search bar, there are tabs for "DOCUMENTS" and "RESEARCHERS". A search input field contains the text "Example: liver disease india singh". There is an "Add to query" button. Below the search bar, there are sections for "More options" and "Query Preview". The "Query Preview" section contains the text "Enter or edit your query here. You can also combine previous searches e.g. #5 AND #2". There are buttons for "+ Add date range", "Clear", and "Search". On the right side, there is a "Field Tags" section with a "Sort by Default" dropdown menu. The "Field Tags" section lists various search criteria such as TS=Topic, TI=Title, AU=[Author], AI=Author Identifiers, AK=Author Keywords, ED=Editor, KP=Keyword Plus, SD=Publication Titles, DO=DOI, PF=Peer Published, CF=Conference, AD=Address, OG=[Affiliation], OO=Organization, SO=Suborganization, SA=Street Address, CI=City, PS=Province/State, CU=Country/Region, ZP=Zip/Postal Code, FD=Funding Agency, FG=Grant Number, FT=Funding Text, SJ=Research Area, WC=Web of Science Categories, IS=ISSN/ISBN, UT=Accession Number, PMID=PubMed ID, DOP=Publication Date, LD=Index Date, PUBL=Publisher, ALL=All Fields, FPI=Final publication year, EAY=Early Access Year, SDG=Sustainable Development Goals, TMC=Macro Level Citation Topic, TMSO=Meso Level Citation Topic, and TMIC=Micro Level Citation Topic.

How to compare your results with previous studies...

- basic vs. advanced search in Scopus

The image displays two screenshots of the Scopus website, illustrating the transition from a basic search to an advanced search.

Top Screenshot: Basic Search Interface

- URL:** <https://www.scopus.com/pages/home#basic>
- Search Bar:** A single input field for "Search documents".
- Search Within:** A dropdown menu set to "Article title, Abstract, Keywords".
- Buttons:** "Add search field", "Add date range", "Advanced document search", "Reset", and "Search Q".
- Search History:** A section showing a single search entry: "1 TITLE-ABS-KEY ((trace AND metals) AND (plant* OR alga* OR cyanobac*) AND (deficien* OR nutr*) AND (... 215 results".

Bottom Screenshot: Advanced Search Interface

- URL:** <https://www.scopus.com/search/form.uri?display=advanced>
- Search Bar:** A large text input field labeled "Enter query string".
- Buttons:** "Outline query", "Add Author name / Affiliation", and "Search Q".
- Operators:** A list of logical operators: AND, OR, AND NOT, PRE/, W/.
- Field codes:** A list of search fields: Textual Content, Affiliations, Authors, Biological Entities, Chemical Entities, Conferences, Document, Editors, Funding, Keywords, Publication, References, Subject Areas.
- Example Query:** `ALL("Cognitive architectures") AND AUTHOR-NAME[smith]
TITLE-ABS-KEY(*somatic complaint wom?n) AND PUBYEAR AFT 1993
SRCTITLE(*field ornith*) AND VOLUME(75) AND ISSUE(1) AND PAGES(53-66)`

How to compare your results with previous studies...

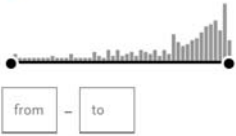
- Outcome of an example of an advanced search in Scopus vs. Web of Science

Documents Preprints Patents Secondary documents Research data

215 documents found [Analyze results](#)

Refine search

Filters

Year 

Author name

Subject area

Document type

- Article 144
- Review 45
- Book chapter 17
- Conference paper 5
- Editorial 2

Show all

Source title

Publication stage

Document title	Authors	Source	Year	Citations
1 Ironing out the conflicts: iron supplementation reduces negatives bacterial interactions in the rhizosphere of an Atacama-endemic perennial grass	Aguado-Narese, C. , Maldonado, J.E. , Hodar, C. , ... Cambiao, V. , Gonzalez, M.	Environmental Microbiome , 20(1), 29	2025	0
2 The Elements of Life, Photosynthesis and Genomics	Merchant, S.S.	Journal of Molecular Biology , 437(11), 169054	2025	2
3 Black soldier frass valorization into low-cost residual biofertilizer conversion process and its effectiveness in foliar and soil applications	Meza Elguera, N.Y. , Ramos Zorrilla, D.L. , Heredia Sucari, J.R. , ... Diaz Vento, I.M. , Jiménez Pacheco, H.G.	Bioresource Technology Reports , 30, 102098	2025	0
4 Meta-Analysis of Abiotic Conditions Affecting Exopolysaccharide Production in Cyanobacteria	Wu, S. , Wang, F. , Wang, H. , Shen, C. , Yu, K.	Metabolites , 15(2), 131	2025	0

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189 results from Web of Science Core Collection for:

(trace metals) and (plant* or alga* or cyanobac*) and (deficien* or nutr*) and (photosyn*) (All Fields) [Copy query link](#)

+ Add Keywords Quick add keywords: [ceratophyllum demersum](#) [phytostabilization](#) [subcellular distribution](#) [photosynthetic pigments](#) [trace metals](#)

Refined By: [Document Type: Review Article](#) Clear all

189 Documents You may also like...

Refine results [Export Refine](#)

Search within results...

Quick Filters

- Open Access 15
- Associated Data 1
- Enriched Citations 31

Publication Years

Document Types

Researcher Profiles

Web of Science Categories

Citation Topics Meso

Citation Topics Micro

Sustainable Development Goals

Web of Science Index

Affiliations

Affiliation with Department

Publication Titles

Languages

Countries/Regions

Publishers

Research Areas

Open Access

Filter by Marked List

Funding Agencies

Conference Titles

Group Authors

Book Series Titles

Editors

Editorial Notices

Document title	Citations	References
1 Ecological effects of particulate matter	403 Citations	172 References
2 Iron and grazing constraints on primary production in the central equatorial Pacific: An EqPac synthesis	361 Citations	96 References
3 Copper-containing plastocyanin used for electron transport by an oceanic diatom	309 Citations	30 References
4 A revised mineral nutrient supplement increases biomass and growth rate in <i>Chlamydomonas reinhardtii</i>	247 Citations	78 References
5 When did oxygenic photosynthesis evolve?	211 Citations	69 References

How to compare your results with previous studies...

- Free scientific databases like medline/pubmed (→ *show online*)
- available everywhere, only require internet access
- usually fast and user-friendly
- Not as complete as above, less options for your search
- **Useful for retrieving articles you found e.g. cited in other articles, and for "quick" searches without need for completeness**

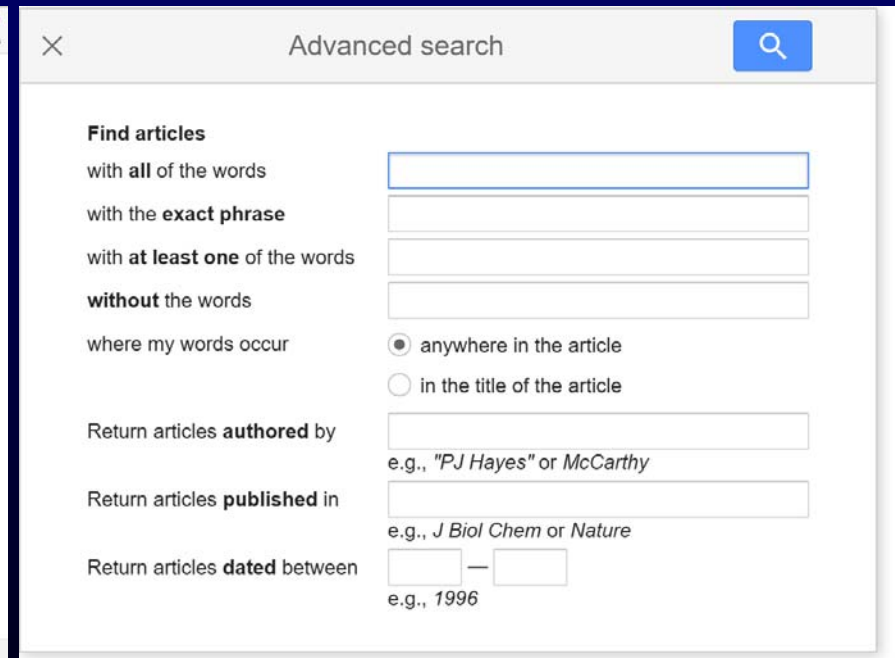
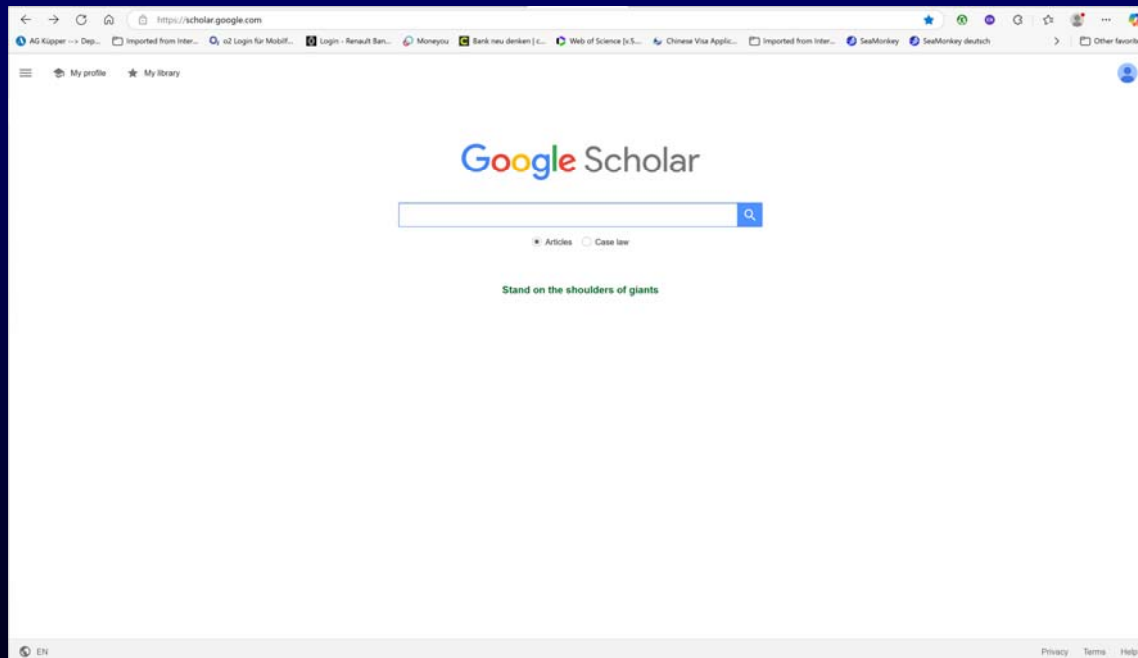
The image shows a screenshot of the PubMed website. The top navigation bar includes the NIH logo and the text 'National Library of Medicine National Center for Biotechnology Information'. Below this is the 'PubMed Advanced Search Builder' section, which has a search box and a 'Search' button. The search results are displayed on the right side of the page, showing a list of articles related to 'climate change and trump'. The search results include a bar chart showing the number of results by year from 2010 to 2025. The search results are sorted by 'Best match' and show 95 results. The first three results are:

- The US withdrawal from the Paris Climate Agreement: could it trump progress on climate change and health?**
Cite: Frumkin H, Haines A, Rao M.
BMJ. 2025 Jan 30;388:r185. doi: 10.1136/bmj.r185.
PMID: 39884710 No abstract available.
[View PDF](#)
- United States news media and climate change in the era of US President Trump.**
Cite: Park DJ.
Integr Environ Assess Manag. 2018 Mar;14(2):202-204. doi: 10.1002/ieam.2011.
PMID: 29193745
Share: Third, the massive power and influence of the fossil fuel industry's public relations arm has also had a tremendous impact on public (mis)understanding of climate change. Fourth, a trend toward declining climate change coverage and "climate sile ...
- Land use change and rodenticide exposure trump climate change as the biggest stressors to San Joaquin kit fox.**
Cite: Nogueire-McRae T, Lawler JJ, Schumaker NH, Cypher BL, Phillips SE.
PLoS One. 2019 Jun 12;14(6):e0214297. doi: 10.1371/journal.pone.0214297. eCollection 2019.
PMID: 31188822 [Free PMC article](#).
Share: This species was once widely distributed across the southern San Joaquin Valley, California, USA, but agriculture and urban development have replaced much of its natural habitat. We modeled impacts of climate change, land-use change, and rodenticide exposure ...
[View PDF](#)

The search results also include a 'RESULTS BY YEAR' bar chart showing the number of results from 2010 to 2025. The search results are sorted by 'Best match' and show 95 results. The search results are displayed on the right side of the page, showing a list of articles related to 'climate change and trump'. The search results include a bar chart showing the number of results by year from 2010 to 2025. The search results are sorted by 'Best match' and show 95 results. The search results are displayed on the right side of the page, showing a list of articles related to 'climate change and trump'.

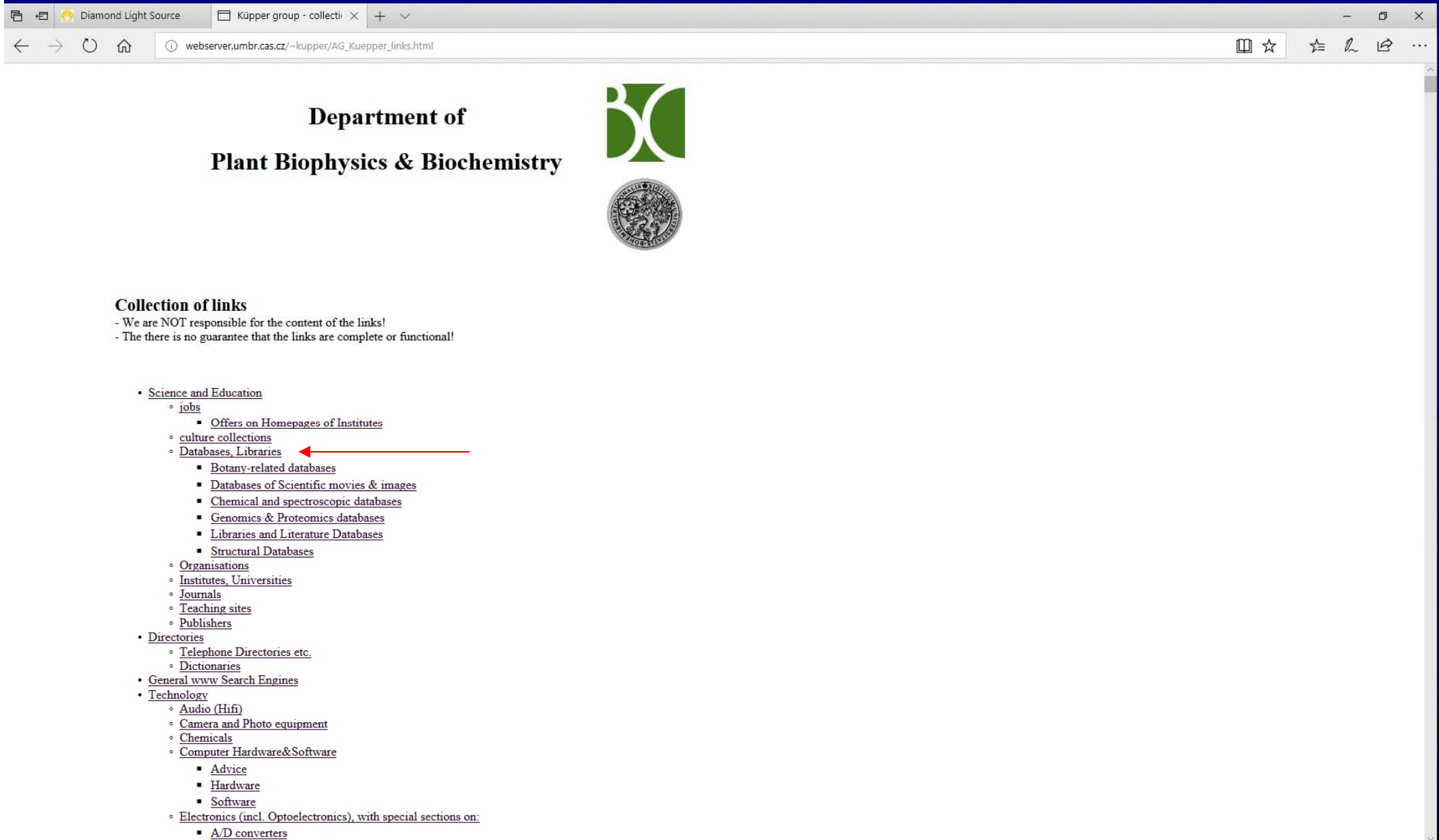
How to compare your results with previous studies...

- Advertisement-based “free” commercial search engines like Google (incl. "Advanced Google Scholar search")
 - like free scientific databases except for:
 - in Google, search results are ordered also by advertisement revenue to Google
 - in "Google Scholar" no boolean operators → complex search terms impossible
 - **useful for a really quick search that does NOT need to be comprehensive, useful for finding images for teaching etc., useful for looking for institute addresses, etc.**





Searches for specialised scientific data

You will find links to various specialised databases e.g. on our group homepage



**Department of
Plant Biophysics & Biochemistry**



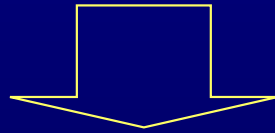
Collection of links

- We are NOT responsible for the content of the links!
- There is no guarantee that the links are complete or functional!

- Science and Education
 - jobs
 - Offers on Homepages of Institutes
 - culture collections
 - Databases, Libraries ←
 - Botany-related databases
 - Databases of Scientific movies & images
 - Chemical and spectroscopic databases
 - Genomics & Proteomics databases
 - Libraries and Literature Databases
 - Structural Databases
 - Organisations
 - Institutes, Universities
 - Journals
 - Teaching sites
 - Publishers
- Directories
 - Telephone Directories etc.
 - Dictionaries
- General www Search Engines
- Technology
 - Audio (Hifi)
 - Camera and Photo equipment
 - Chemicals
 - Computer Hardware&Software
 - Advice
 - Hardware
 - Software
 - Electronics (incl. Optoelectronics), with special sections on:
 - A/D converters

Literature searches (I)

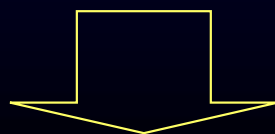
Think of a search term and test it. It should be comprehensive enough to cover all the subject area you want to learn about, but specific enough that you can still read at least all titles of the articles retrieved by your search (i.e. max. hundreds, not thousands of results) (\rightarrow *examples*)



Start screening your results by reading the titles. If the title looks interesting, read the abstract. If that shows it is an important paper for your work, read it in detail. In that latter case, don't forget to critically think about the methods applied, often you will find some flaws that render some results questionable

or:

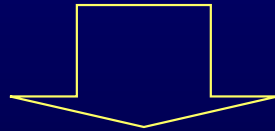
If you absolutely don't find a search term specific but comprehensive enough to end up with a reasonable number of papers, narrow down your search to a few new articles (last 2-3 years), PLUS some authoritative comprehensive reviews PLUS highly cited original articles. This selection will then lead you to further relevant papers. And it is likely that authors from the latter two categories will be among your referees when you submit your paper.



Literature searches (II)

Save the articles you could retrieve in a way that you will find them again later, even after downloading hundreds more publications.

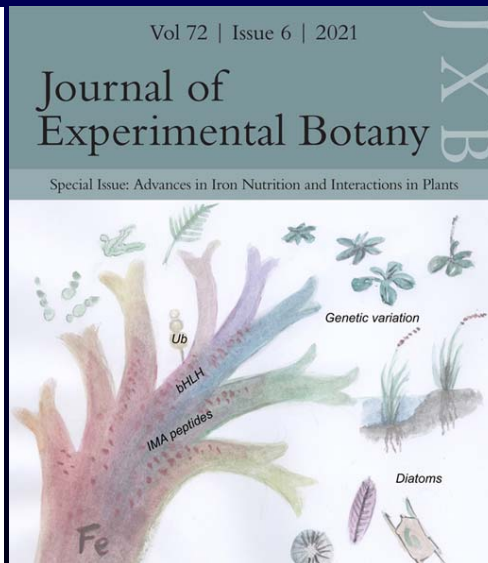
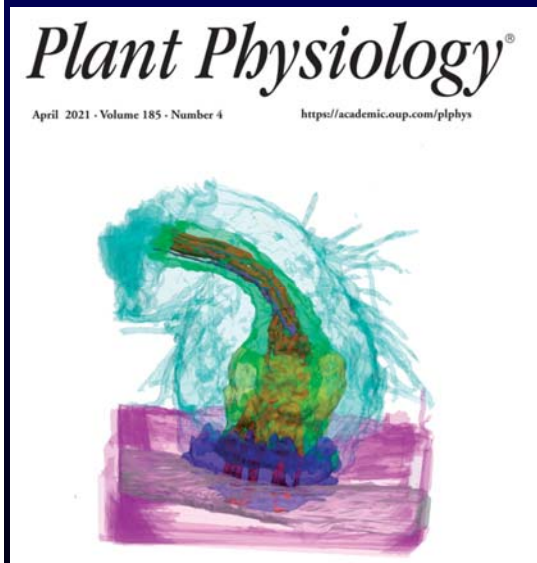
- For this, a filename should contain (in a consistent order) at least the family name and initials of the first author, the publication year, abbreviated journal title, issue and page numbers.
- A drastically shortened version of the title could also help, but full titles are almost always too long (remember: max. file name length is 256 characters, but this includes the whole file path!) (*→ examples*)



Once you have a lot of articles, make a systematic database on your computer out of them, in a way that requires least time needed for the purpose of finding articles later (usually does not require special software).

... and how to publish them

... in scientific journals



... and as conference presentations



Where should you publish?

- **Conferences**

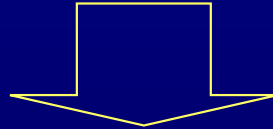
- Useful for meeting with your colleagues – but this usually only works well with REAL, physical, not online conferences
- Useful for learning about the latest, often not published results – but be aware that often researchers are (rightfully) afraid of showing the most exciting unpublished results because of competition
- **Be aware of fraudulent, predatory conferences – often fraudulent conferences exist under the same name as famous real conferences → check carefully!**

- **Scientific journals**

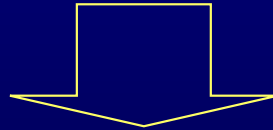
- usually the final place where you want to publish the knowledge you gained with your research, to make it useful for the whole scientific community
- factors to be considered for the choice of a journal: match with your scientific field, requirements for publication, scientific reputation (**be aware of predatory journals!**)

Scientific writing (I)

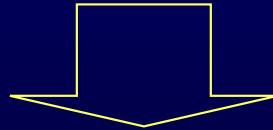
Write the "Methods" section, as unformatted plain text, already during data acquisition, because then you remember possibly important small details best



Sort your data, make preliminary graphs of each dataset, print those graphs



Try to explain the graphs to a colleague, and arrange them in a way that turns out to make sense in terms of presenting a consistent story



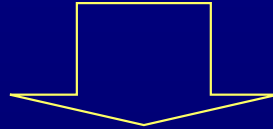
Decide to which journal you initially want to submit the manuscript, and start writing the text of the manuscript based on a template that is suitable for that journal

If you don't have template, create one, don't just format on a single-paragraph basis as this will lead to formatting chaos and will cost a lot more time later!

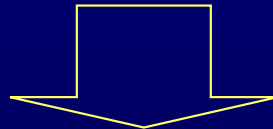


Scientific writing (II)

Write the "Results" section of your manuscript, with strongest focus on your strongest data



Write the Discussion and Abstract of your manuscript, focussing on the most important results



Only now write the Introduction, in a way that clearly but ONLY introduces facts and methods that are important in view of your own results and methods



Assemble the draft graphs into figures, and optimise the layout of the figures



Send the paper to your colleagues for discussion



SUBMIT

*To advance in SCIENCE and ARTS,
YOU need a good EDUCATION,
YOU must have IDEAS, even some crazy ones,
however, 95-98% will be HARD WORK...*



**All slides of my lectures can be downloaded
from my workgroup homepage**

Biology Centre CAS → Institute of Plant Molecular Biology → Departments
→ Department of Plant Biophysics and Biochemistry,
or directly

http://webserver.umbr.cas.cz/~kupper/AG_Kuepper_Homepage.html