



Science Under Scrutiny: The Dos and Don'ts of Ethical Research

A crash course in spotting (and avoiding) scientific misconduct

Pr. Xavier COUMOUL





Why Ethics Matter? (15')

- Definitions of
 - Ethics
 - Integrity
 - Equality
 - Equity

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- Definitions of
 - Ethics
 - Integrity

First round

- 1 2 minutes to define each word (1' per word)
- 2 XC picks randomly 3 persons / word
- 3 Definitions

Why Ethics Matter?

• **Ethics** and **integrity** are closely related concepts but have distinct meanings, especially in the context of science and research.

- **Ethics**: Refers to the set of moral principles, values, and rules that guide decision-making and behavior. Ethics defines what is considered right or wrong, fair or unfair, and acceptable or unacceptable in a given context.
- Integrity: Refers to the adherence to those ethical principles and values in practice. It reflects a consistent commitment to doing the right thing, even when it's challenging or inconvenient.

Why Ethics Matter?

• Examples:

- **Ethical** guidelines for research involving human subjects emphasize informed consent and confidentiality.
- Context dependant: medical guidelines are different than buisness ethics

• Integrity:

- A researcher demonstrates <u>integrity</u> by disclosing a potential conflict of interest, even if it risks personal gain.
- Universal -> consistently acting in alignment with moral principles

To summarize

-	Ethics	Integrity
Definition	Moral principles and guidelines	Adherence to those principles
Focus	External framework	Internal character
Scope	Context-dependent	Universal
Application	Rules for responsible conduct	Personal commitment to ethical behavior
Example	Prohibiting falsification of data	Reporting data truthfully, even under pressure

Why Ethics Matter? (15')

• Something you may (should) want to consider at the ethics level...

Why Ethics Matter? (15')

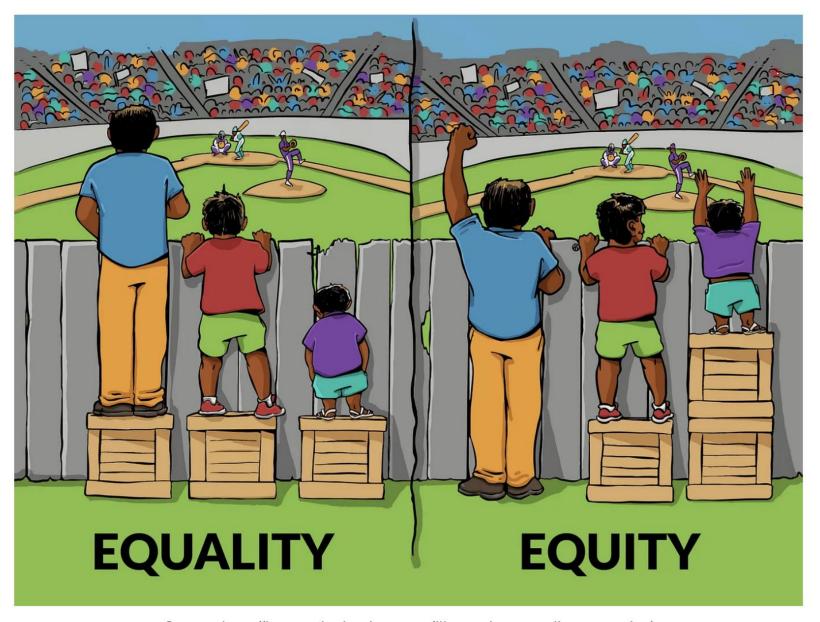
- Something you should want to consider at the ethics level
- Difference between
 - Equality
 - Equity

Second round

- 1-2 minutes to define each word (1' per word)
- 2 XC picks randomly 3 persons / word
- 3 Definitions

Why Ethics Matter?

- **Equality**: Treating everyone the same, regardless of individual needs or circumstances. It assumes that everyone starts from the same place and has the same requirements.
 - Example: Providing identical resources or opportunities to all, such as giving every student the same number of books.
- **Equity**: Providing resources or opportunities in a way that accounts for individual differences, needs, or barriers. It aims to achieve fairness by addressing systemic inequalities.
 - Example: Giving more resources to students who need extra support to achieve the same outcomes as others.



Source: http://interactioninstitute.org/illustrating-equality-vs-equity/

To summarize

-	Equality	Equity
Definition	Everyone receives the same resources.	Resources distributed based on need.
Focus	Uniform treatment.	Fair outcomes by addressing differences.
Goal	Equal input.	Equal opportunity or outcome.
Approach	Ignores individual circumstances.	Accounts for individual circumstances.
Example	Providing all employees the same tools.	Providing specialized tools for employees with disabilities.

The Pressure Cooker: Publish or Perish

• Take 2' to think about 2 – 3 points -> stress your integrity

Write them on a post-it

Need for research funds

Publish or

Need for and recognition and

publish as much and as quickly

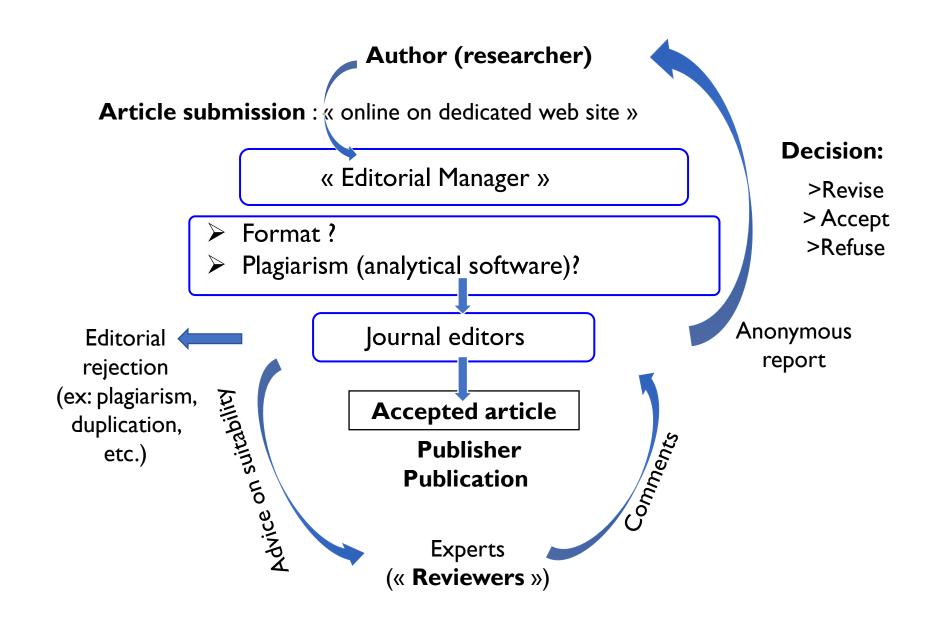


to establish one's notoriety and

Need to e and

to feed one's Ego





• Publishers sell to universities, research bodies etc. the subscription to a set of journals for a high price (Paywall) and articles can be viewed only by members of the university or research organization.

AUTHORS PAY TO PUBLISH

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- For article to be freely accessible (Open Access), authors must pay an Article
 Processing Charge (APC) that varies
 according to the notoriety of the journal (impact factor) from about 300 \$ to up to 10 000 \$

THE OPEN ACCESS TO PUBLICATIONS IS BECOMING MANDATORY

What is the status in Belgium?

New « ways » of publishing...

« PRE-PUBLICATION »

- BioRxiv
- MedRxiv
 - Papers published in OA without peer reviewing
 - = uncertified science

What could be problematic when we publish uncertified results?

AN EXAMPLE linked to the Covid-19 pandemic

mRNA COVID-19 Vaccination and Development of CMR-confirmed Myopericarditis

MedRxiv

https://doi.org/10.1101/2021.09.13.21262182

Paper uploaded on MedRxiv on September 16, 2021.

AN EXAMPLE linked to the Covid-19 pandemic

"During the process of open peer review on MedRxiv, we quickly received a number of messages from reviewers concerned that there was a problem with our reported incidence of myocarditis post mRNA vaccination."

! Error x25!

Paper withdrawn by the authors on September 24, 2021.

PREDATORY JOURNALS

Which characteristics?

2-3 items per person – 3'

How do you recognize a predatory Journal?

Sketchy Website and Poor Quality Presentation

- The journal's website has spelling, grammar, or formatting errors.
- Broken links or poorly organized information.
- Lack of clear navigation for author guidelines, editorial board, or policies.

Lack of Transparency in Fees

- The journal aggressively solicits articles but hides article processing charges (APCs) until late in the process.
- Fees seem unusually high or suspiciously low compared to reputable journals.

Aggressive Solicitation

- Frequent spam emails inviting you to submit articles, often unrelated to your expertise.
- Flattering language like "Your work is groundbreaking" or "We specially selected you."

No or Fake Peer Review Process

- Extremely fast review times (e.g., days or hours instead of weeks or months).
- · Accepts all submissions without meaningful revisions.

Editorial Board Concerns

- Editorial board members are unknown in the field, fake, or not listed.
- Fake profiles or no affiliations for editorial members.

Indexed in Dubious Databases

- The journal claims to be "indexed" in databases that are obscure, fake, or irrelevant (e.g., listing only Google Scholar).
- Not indexed in respected platforms like PubMed, Scopus, or Web of Science.

How do you recognize a predatory Journal?

Misleading Metrics

- Claims to have high "impact factors" from questionable sources (e.g., Index Copernicus, ResearchGate scores).
- Lacks authentic metrics from Clarivate or Scopus.

No Clear Affiliation or Publisher Information

- The publisher is unknown, lacks a professional reputation, or has been flagged in the past.
- The journal's physical address is incomplete or fake.

Unrelated or Overly Broad Scope

- Publishes articles across unrelated fields (e.g., chemistry and history in one issue).
- Lack of focus undermines its credibility in your area of expertise.

Citation Manipulation

Encourages self-citations or citation stacking (e.g., asking authors to cite articles from the same journal unnecessarily).

Check Blacklists and Warning Lists

- Appears on lists like Beall's List or watchdog organizations' sites.
- Missing from the Directory of Open Access Journals (DOAJ) or other legitimate registries.

Look for Author Testimonials

Negative experiences shared on forums or sites like PubPeer or ResearchGate can signal a predatory journal.

PREDATORY CONFERENCES

Solicitations by email to attend a conference as a speaker:

- You are the best in your field so we ask you ...
- There are Nobel awards who also participate, like you
- Travel and housing are at your expense but it's prestigious

FFP: The Big Three Misconducts

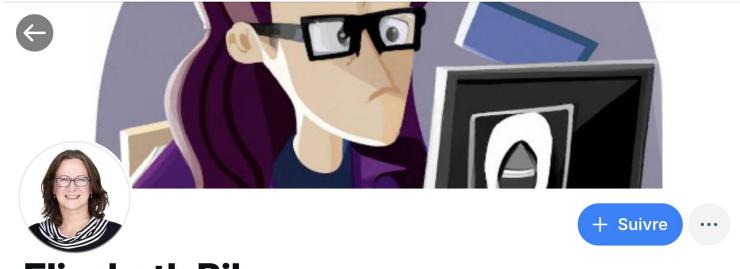
Fabrication

Falsification

• Plagiarism

FFP: They can be detected (a few examples)

• Elisabeth Bik



Elisabeth Bik

@elisabethbik.bsky.social

37,2 k abonné·e·s 28 k abonnements 937 posts

Science integrity consultant and crowdfunded volunteer, PhD. Previously at Stanford University and (gasp!) uBiome. NL. USA. SFO.

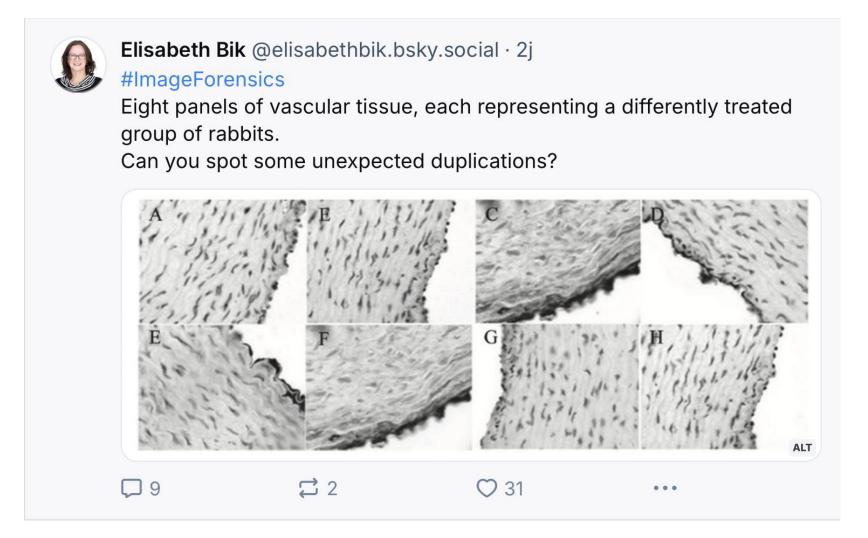
#ImageForensics.

@MicrobiomDigest on X.

Blog: ScienceIntegrityDigest.com

Support me: www.patreon.com/elisabethbik

FFP: They can be detected (your turn... an easy one)



FFP: They can be detected (your turn... a hard one)

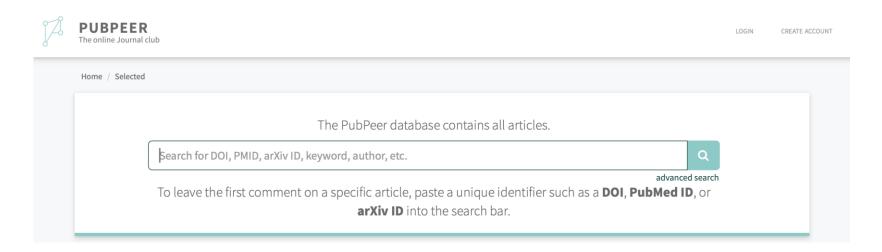


FFP: They can be detected (your turn... a hard one)



FFP: They can be detected (a few examples)

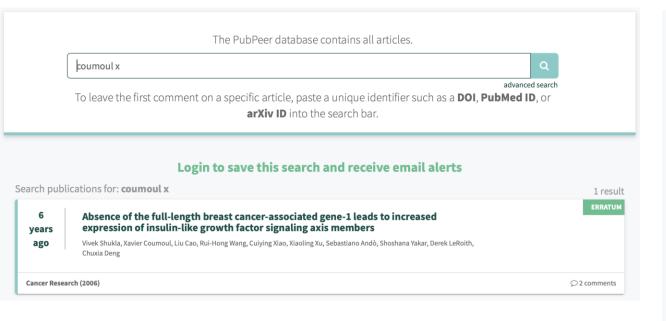
- Elisabeth Bik
- PubPeer

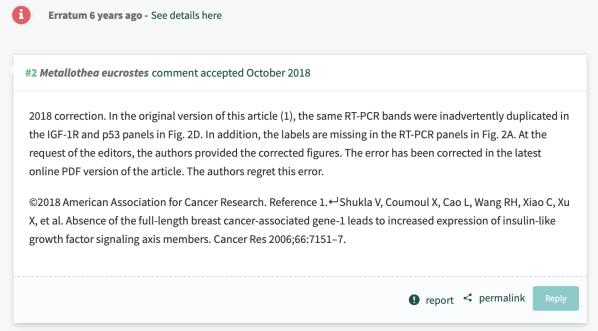


https://pubpeer.com

FFP: They can be detected (a few examples)

- Elisabeth Bik
- PubPeer (one example)





Consequences of Misconduct (reminder)

- For the perpetuators
- For the patients
- For the society

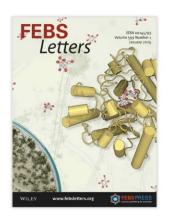
Ethics in Action: How to Stay Clean

Your turn?

Ethics in Action: How to Stay Clean (a sh. List)

Choosing good journals











- Importance of transparency and reproducibility.
- Collaborating with integrity.
- Anti-plagiarism software checks.
- Avoid unconscious bias and declare conflicts of interest.

Open Discussion: Share Your Stories

- Be an ethics ambassador.
- Report misconduct
- Spread awareness.

- Share their experiences
- Discuss ethical dilemmas.

« Integrity is contagious—spread it »