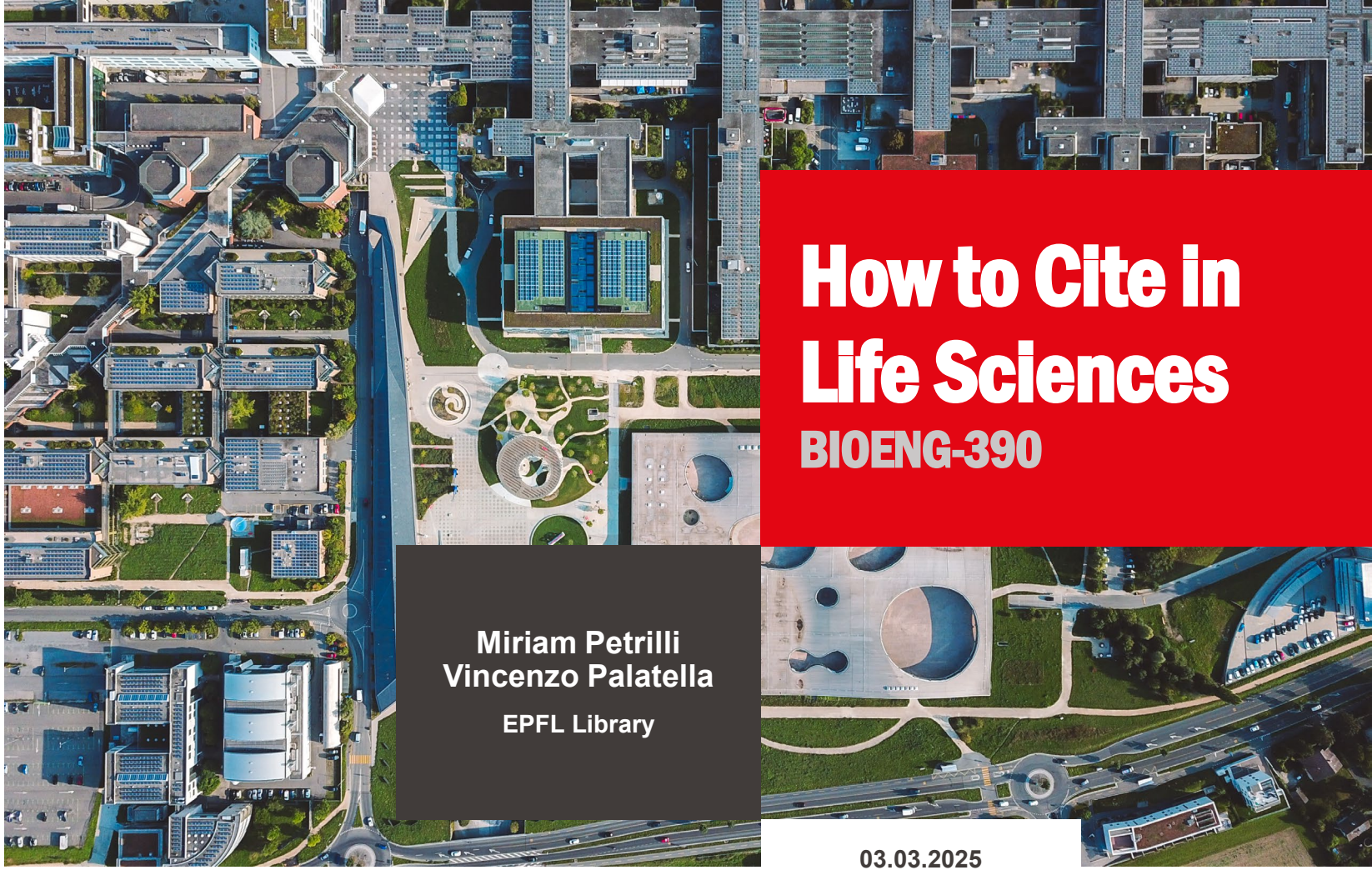


How to Cite in Life Sciences

BIOENG-390

Miriam Petrilli
Vincenzo Palatella

EPFL Library

03.03.2025

École polytechnique fédérale de Lausanne

Learning objectives

At the end of this training you will be able to:

- Illustrate the main principles of scholarly communication
- Explain the main differences between PubMed and Google Scholar
- Define plagiarism and explain how to avoid it with correct citations
- Use efficiently the reference manager software Zotero

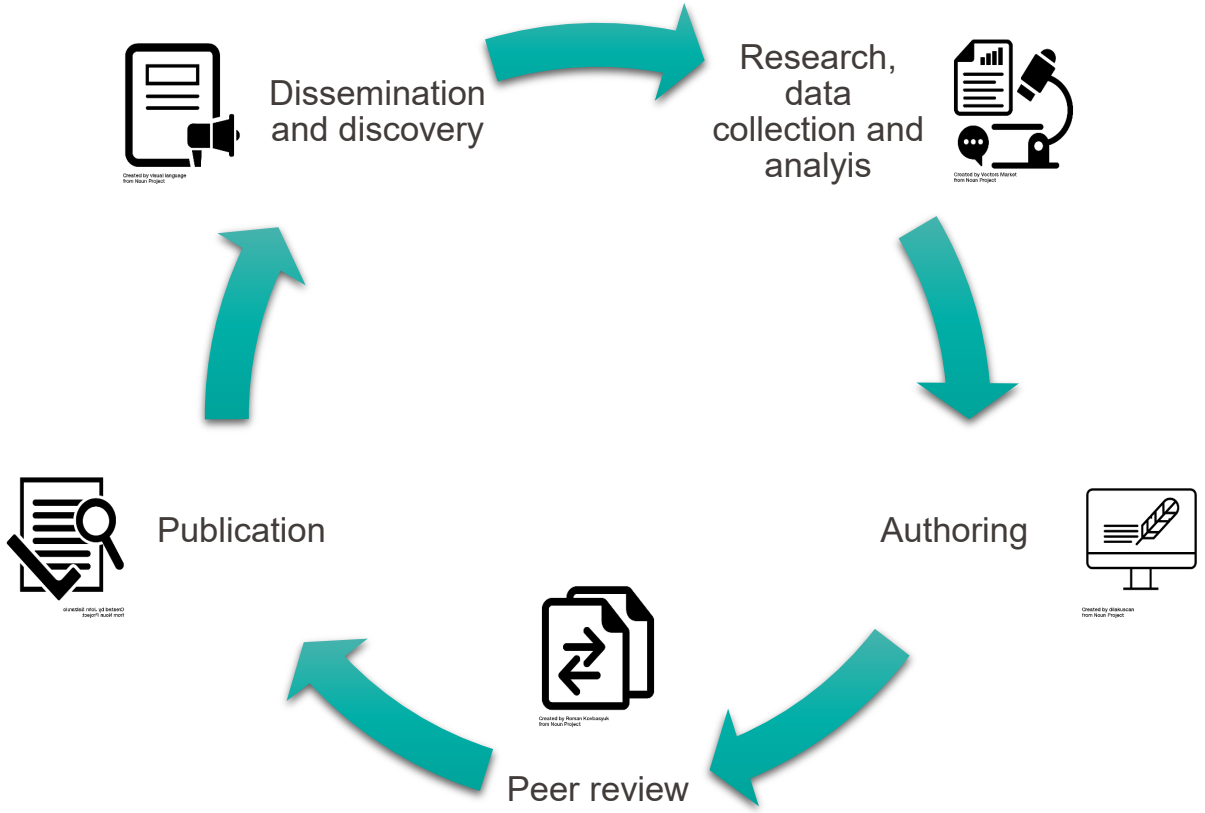
Literature for your lab project

- Acquisition of practical skills in experimentation and data analysis
- Acquisition of skills in information literacy
  - Search for scholarly publications
  - Keep track of your sources
  - Reuse/cite your sources

- Research is always based on pre-existing knowledge coming from other scientists

The scholarly communication context

The Scholarly Communication Cycle

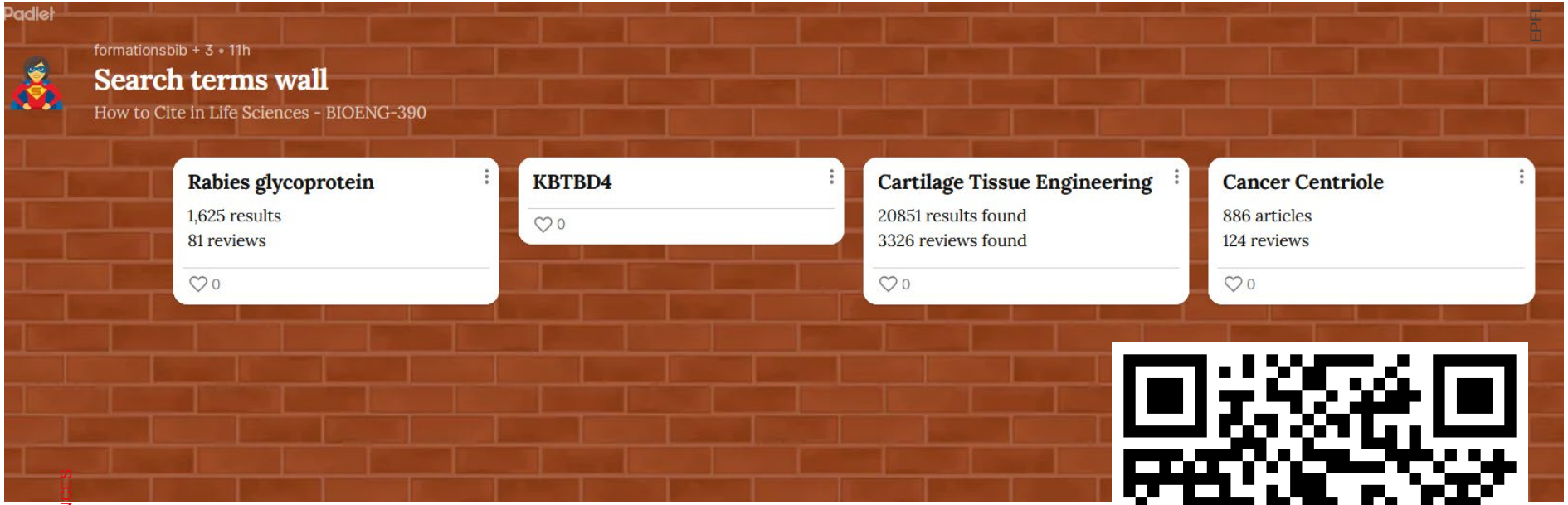


Icons from The Noun Project (https://thenounproject.com): 1. Market Research report by Vectors Market; 2. Blog by dilakuscan; 3. Peer Reviewed by John Salzarulo; 4. File Exchange by Roman Kovbasyuk; 5. Press release by visual language

Elements of an academic article

Information retrieval: Strategy and tools

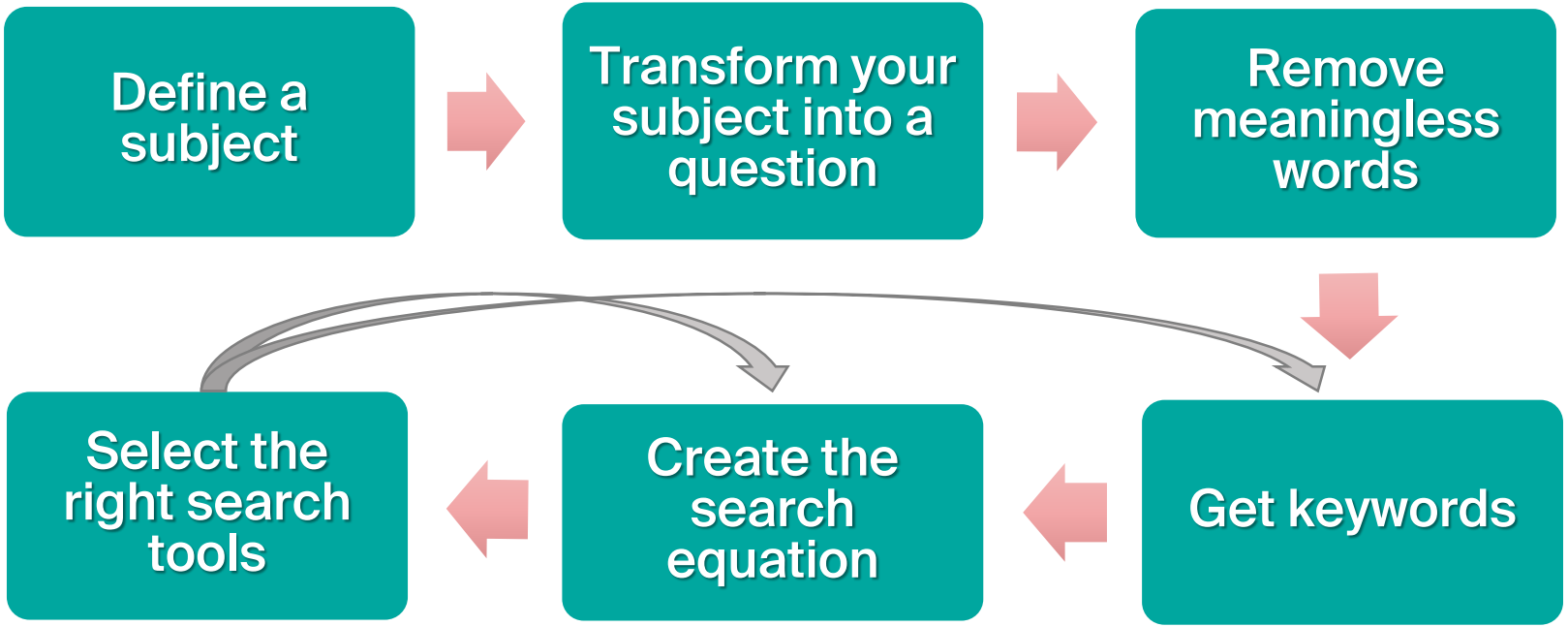
Padlet: searching with keywords



- Padlet search terms wall

(If you didn't do it yet) Add a couple of keywords related to your research subject

Information retrieval strategy



The research grid

Define a **subject** and transform it into a **question**	**Subject:** CRISPS/Cas9 **Question:** How does CRISPR/Cas9 work in cancer therapy?		
Extract the main **concepts** and get **keywords**			
Search for **synonyms** and **related terms**			
Create the **search equation**			
Search 2 databases and compare their **results**			
Refine your search equation			

The research grid

Define a **subject** and transform it into a **question**	**Subject:** CRISPS/Cas9 **Question:** How does CRISPR/Cas9 work in cancer therapy?		
Extract the main **concepts** and get **keywords**	CRISPR/Cas9	Cancer therapy	
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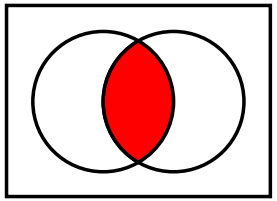
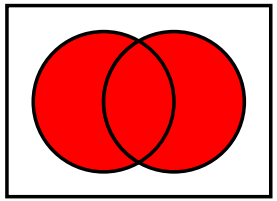
Search for **synonyms** and **related terms**	Gene editing Gene correction	Cancer treatment	
Create the **search equation**			
Search 2 databases and compare their **results**			
Refine your search equation			

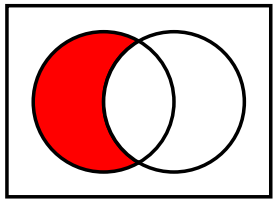
Boolean operators and more



AND to combine key concepts



OR to add alternative key concepts



NOT to exclude concepts

( )

Group the keywords

* or ?

Wildcard

« » or " "

Exact expression

The research grid

Define a **subject** and transform it into a **question**	**Subject:** CRISPS/Cas9 **Question:** How does CRISPR/Cas9 work in cancer therapy?		
Extract the main **concepts** and get **keywords**	CRISPR/Cas9	Cancer therapy	**AND**
Search for **synonyms** and **related terms**	Gene editing Gene correction **OR**	Cancer treatment	
Create the **search equation**			
Search 2 databases and compare their **results**			
Refine your search equation			

The research grid

Define a **subject** and transform it into a **question**	**Subject:** CRISPS/Cas9 **Question:** How does CRISPR/Cas9 work in cancer therapy?		
Extract the main **concepts** and get **keywords**	CRISPR/Cas9	Cancer therapy	
Search for **synonyms** and **related terms**	Gene editing Gene correction	Cancer treatment	
Create the **search equation**			
Search 2 databases and compare their **results**			
Refine your search equation			

Where can I use my search equation?

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

https://scholar.google.com

PubMed: What is it?

- Biomedical and life sciences literature only
- Free U.S. National Library of Medicine database
- Search Builder and Search History
  - Build complex searches and keep track of your searches
- Human curated
- Free account with more features and possibilities
  - Use your EPFL email to create your account

Google Scholar: What is it?

- Google service limited to scholar literature
- Searches vast array of information: academic articles, technical reports, preprints, grey literature
- Citation information provided
- Full-text if available (Open Access) or via your institution's subscription
- Good coverage for hard sciences (less coverage in social sciences)

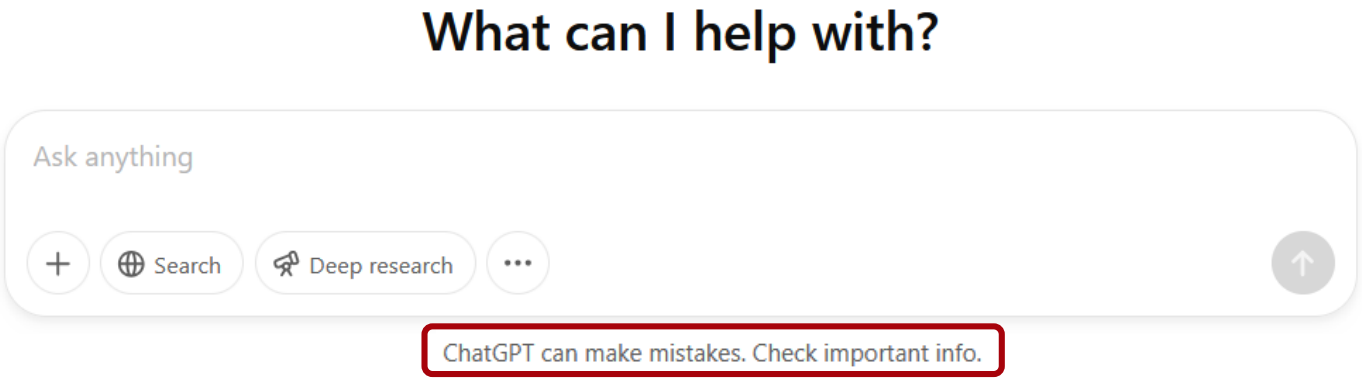
✋ Not only scholarly publications available - items retrieved are not necessarily peer-reviewed
✋ Few options to filter search results
✋ Material selection criteria unknown

Google Scholar

The research grid

Define a **subject** and transform it into a **question**	**Subject:** CRISPS/Cas9 **Question:** How does CRISPR/Cas9 work in cancer therapy?		
Extract the main **concepts** and get **keywords**	CRISPR/Cas9	Cancer therapy	
Search for **synonyms** and **related terms**	Gene editing Gene correction	Cancer treatment	
Create the **search equation**	(« CRISPR/Cas9 » OR (gene AND (editing OR correction))) AND (Cancer AND (therap* OR treatment*))		
Search 2 databases and compare their **results**	PubMed: 19 940	Google Scholar: 14 100	
Refine your search equation	**Too many results?** Use filters / Add concepts **Too few results?** Remove concept(s) / Add synonyms		

ChatGPT and co.



Keep in mind:

- It's a tool, not a source
- It uses patterns, it doesn't have a full understanding of the subject

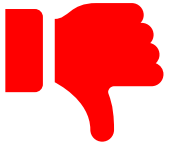
Ask yourself:

- Where the information comes from? Can we retrieve the sources?
- Is the context right?
- Do I really need to cite it if I use it?

LLMs – Basic recommendations

- Fine-tune language/style
- Get new ideas if you are stuck
- Create pictures
- Inform the final reader about the AI tool you used

- Get a basic idea about a new subject (but always double check the information)
- It can generate “hallucinations”, false information presented as facts



- Write a paper from scratch
- Use it as the only source of information
- Cite it in a paper
- Made-up references

What else is there?

- BEAST – EPFL's library catalogue (books, articles, patents, standards, etc.)
- Thematic preprints repositories (e.g. bioRxiv, medRxiv)
- Multi-disciplinary databases (e.g. Scopus, Web of Science)
- Discipline-specific databases (e.g. Biomedical & Life Sciences Collection)
- Open alternatives to Google Scholar (e.g. OpenAlex, Matilda)

Copyright, citations & plagiarism

A few things about copyright

Copyright…

- …applies **automatically** (no need to ask/apply)
- …according to the Swiss and European laws, it includes **moral rights** (authorship, integrity of the work), which are inalienable…
- …and **property rights** (diffusion, commercial use), which are transferable
- …protects **the form**, not the idea!
- …provides, conditionally, some exceptions. In particular, those related to **education** and to **citation** (in Switzerland: LDA art. 19 al. 1b et art. 25)

What is a citation?

C. tyrobutyricum is a spore-producing, rod-shaped, strictly anaerobic, gram-positive bacterium widely used in industrial production. It can use a wide range of available carbon sources, including glucose, xylose, glycerol, and mannose. These components can enter the cell through the phosphotransferase system (PTS) with specific transport vectors (Akhtar et al. 2018). *C. tyrobutyricum* produces the intermediate product pyruvate and a key precursor, butyryl CoA, via a series of enzymatic reactions (Jiang et al. 2010). With the catalysis of butyryl phosphate transferase and butyryl kinase, the precursor forms the main product (butyric acid), by-product (acetic acid), and a small amount of lactic acid. This process is accompanied by the production of hydrogen and carbon dioxide (Baroi et al. 2015).

References

Akhtar, T., A.S. Hashmi, M. Tayyab, A.A. Anjum, S. Saeed, and S. Ali. 2018. Bioconversion of agricultural waste to butyric acid through solid state fermentation by *Clostridium tyrobutyricum*. *Waste and Biomass Valorization* 11: 2067–2073.

Article Google Scholar

Baroi, G.N., I.V. Skiadas, P. Westermann, and H.N. Gavala. 2015. Effect of in situ acids removal on mixed glucose and xylose fermentation by *Clostridium tyrobutyricum*. *AMB Express* 5: 67.

Article PubMed PubMed Central Google Scholar

Bhatnagar, A., K.K. Kesari, and N. Shurpali. 2015. Multidisciplinary approaches to handling wastes in sugar industries. *Water, Air, & Soil Pollution*. https://doi.org/10.1007/s11270-015-2705-y.

Article Google Scholar

In-body citation

- Paraphrase
- It can also be an excerpt of the cited text, properly highlighted (quotation marks, italic, different indentation…)

Call

- Textual (e.g. Author, year) or numeric (e.g. [1], [2], etc-)

Bibliographic entry

- According to the citation style used

Citing enables you to…

- …make clear what's **your own** (and **new**) contribution and what comes from previous publications
- …add **credibility** to your work (you have read what was published in your domain and you know what you are talking about)
- …place your work into its context and show the **originality** of your input
- …provide the reader with further **references** that were useful to you in case they would like to know more.

Not citing means…

- Claiming as yours someone else's work
- Present as brand new something that it's not

Plagiarism

- Doesn't matter if it's intentional or not
- Doesn't matter if we're plagiarizing others or ourselves (self-plagiarism)
- Can have consequences! From blame to exclusion (see https://www.fedlex.admin.ch/eli/cc/2021/482/fr)

How to insert a citation

Paraphrasing

The original:
Human emissions of greenhouse gases are the primary driver of climate change today.
(from https://ourworldindata.org/co2-and-greenhouse-gas-emissions)

The paraphrase:
Greenhouse gas emissions, particularly carbon dioxide, are the primary cause of global climate change (Ritchie and Roser 2020)
(from https://link.springer.com/article/10.1007/s10311-022-01468-z)

How to insert a citation – Other options

The short excerpt

In his article *The biology of dying democracies*, Kováč (2019) states that «Marxist communism became a gigantic experiment in the 20th century to test the European rationalism. The experiment failed.»

The longer excerpt

The approach chosen for this article is the one presented by Kováč in *The biology of dying democracies* (2019), described as follows:

> Humans are controversial beings, an inconsistent mixture of nature and culture and dominated by both. Biological hominization was followed by cultural humanization. So far, biologists mostly tended to conceive the biological individual as a Darwinian unit communicating with another individual in interest of one's own Darwinian fitness. Signals should serve to modify the behaviour of the receiver to benefit the signaler.

Multiple sources

Renewable green energy transitions are necessary to mitigate global climate change and reduce carbon emissions worldwide (Levenda et al. 2021; Chen et al. 2022).

OR

Experts believe that better information literacy knowledge will help students to judge the appropriateness of information[1-3].

Reusing images & tables

From https://actu.epfl.ch/news/la-bibliotheque-de-l-epfl-se-transforme/

- Check reuse license (Creative Commons)
- If needed, get the author's permission
- Copy and paste
- Cite the source

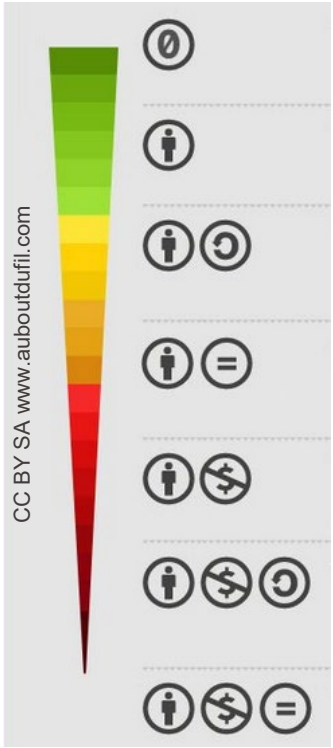
Country	Total	Wastewater treatment plant	Biowaste	Agriculture residues treating plants	Industrial treating plants and landfill
Germany	10 551	1 271	292	8 400	280
United Kingdom	685	170	127	342	46
Sweden	282	134	36	54	58
Brazil	638	57	N/A	503	78
Norway	162	27	6	6	81
Switzerland	434	271	29	112	22

Data from https://link.springer.com/article/10.1007/s10311-022-01468-z/tables/1

- Get the data (whole or partial)
- Create a new layout for the table
- Cite the source

Creative Commons (CC) licenses

More open



More restrictive

CC0 Public Domain

CC BY Attribution

CC BY-SA Share Alike

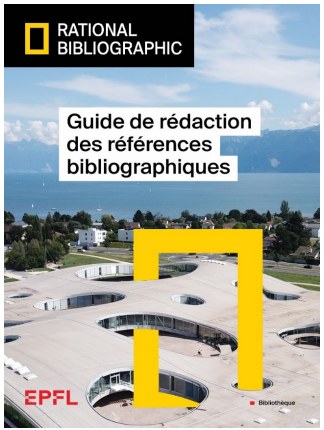
CC BY-ND No Derivative

CC BY-NC Non-Commercial

CC BY-NC-SA Non-Commercial + Share Alike

CC BY-NC-ND Non-Commercial + No Derivative

Knowing more about citation and Information Literacy



Refer to our **Rational Bibliographic guide** to create and verify your references: go.epfl.ch/guide-bibliographique

Use **Infosphère** our **Information Literacy plateforme** to search, analyse, use and cite information in your works: go.epfl.ch/guide-bibliographique

Introduction to Zotero

Zotero

Download and install: zotero.org

Documentation: go.epfl.ch/zot23

Contact us if you need help: go.epfl.ch/bookalibrarian

Zotero: questions after the introductory video?

- Installation (standalone software + browser connector)
- Interface
- Different ways to add references to your library
- Collections, tags, notes
- Using it with your favorite word processor
- Citation styles

Using Zotero in groups

- Create groups: https://www.zotero.org/support/fr/groups
- You must have an account to create a new group
- Take into account that the group owner stores the group files in her/his own Zotero account
- As a group, define rules (tree structure, file naming, adding tags and notes)
- Maintain high quality of metadata when collecting references (check that the main fields are filled in: title, author, date, publisher, etc.)
- Respect the work done by others

Zotero exercice

- Use the same search terms as in Padlet (or your new search equation) on PubMed. Use filters (publication date, reviews, clinical trials etc.) to refine your search.
- Select one review and one research article and add them to a new Zotero collection named “Bachelor Project”.
- Use the collection you’ve just created to add a bibliography in the provided template using the citation format ‘EMBO Press’.
- Submission due by **17 March 2025**

Self-evaluate yourself

- Quiz Information Literacy and Scholarly communication (link on Moodle)

Questions and assessment

Please take the time to assess this training:

Scan the QR code or
https://library-survey.epfl.ch/c/gjzetdaf

It will help us improve !

Thank you!

CONTACT

formations.bib@epfl.ch

library.epfl.ch

Book a librarian