

Publication Crimes

and How to Fight Them

ŠTĚPÁN ČADA



What are the signs of quality science?

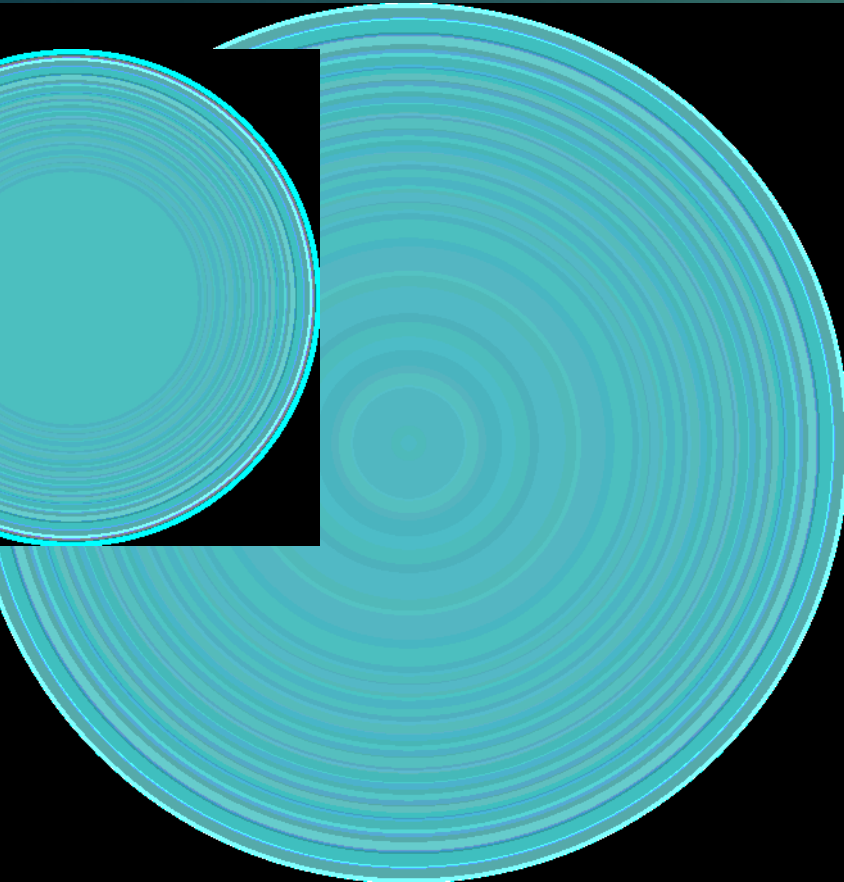
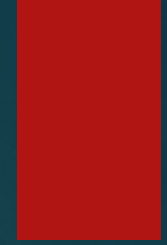
- ▶ What makes a publication **trustworthy** enough for you to cite it?
- ▶ What makes a scientist reliable enough for you to **trust** his opinions on the subject?
- ▶ What makes a scientific project solid enough for you to collaborate?
- ▶ What makes a sufficient publication basis to start your own research?
- ▶ What determines whether a project gets funded?
- ▶ What determines whether a paper gets published?

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Science as we know it is largely based on trust (among scientists themselves but also between scientists and society). The trust however needs to be protected.

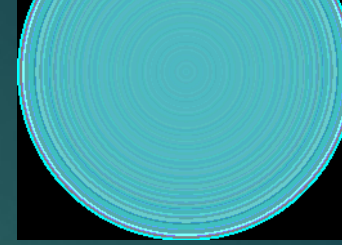
What are the signs of quality science?



What are the signs of quality science?

- ▶ Scientific awards?
- ▶ Funding?
- ▶ Publications in high-impact journals?
- ▶ Media coverage?
- ▶ Author's career?
- ▶ Affiliation with prestigious university/institute?
- ▶ Number of publications?
- ▶ Number of citations?
- ▶ Transparency (availability of raw data, open peer reviews...)?
- ▶ Indexing on PubMed/WoS/Scopus?
- ▶ Peer review?

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- ▶ **Gregg Semenza**
- ▶ Johns Hopkins' Institute for Cell Engineering
- ▶ Nobel prize in physiology, 2019
- ▶ More than 50 publications questioned online based on **problematic image data**
- ▶ 9/2022: 4 papers in PNAS retracted (together cited more than 750x)
- ▶ Currently (10/2024) total of 13 retractions.
- ▶ <https://www.nature.com/articles/d41586-022-03032-9>
- ▶ <https://retractionwatch.com/2023/10/02/nobel-prize-winner-gregg-semenza-tallies-tenth-retraction/>



What are the signs of quality science?

▶ Alzheimer disease research

▶ Simufilam

- ▶ 8/2021: NIH received a report about potential data manipulation in the clinical testing of new drug Simufilam, which lead to federal investigation of Cassava Sciences company which owns it.
- ▶ 10/2023: Co-developer of the drug, Hoau-Yan Wang, was found guilty of research misconduct, based on **image data manipulation**.

▶ <https://www.science.org/content/article/co-developer-cassava-s-potential-alzheimers-drug-cited-greivous-abuse>

▶ Sylvain Lesné

- ▶ 7/2022: Signs of **image data manipulation** exposed also in one of the most-cited works in the AD field (Lesné *et al.*, 2006).
- ▶ It is estimated that tens of millions USD from NIH grants and 16 years of research have been wasted.

▶ <https://www.science.org/content/article/potential-fabrication-research-images-threatens-key-theory-alzheimers-disease>

The immediate, obvious damage is wasted NIH funding and wasted thinking in the field because people are using these results as a starting point for their own experiments.

What are the signs of quality science?

- “Viroj Wiwanitkit has **published 543 items indexed in PubMed in the last 12 months**, the vast majority of them letters to the editor. Most of Wiwanitkit's letters with colleagues appear to be **only a single paragraph**. Many concern COVID-19 and vaccinations, but the catalog includes letters about monkeypox, knee replacement surgery, bipolar disorder, even ChatGPT.”



Viroj Wiwanitkit
Joseph Ayobabalola University in Nigeria

<https://retractionwatch.com/2023/07/24/meet-the-author-who-has-published-more-than-500-letters-to-the-editor-in-a-year/>

What are the signs of quality science?

- “We searched Scopus for authors who had published **more than 72 papers (the equivalent of one paper every 5 days) in any one calendar year between 2000 and 2016**, a figure that many would consider implausibly prolific. We found **more than 9,000 individuals**, and made every effort to count only ‘full papers’ — articles, conference papers, substantive comments and reviews — not editorials, letters to the editor and the like.”
- “The number of hyperprolific authors (after our exclusions) **grew about 20-fold between 2001 and 2014**, and then levelled off (...). **Over the same period, the total number of authors increased by 2.5-fold.**”

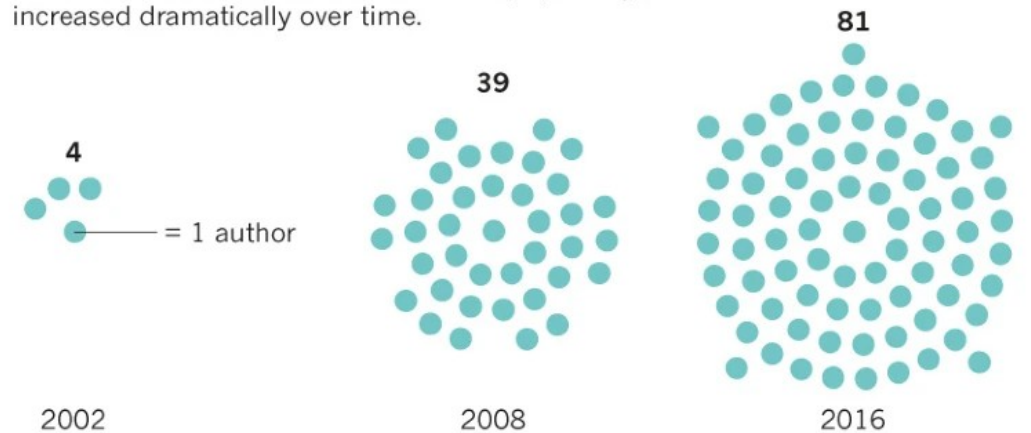
<https://www.nature.com/articles/d41586-018-06185-8>

COMMENT | 12 September 2018

Thousands of scientists publish a paper every five days

HYPERPROLIFIC AUTHORS PROLIFERATE

Numbers of authors with more than 72 papers a year increased dramatically over time.



©nature

Traditional publishing system is failing

- ▶ **Insufficient motivation of reviewers**

- ▶ Peer-reviewing is time-consuming and traditionally not honored by journals.

- ▶ **Financial conflict of interest of publishing houses**

- ▶ More papers in shorter time → more money.

- ▶ **Disproportionate open-access publishing fees**

- ▶ <https://www.spectrumnews.org/news/imaging-journal-editors-resign-over-extreme-open-access-fees/>

- ▶ **Insufficient motivation of publishers and institutions to investigate and retract problematic publications.**

- ▶ Investigation of research ethics is fully in hands of the affiliated institutions, which often leads to conflicts of interest (reputation loss, prominent position of involved researchers). Investigation rarely leads to punishment of involved researchers.

- ▶ **“Publish or perish” vs. replication crisis** (replication studies and negative data are rarely published)

- ▶ **Reporting problematic data and ethical misconducts carries high personal and career risks but at the same time is not rewarded by publishers or institutions.**

Problematic publications are not effectively eliminated from the scientific record.

- ▶ Relative number of retracted publications does not reflect the yearly increase in number of all published articles.

*“(..)**we estimate** — on the basis of evidence from surveys, studies and reports from sleuths — **that one in 50 papers would meet at least one of the criteria for retraction** from the Committee on Publication Ethics, a non-profit collective in Eastleigh, UK. **These include “clear evidence that the findings are unreliable”**, whether because of falsified data, plagiarism, faked peer review or just ‘major error’, which might involve contaminated cell lines or another non-fraudulent problem. **Yet the rate of retraction is still under 0.1%.**”*

Ivan Oransky, founder of Retraction Watch, 2022.

<https://www.nature.com/articles/d41586-022-02071-6>

Problematic publications are not effectively eliminated from the scientific record.

- ▶ Insufficient motivation of publishers/editors
 - ▶ Insufficient communication/unwillingness to verify critique by readers but also to publish corrections suggested by authors(!).
 - ▶ Too long periods of investigation (years).

In 1987, the NIH found a paper contained fake data. It was just retracted.^[OBJ]

When failure to correct a flawed paper could put patients' lives at risk

Catch and kill: What it's like to try to get a NEJM paper corrected.^[OBJ]

A journal did nothing about plagiarism allegations for a year. Then the tweets (and an email from Retraction Watch) came.

Problematic publications are not effectively eliminated from the scientific record.

- ▶ Even when false publications are retracted, they can still be read and cited.

Top 10 most highly cited retracted papers

Ever curious which retracted papers have been most cited by other scientists? Below, we present the list of the 10 most highly cited retractions as of December 2020. Readers will see some familiar entries, such as the infamous *Lancet* paper by Andrew Wakefield that originally suggested a link between autism and childhood vaccines. You'll note that several papers — including the #2 most cited paper — received more citations after they were retracted, which research has shown is an ongoing problem.

<https://retractionwatch.com/the-retraction-watch-leaderboard/top-10-most-highly-cited-retracted-papers/>

Before/after retraction

2. <u>Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children.</u> LANCET; FEB 28 1998. <i>Wakefield AJ, Murch SH, Anthony A, Linnell J, Casson DM, Malik M, Berelowitz M, Dhillon AP, Thomson MA, Harvey P, Valentine A, Davies SE, Walker-Smith JA</i>	2010	642	867	1509
7. <u>Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children.</u> <i>Lancet.</i> February 28, 1998. <i>AJ Wakefield, SH Murch, A Anthony, J Linnell, DM</i>	2010	642	1052	1694

2023

2024

Problematic publications are not effectively eliminated from the scientific record.

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We identified 478 retracted articles, 220 (46%) of which were cited at least once. We contacted 1297 corresponding authors of the papers that cited these articles, 417 (30%) of whom responded to our survey and were included in the final analysis. The median number of authors in the analyzed articles was five, and the median elapsed time from retraction to citation was 3 yr. **Most of the corresponding authors (89%) were unaware of the retracted status of the cited article, mainly because of inadequate notification of the retraction status in journals and/or databases and the use of stored copies.**

Education | September 2022

Inappropriate Citation of Retracted Articles in Anesthesiology and Intensive Care Medicine Publications ✓



Alessandro De Cassai, M.D.; Federico Geraldini, M.D.; Silvia De Pinto, M.D.; Ilaria Carbonari, M.D.; Marco Cascella, M.D.; Annalisa Boscolo, Ph.D.; Nicolò Sella, M.D.; Francesco Monteleone, M.D.; Fabio Cavaliere, M.D.; Marina Munari, M.D.; ... Show more

+ Author and Article Information

Anesthesiology September 2022, Vol. 137, 341-350.

<https://doi.org/10.1097/ALN.0000000000004302>

When publication system fails, lives are at stake

▶ Paolo Macchiarini

▶ Karolinska Institutet (KI), Sweden

▶ Experimental transplantation of artificial tracheas in combination with stem cells (2011-2012)

▶ 7 out of 8 operated patients died

▶ “One patient died suddenly when the implant caused massive bleeding just 4 months after it was implanted; the two others survived for 2.5 and nearly 5 years, respectively, but **suffered painful and debilitating complications before their deaths.**”[1]

▶ 2016 – guilty of research misconduct (KI), and then few more times:

▶ “The articles contain **fabricated and distorted descriptions of the patients’ conditions before and after the operations. Justification is lacking for treatment of the patients on the grounds of so-called vital indication** (when a given treatment is the last resort for survival), and **one misses reference to relevant animal experiments which must precede human studies** that involve unproven methods. Furthermore, **ethical approvals are lacking, as are appropriate informed consents.**”[2]

▶ 2023 – sentenced in Sweden to prison for 2,5 years for causing bodily harm to his patients



[1] <https://www.science.org/content/article/transplant-surgeon-gets-prison-sentence-failed-stem-cell-treatments>

[2] <https://news.ki.se/seven-researchers-responsible-for-scientific-misconduct-in-macchiarini-case>

ARTICLES | VOLUME 378, ISSUE 9808, P1997-2004, DECEMBER 10, 2011

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Figures



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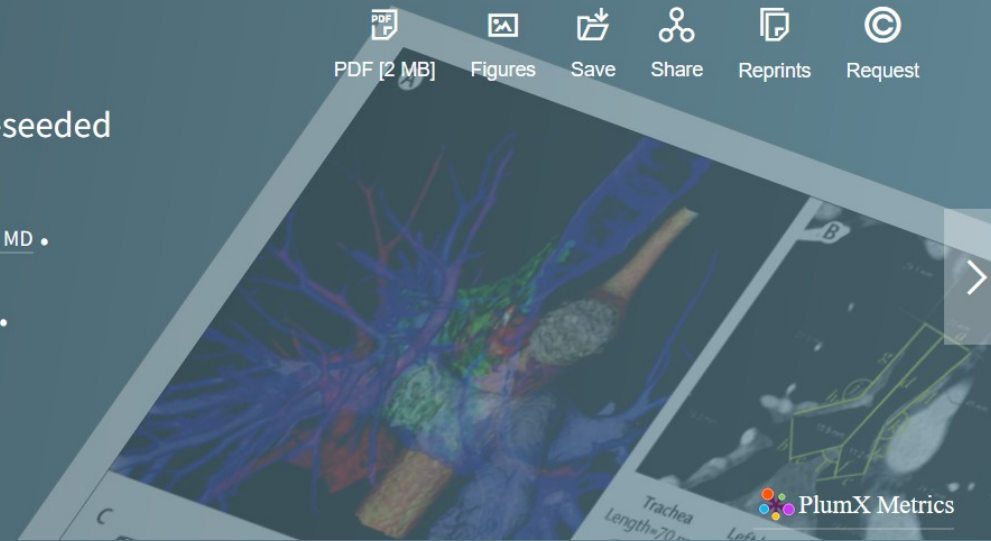
Reprints

Request

RETRACTED: Tracheobronchial transplantation with a stem-cell-seeded bioartificial nanocomposite: a proof-of-concept study

Philipp Jungebluth, MD • Evren Alici, MD • Silvia Baiguera, PhD • Pontus Blomberg, PhD • Béla Bozóky, MD • Claire Crowley, MSc • Oskar Einarsson, MD • Prof Tomas Gudbjartsson, MD • Sylvie Le Guyader, PhD • Gert Henriksson, MD • Ola Hermanson, PhD • Jan Erik Juto, MD • Bertil Leidner, MD • Tobias Lilja, PhD • Jan Liska, MD • Tom Luedde, MD • Vanessa Lundin, MS • Guido Moll, MS • Christoph Roderburg, MD • Prof Staffan Strömblad, PhD • Tolga Sutlu, BSc • Emma Watz, MD • Prof Alexander Seifalian, PhD • Prof Paolo Macchiarini, MD   • Show less

Published: November 24, 2011 • DOI: [https://doi.org/10.1016/S0140-6736\(11\)61715-7](https://doi.org/10.1016/S0140-6736(11)61715-7)

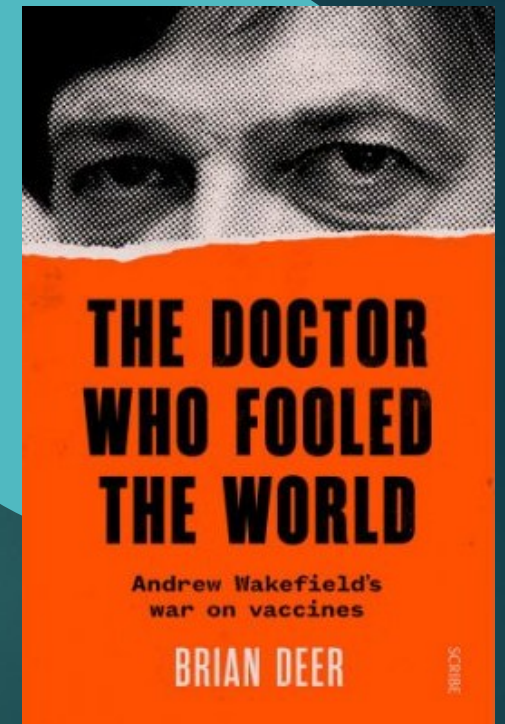


- ▶ Despite the long-standing evidence of data falsification and research misconduct ruling (2016), the articles in Lancet were only marked with an Expression of concern in February 2023 and retracted after public backlash in October 2023.

- ▶ <https://retractionwatch.com/2023/10/27/lancet-retracts-two-more-papers-by-convicted-surgeon-paolo-macchiarini/>

Antivax movement as a symptom of publishing system dysfunction

- ▶ Andrew J. Wakefield
 - ▶ Royal Free Hospital and UCL (London)
 - ▶ 1998 – published an influential study in Lancet connecting vaccination against measles to new form of enterocolitis linked to autism. Attempts at replication by other researchers failed.
 - ▶ 2004 – Sunday Times revealed undisclosed financial conflict of interest on Wakefield part. By selling test-kits for “autistic enterocolitis” he made up to 43 million GBP.
 - ▶ 2006 - 2010 - General Medical Council (GMC) investigation.
 - ▶ Found evidence of research misconduct, falsification of data and ethical approvals.
 - ▶ 2010 – article retracted, Wakefield struck off the UK medical register
- ▶ More: <https://www.bmj.com/content/342/bmj.c5347>



Antivax movement as a symptom of publishing system dysfunction

Fraud's long tail: Measles outbreak shows why it's important to look downstream of retractions

As Retraction Watch readers know, public health officials are concerned about a U.S. measles outbreak. As *The New York Times* notes:

The United States has already had more cases of measles in the first month of 2015 than the number that is typically diagnosed in a full year. This follows a year in which the number of cases was several times more than the average since 2000, when the disease was declared eliminated in the United States.



Child with measles, via Wikipedia/CDC

ScienceDirect homepage
November 2021

Popular Articles

Ivermectin: a multifaceted drug of Nobel prize-honoured distinction with indicated efficacy against a new global scourge, COVID-19

New Microbes and New Infections, Volume 43

Why are we vaccinating children against COVID-19?

Toxicology Reports, Volume 8

Cognitive deficits in people who have recovered from COVID-19

EClinicalMedicine, Volume 39

Traditional publishing system is failing

- ▶ Publishing industry works for profit and has no motivation to reform.
- ▶ Journals are encouraged to publish increasing number of articles over shorter span of time.
- ▶ Institutions and publishers are too passive to effectively investigate research misconduct.
- ▶ Researchers are forced to publish as often as possible, but not honored for reviewing the literature, publishing replication and negative data.
- ▶ Whistleblowers face high personal risks, but at the same time are not rewarded for their work.
- ▶ The result is an environment which encourages production of **poor-quality** and **falsified** research publications.
- ▶ Falsified publications are usually hard to uncover, but even when it happens, it can still undermine the trust of the public in scientific research in general.
- ▶ **Consequences of public distrust towards research are severe.**

How to recognize problematic publication in biomedicine field?

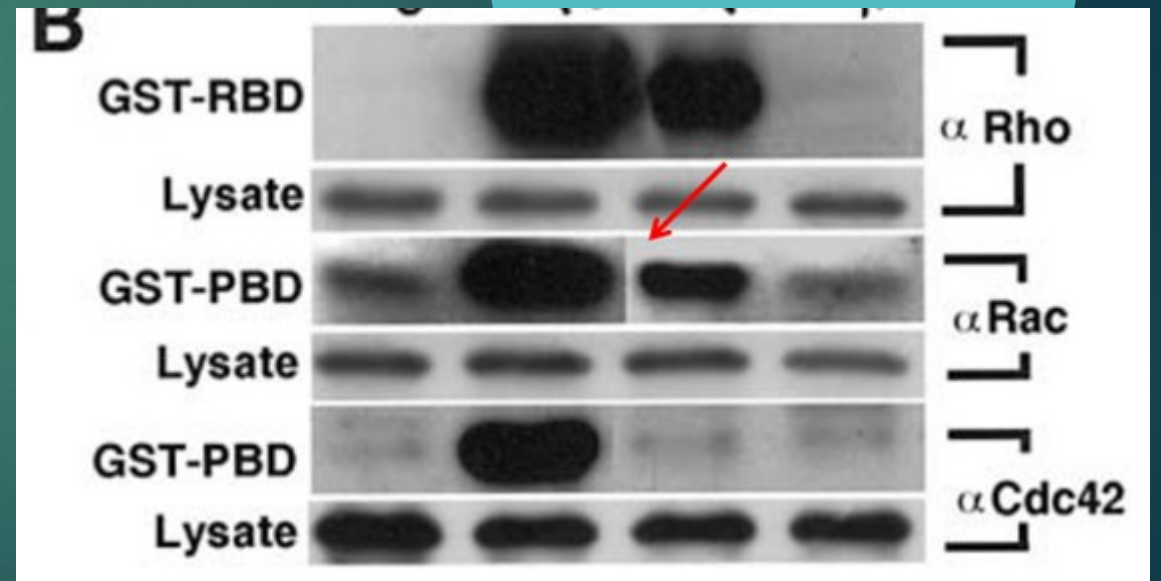
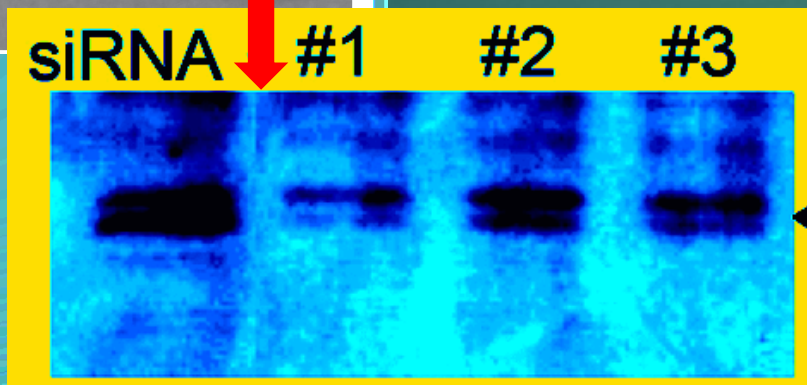
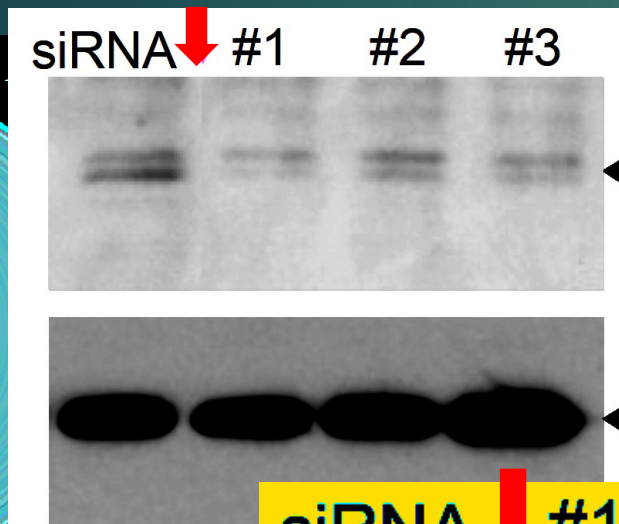
- ▶ Image data are currently one of the main sources for revealing problems in presented data.
- ▶ **At least 4 % of primary biomedicine publications** (1 in 25) contains problematic image data.^[1]
 - ▶ This number likely represents only the tip of the iceberg:
 - ▶ Not all problematic publications contain image data
 - ▶ Not all problematic publications contain easily identifiable image problems.
 - ▶ Sometimes, the problem is hidden in the publication process itself (manipulation/absence of peer review, “hijacking” of special issues and whole journals).
 - ▶ The real number of problematic publications is **much higher**.

[1] <https://journals.asm.org/doi/10.1128/mbio.00809-16>

Case study

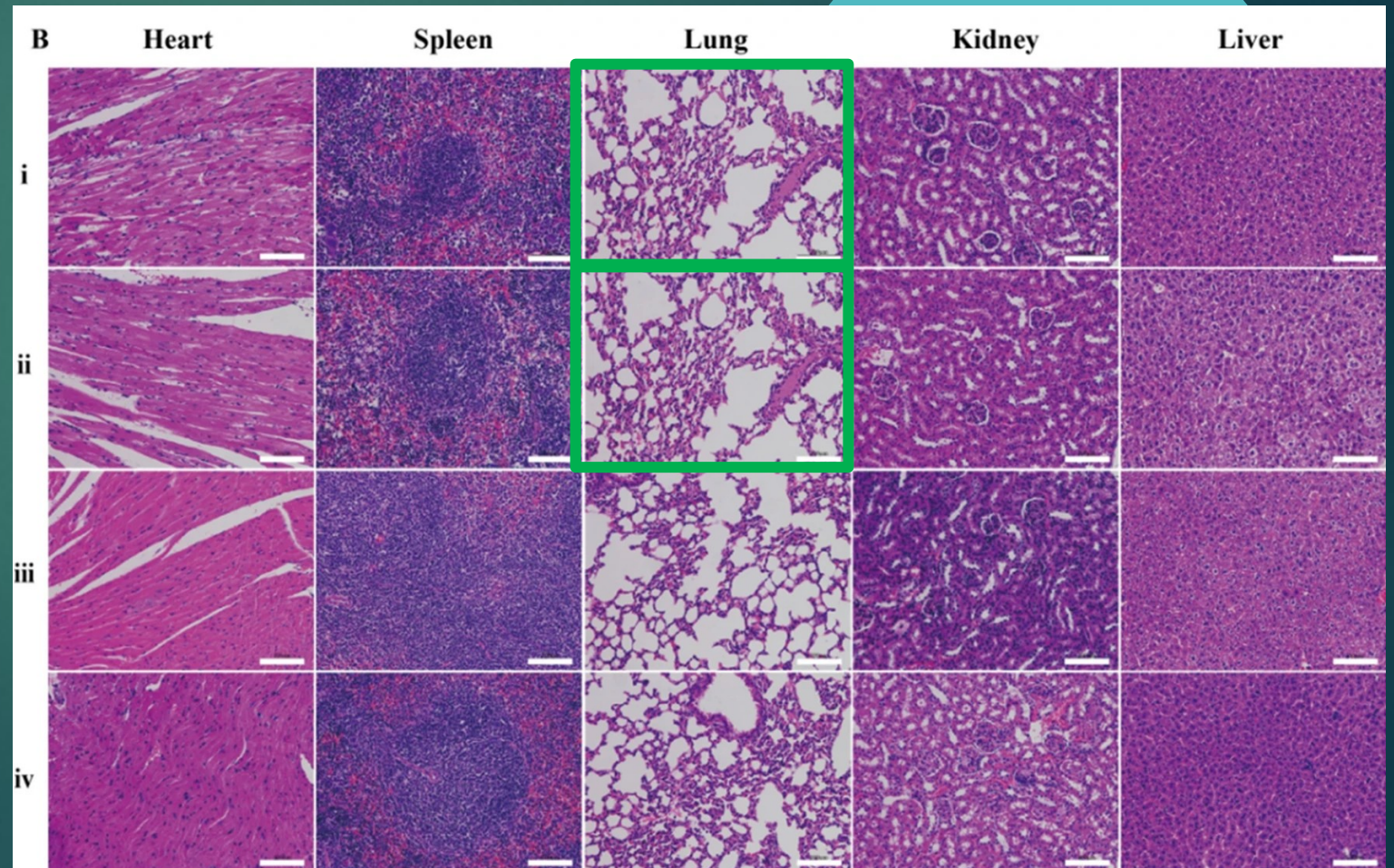
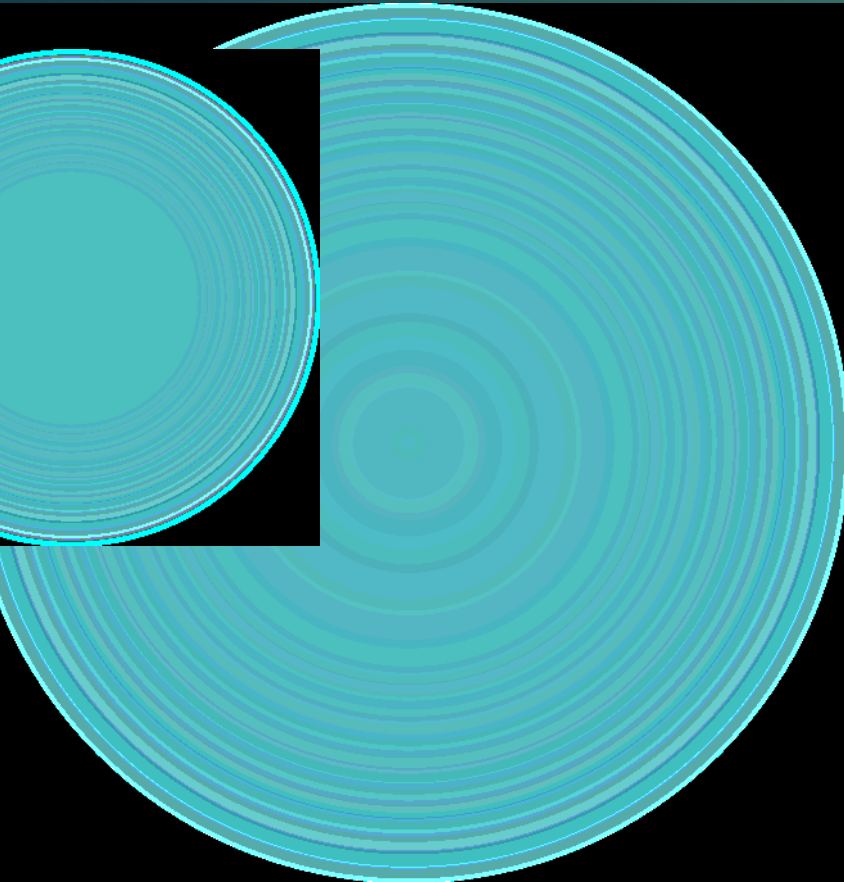
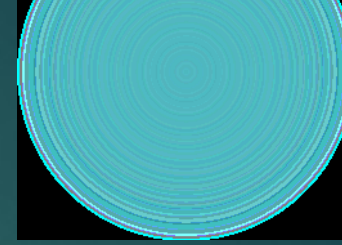
▶ Splicing

- ▶ Compiling bands from different membranes/gels next to each other.
- ▶ Considered bad practice now but tolerated in older papers.



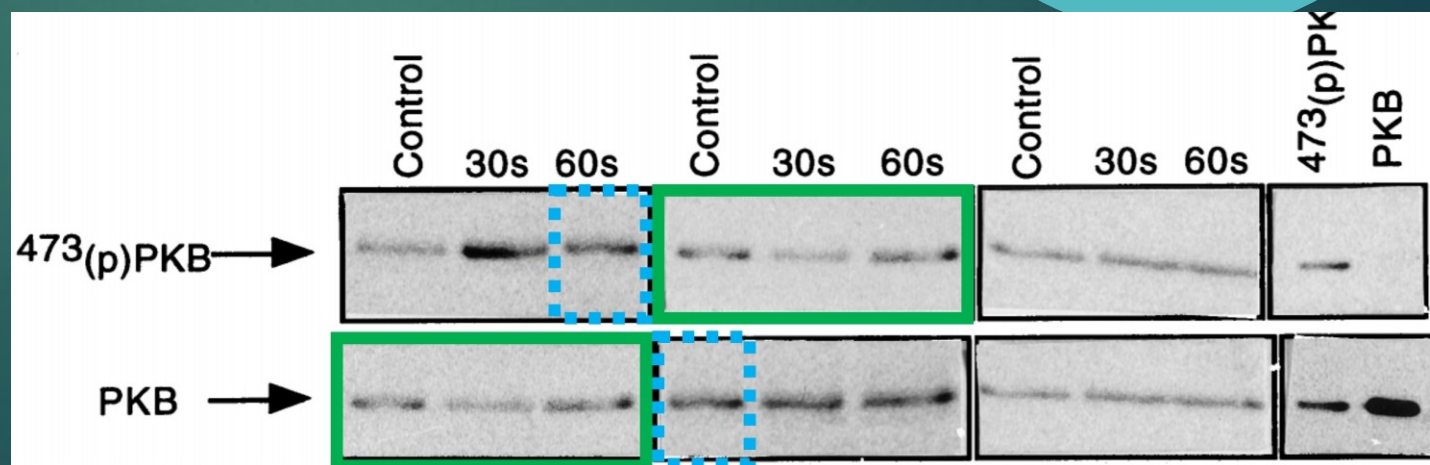
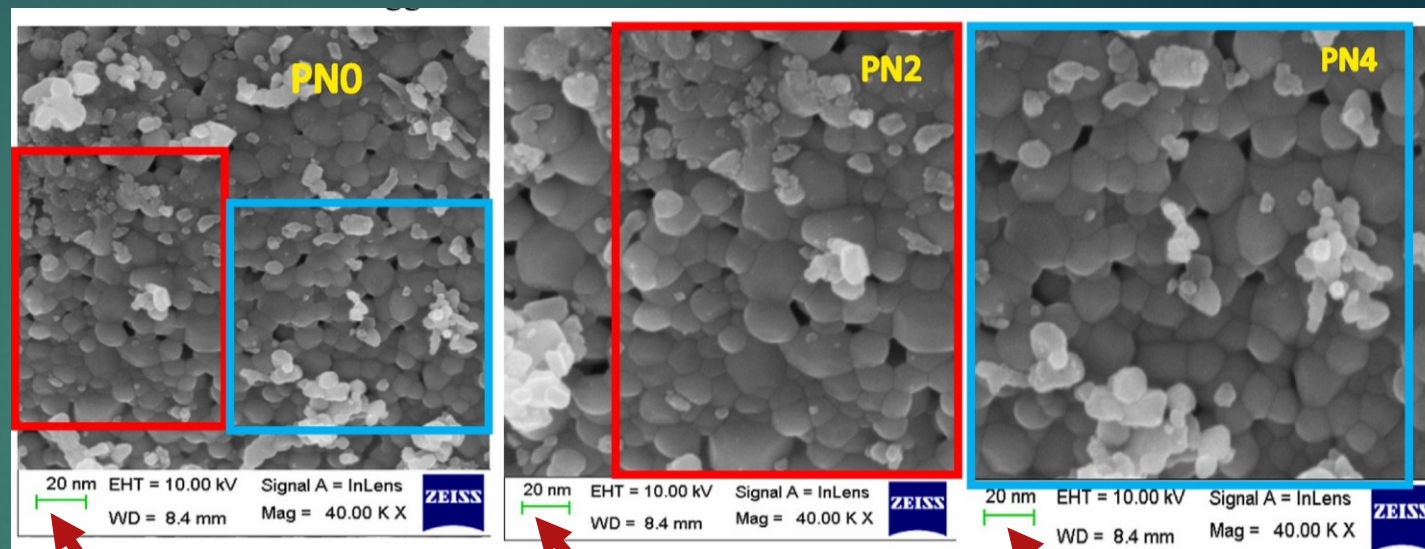
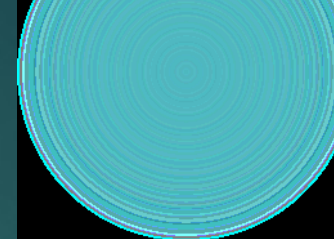
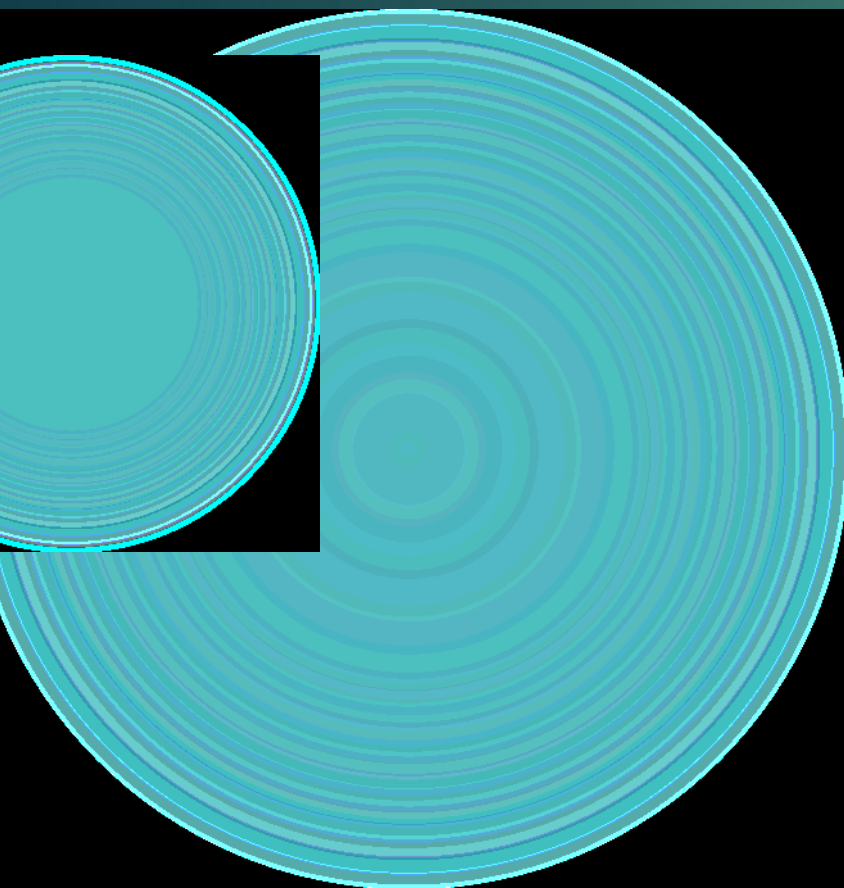
Case study

- ▶ Image duplication type I (simple duplication of image panel).



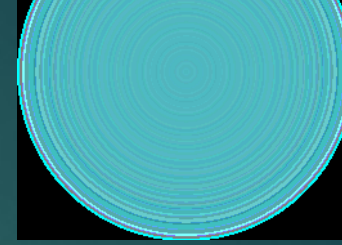
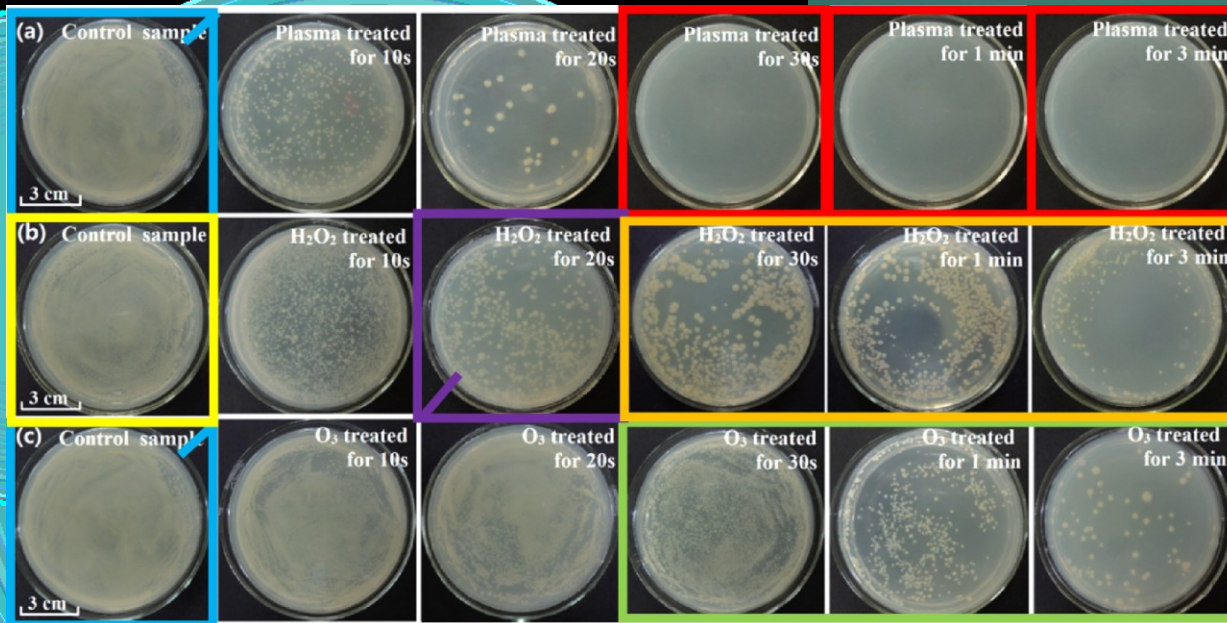
Case study

- Duplication type II - overlapping panels



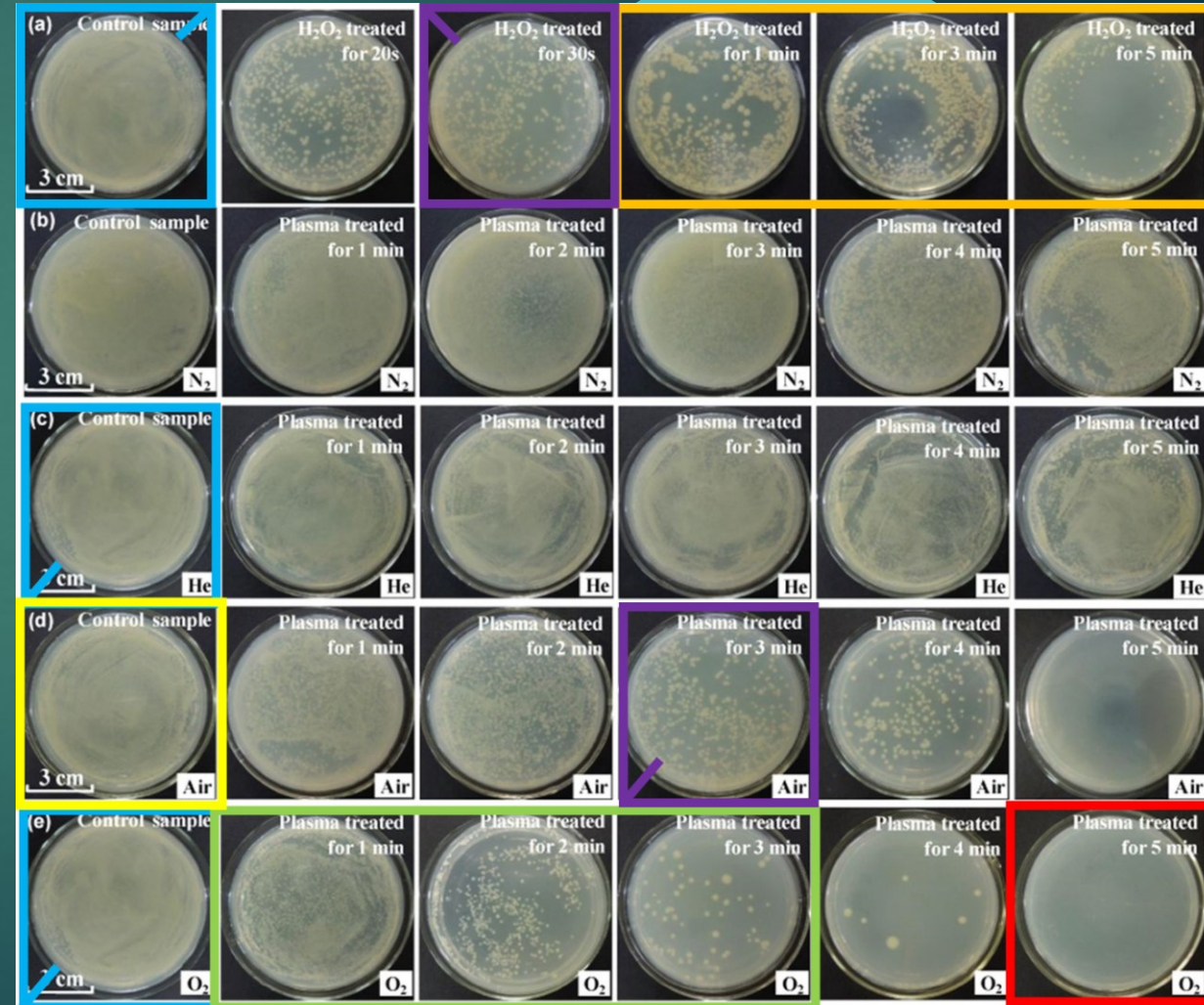
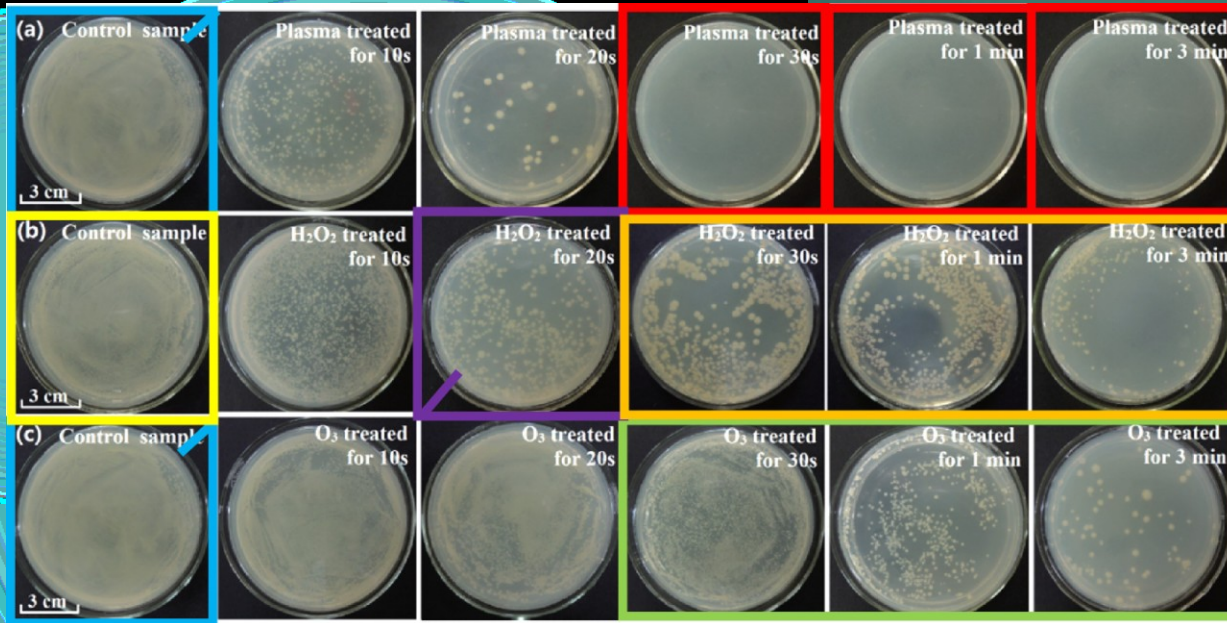
Case study

- Duplication type I and II – rotation of panel



Case study

- ▶ Duplication type I and II – rotation of panel
- ▶ Image reuse for “illustration” of other experiments → “self-plagiarism”



Case study

▶ Unauthorized reuse of images from other sources (→ plagiarism)



Elisabeth Bik goes to Kansas

@MicrobiomDigest

If you are claiming to have isolated *Helicobacter pylori* from wastewater, better not use a photo of human stomach-isolated bacteria from the Nobel Prize winner Barry Marshall himself.

Left: Marshall et al. 1985 paper.
Right: Wastewater 2012 paper
pubpeer.com/publications/2...

Priložit Tweet

Barry Marshall et al., 1985
April 15, 1985, Vol. 142 THE MEDICAL JOURNAL OF AUSTRALIA

... with ulcers in whom PC was found by means of other culture or immunological tests. In the remaining patients with chronic gastritis, immunoreactivity of gastric mucosal sections for histamine was observed. For the purposes of this study, it was assumed that all patients with chronic gastritis had H. pylori. The immunoreactivity was based on the histology of the stomach and the presence of the bacterium. The immunoreactivity was based on the histology of the stomach and the presence of the bacterium. The immunoreactivity was based on the histology of the stomach and the presence of the bacterium.

PCR Analysis and DNA Sequencing

... PCR was performed on a 10 µl aliquot of each sample using the AmpliTaq GeneAmp DNA Polymerase III (Applied Biosystems) according to the manufacturer's instructions. If a specific band (approximately 1.5 kb) was observed, it was amplified by PCR. The PCR products were then digested with EcoRI and HindIII. The digested DNA was then ligated with a BamHI-HindIII dimer. The ligation products were then digested with BamHI and HindIII. The digested DNA was then ligated with a BamHI-HindIII dimer. The ligation products were then digested with BamHI and HindIII.

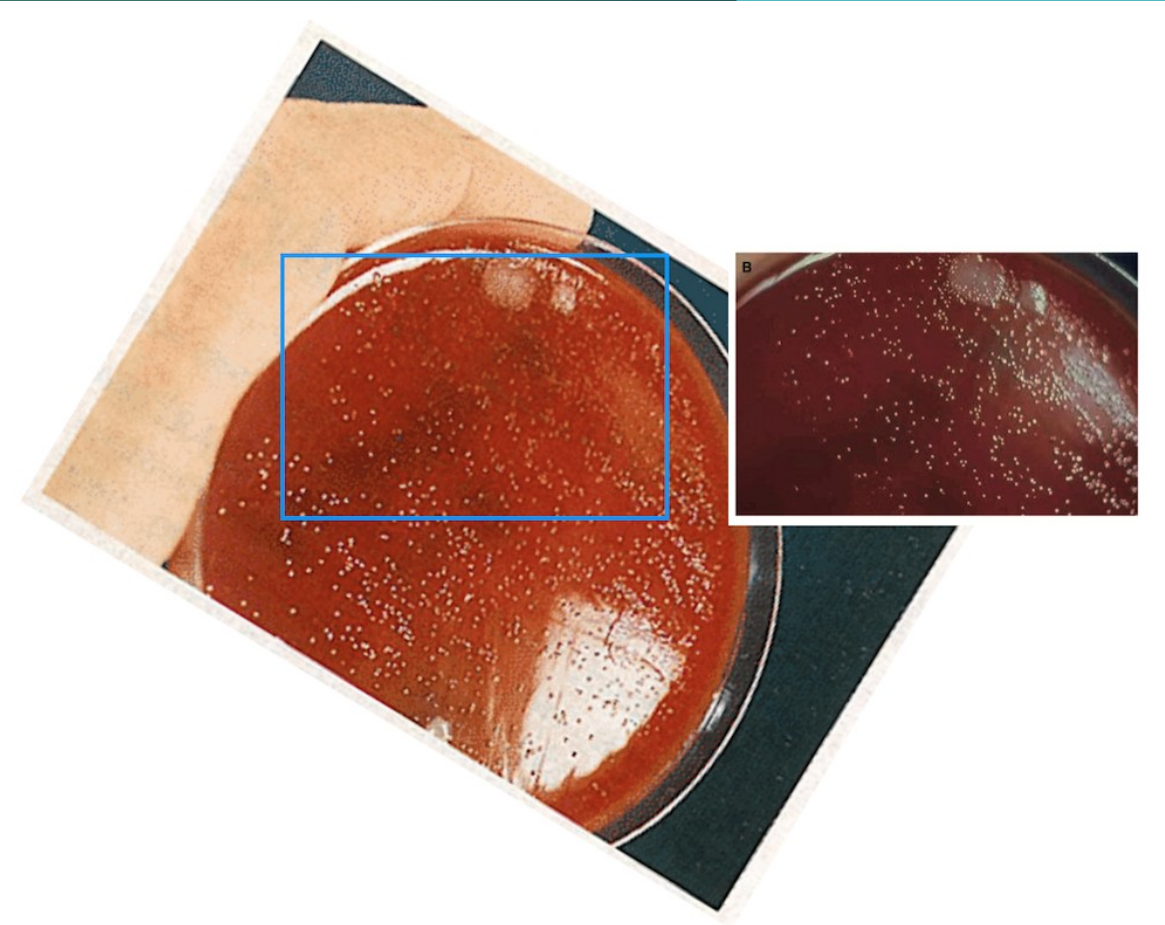
Moreno and Ferrús, 2012
Detection of *Salmonella* in *Salmonella*

... PCR was performed on a 10 µl aliquot of each sample using the AmpliTaq GeneAmp DNA Polymerase III (Applied Biosystems) according to the manufacturer's instructions. If a specific band (approximately 1.5 kb) was observed, it was amplified by PCR. The PCR products were then digested with EcoRI and HindIII. The digested DNA was then ligated with a BamHI-HindIII dimer. The ligation products were then digested with BamHI and HindIII.

Results and Discussion

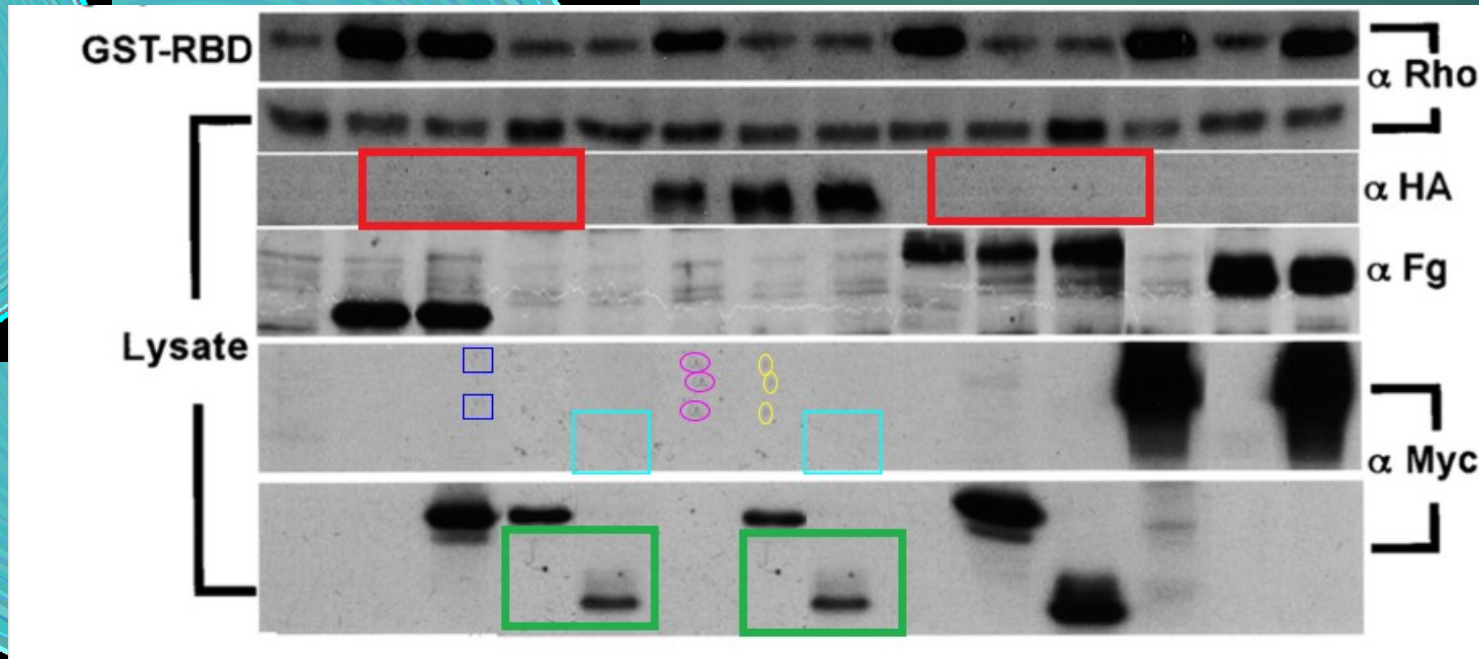
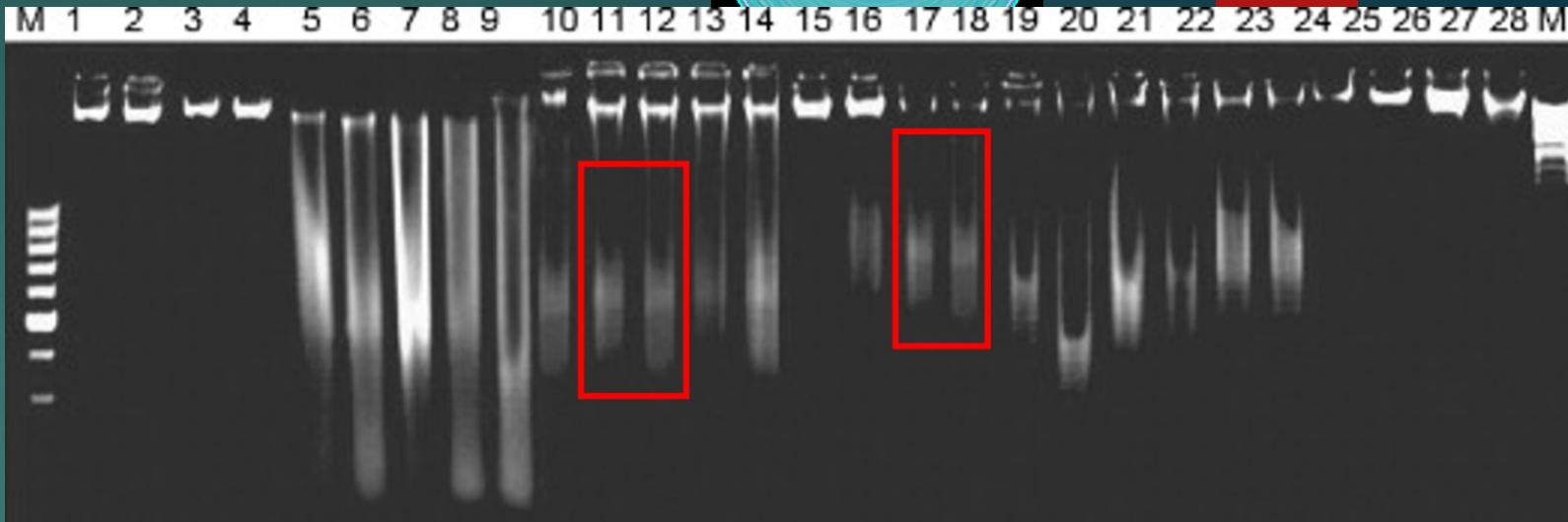
... Culture Detection of *Helicobacter pylori* in Wastewater

Although many studies have focused on improving the recovery of H. pylori from water systems (13, 14), to date, only one study has reported the isolation of H. pylori from wastewater (15). However, the isolation of H. pylori from wastewater is not surprising because the bacterium is known to be resistant to environmental stresses (16). The isolation of H. pylori from wastewater is not surprising because the bacterium is known to be resistant to environmental stresses (16). The isolation of H. pylori from wastewater is not surprising because the bacterium is known to be resistant to environmental stresses (16).



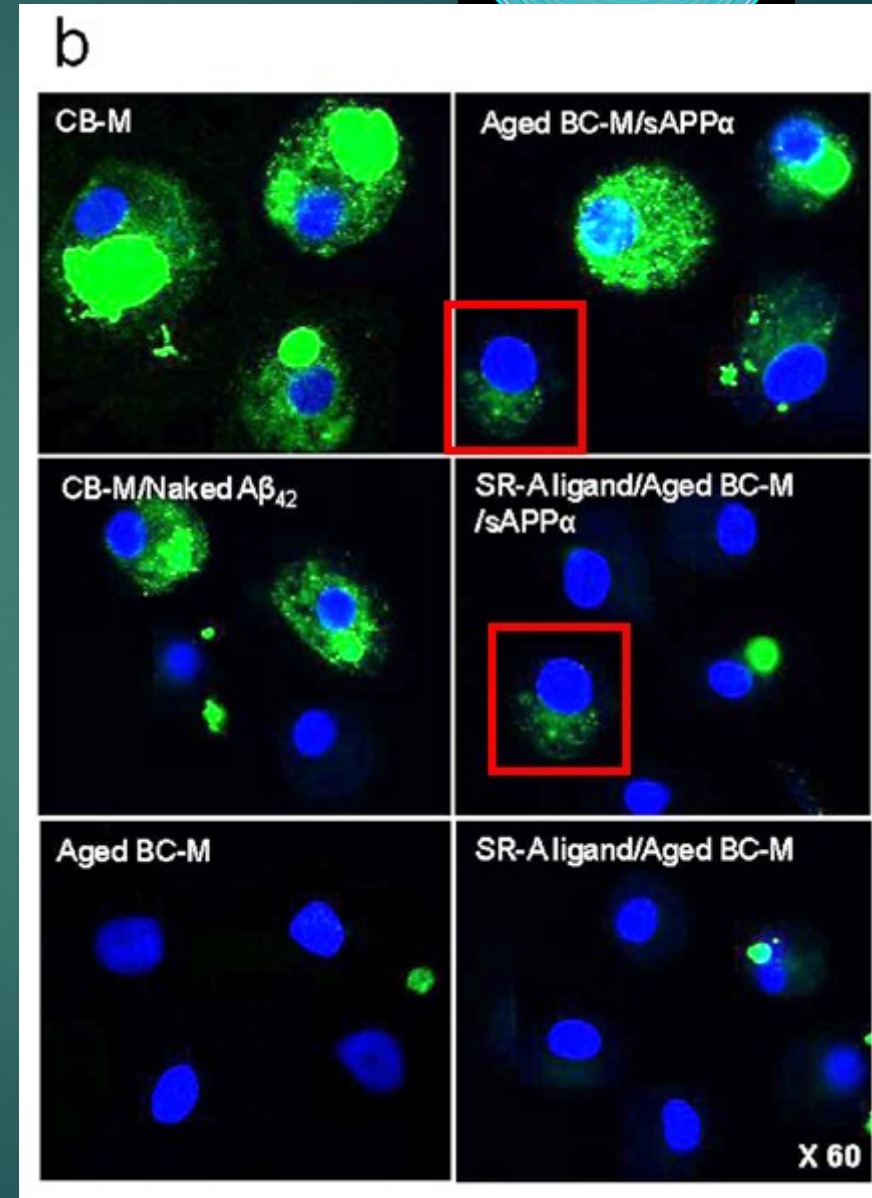
Case study

- ▶ Duplication type III
 - ▶ Parts of the image repeat inside one panel or among panels.
 - ▶ What could have happened here?



Case study

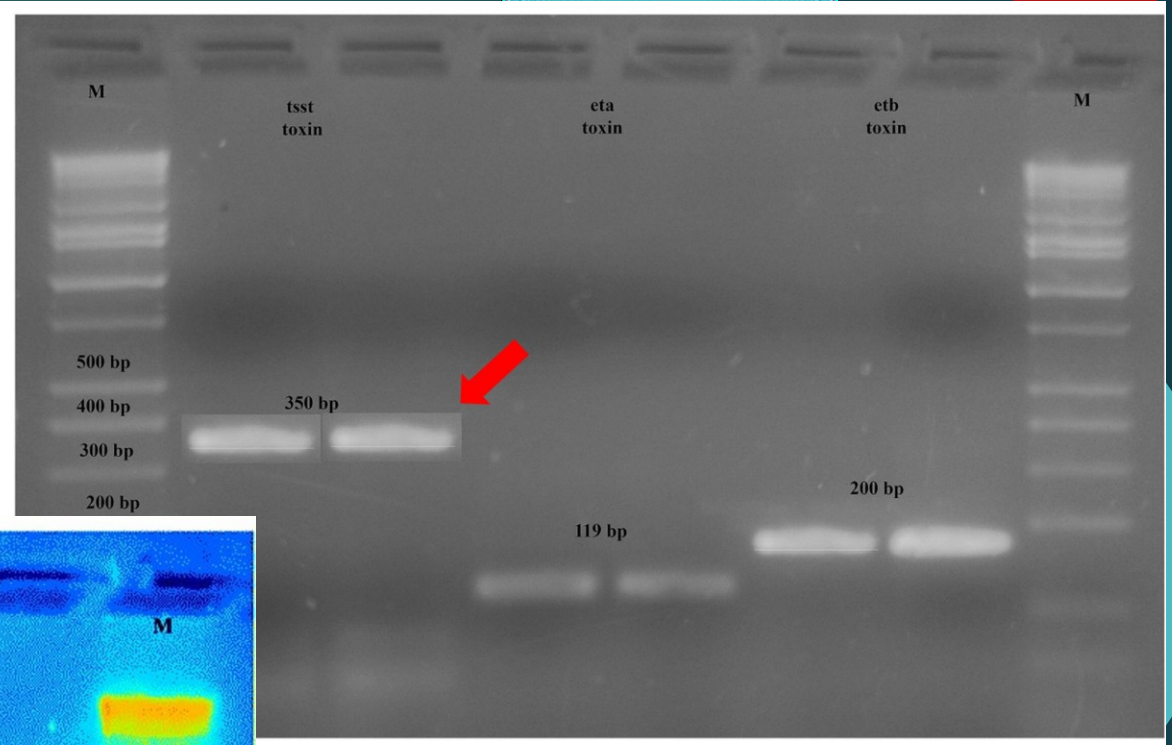
- ▶ Duplication type III – parts of the image are identical between panels
- ▶ What could have happened here?



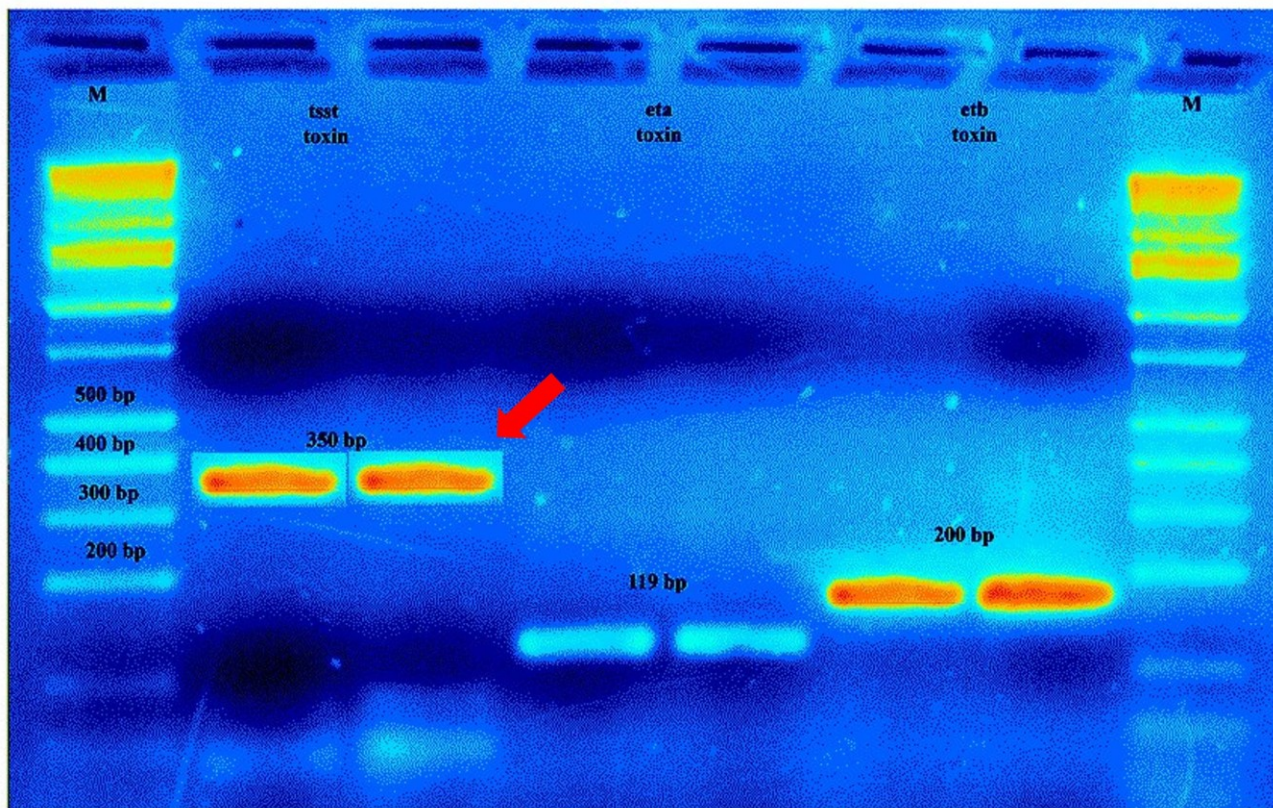
Case study

- ▶ What could have happened here?

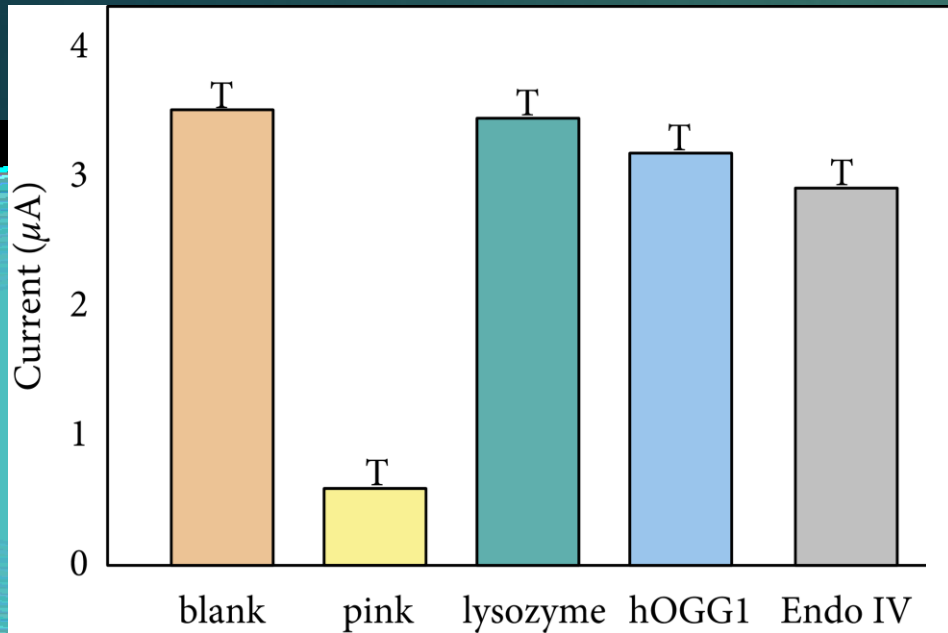
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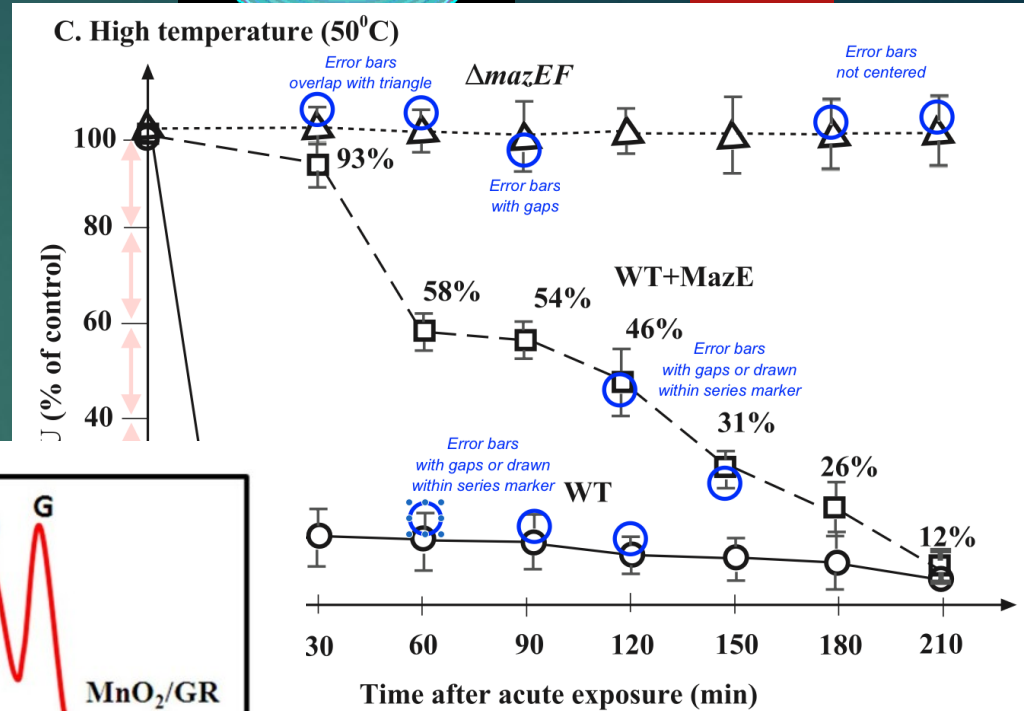
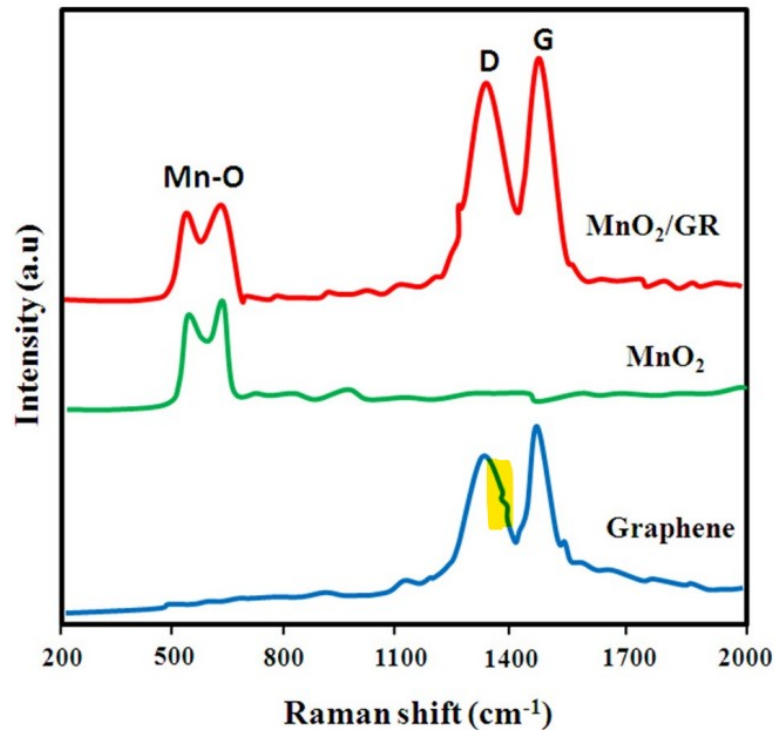
B



Sometimes the image data are not needed



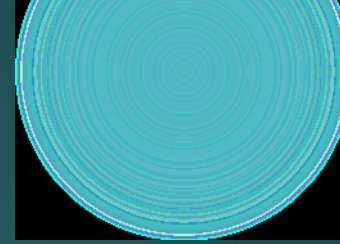
<https://retractionwatch.com/2022/12/05/a-paper-used-capital-ts-instead-of-error-bars-but-wait-theres-more/>



Paper Mills

- ▶ **Organized groups** (companies) producing and selling **fabricated research articles** prepared for publication (or including the publication).
- ▶ They have **templates and image libraries**, which they use to generate content fitting the customer.
- ▶ Typical scenario: The MDs in Chinese hospitals are required to publish in international journals for career advancement. This is not always realistic (lack of time, funding, research equipment, language barrier). The MD therefore pays the publication as a service in a specialized company. The company designs the publication based on the customer's requests and target journal requirements.
- ▶ **Paper Mill products are very hard to expose for certain.** You need to search through publications across topics, to find similar templates.

Paper Mills

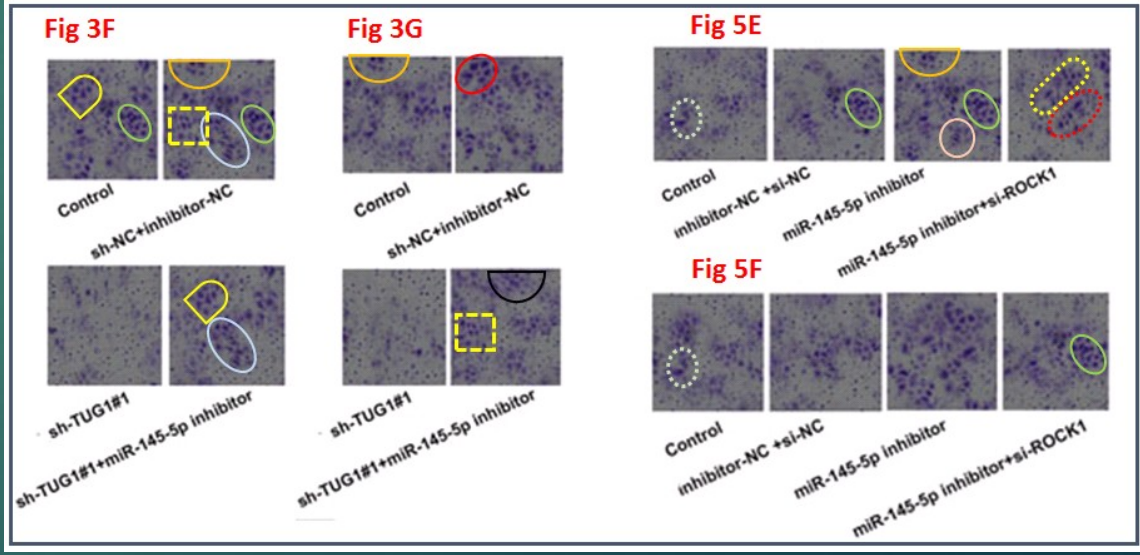
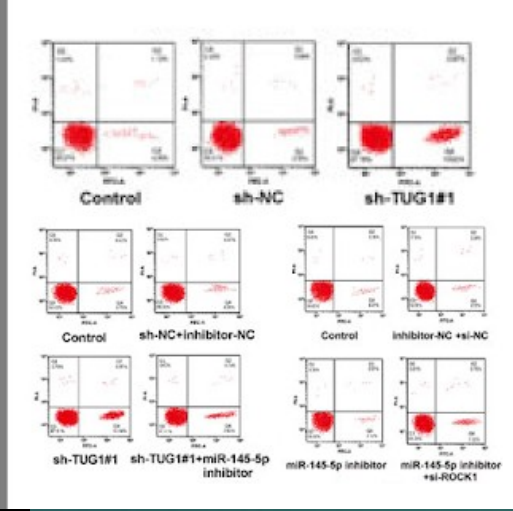
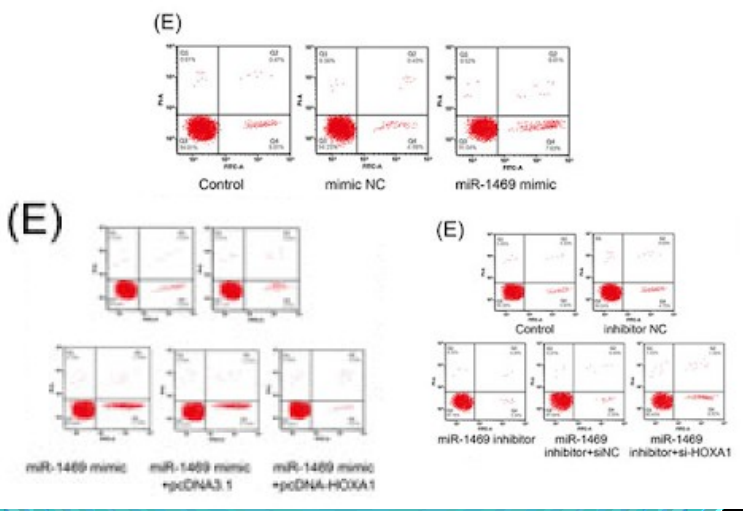
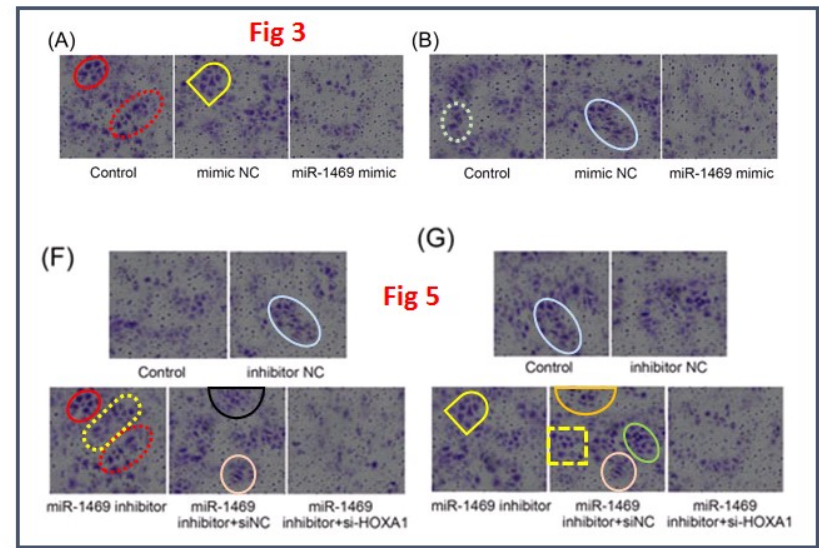
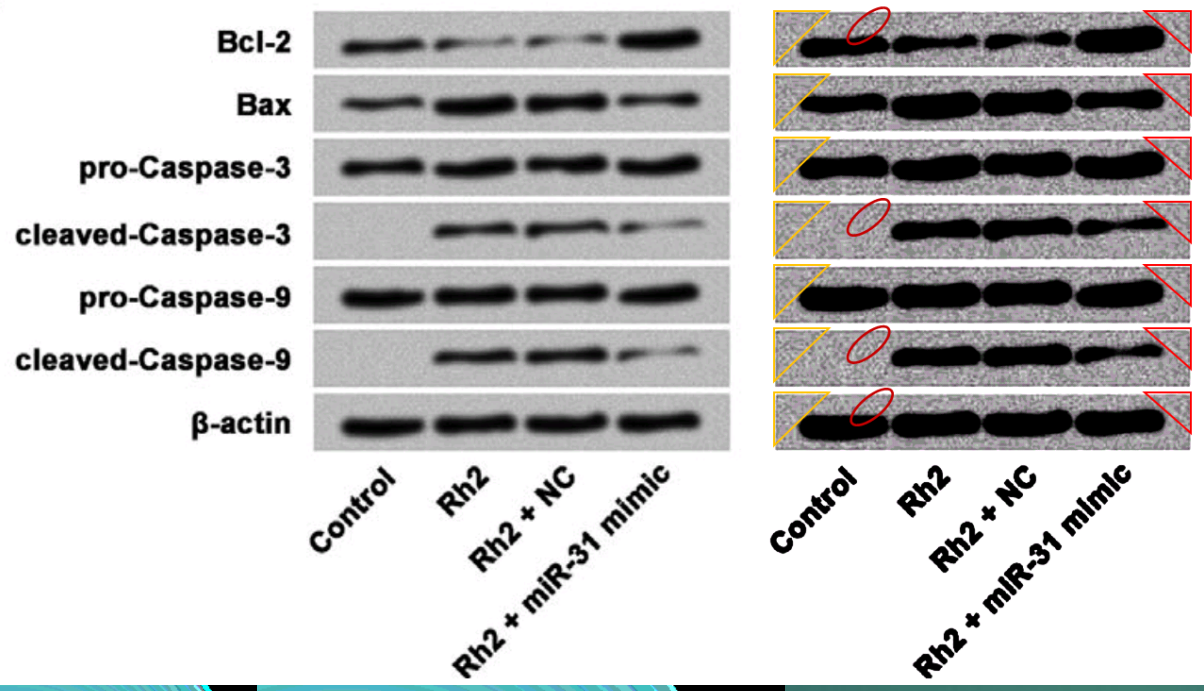


- ▶ The probability of encountering a paper-mill product depends on a journal and publisher.
- ▶ In 2022 Committee on Publication Ethics (COPE) report estimates, that **up to 2 %** of all currently submitted manuscripts are Paper Mill products. (<https://publicationethics.org/node/55256>)
 - ▶ *“Data on over 53,000 papers were analysed. This was shared by six publishers and spans a wide range of subject areas; overall **the percentage of suspect papers being submitted to journals ranges from 2-46%**. The analysis shows that **most journals will see 2% suspected fake papers submitted** and then for **journals where paper mills have been successful in getting papers accepted, they see a sharp increase in suspect submissions.**”*
- ▶ Another study trying to detect such publications concluded it could be **up to 1% of articles in PubMed** (<https://www.nature.com/articles/d41586-022-02997-x>)

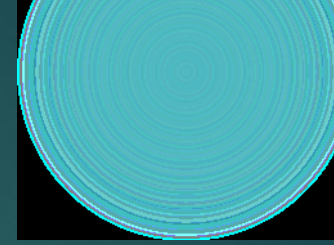


Some signs of paper mill products

- ▶ Template-like names
 - ▶ **“Long non-coding RNA [enter name][enter effect] in [enter disease].”**
- ▶ Repeating and overlapping images in articles attributed to different authors from different institutions.
- ▶ Very similar visual style of western blot and flow cytometry data.
- ▶ No innovative approaches, unique methodology.
- ▶ Binary character of conclusions (yes or no), or very shallow description.
- ▶ Generic, non-institutional email addresses of authors (142838@168.com)
- ▶ No responses from authors following inquiries.
- ▶ If they do respond, they usually blame a different anonymous laboratory which made the experiments for them, but which is not acknowledged in the paper.

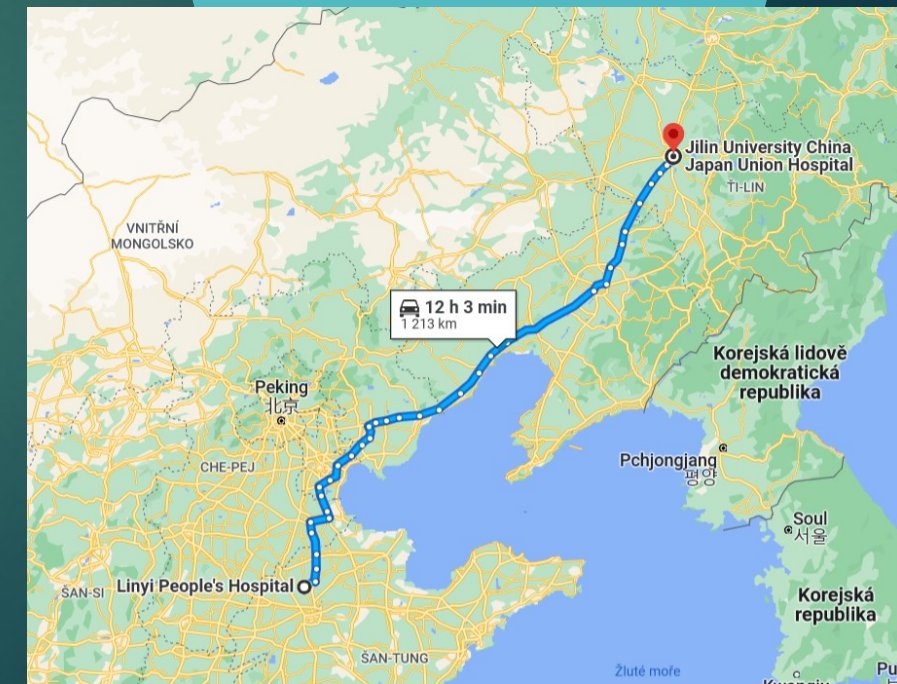
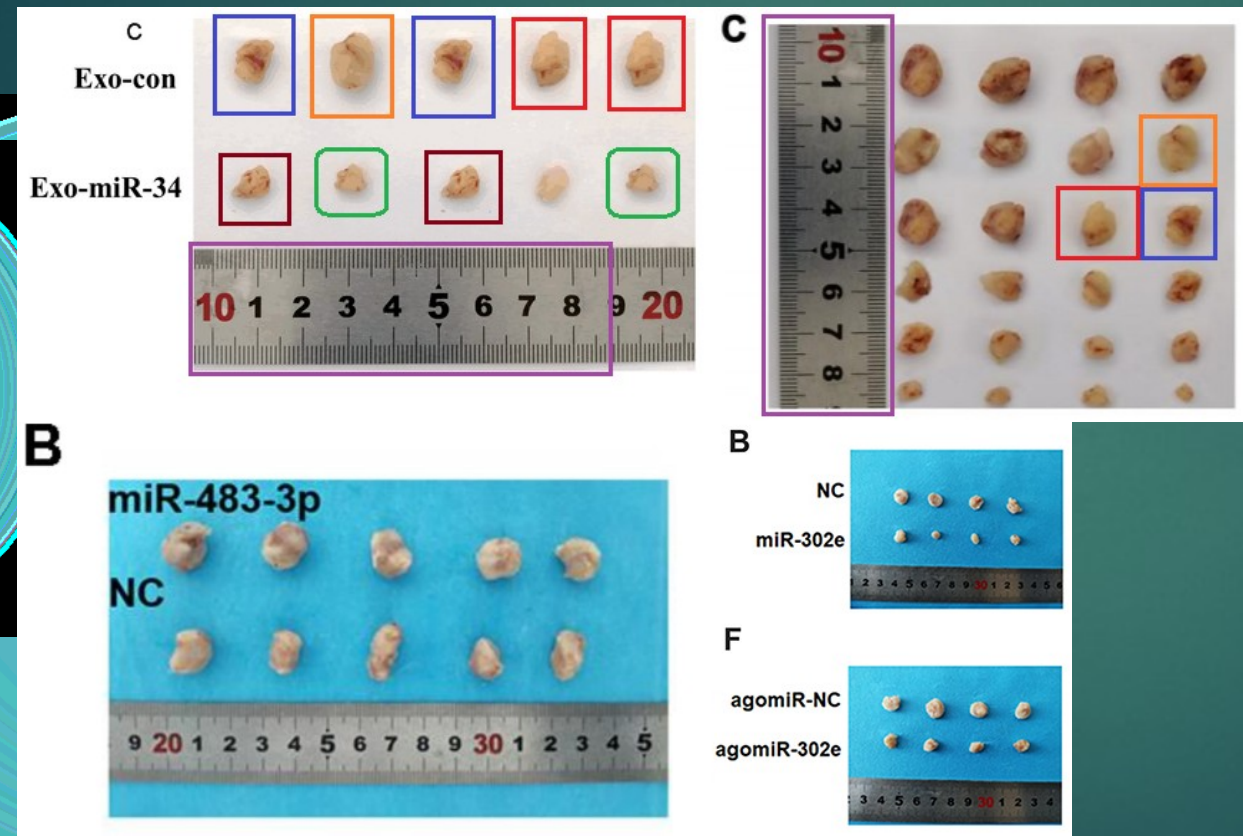


The Case of Travelling Ruler



David Bimler
aka
"Smut Clyde"

- ▶ Publication of authors from at least 4 different institutions contain images of the same ruler.



Fabrication using computer programs

- ▶ Current revolution in AI connected to text and image generation represents acute danger for the future of scientific publishing because the falsified data will be harder and harder to distinguish.

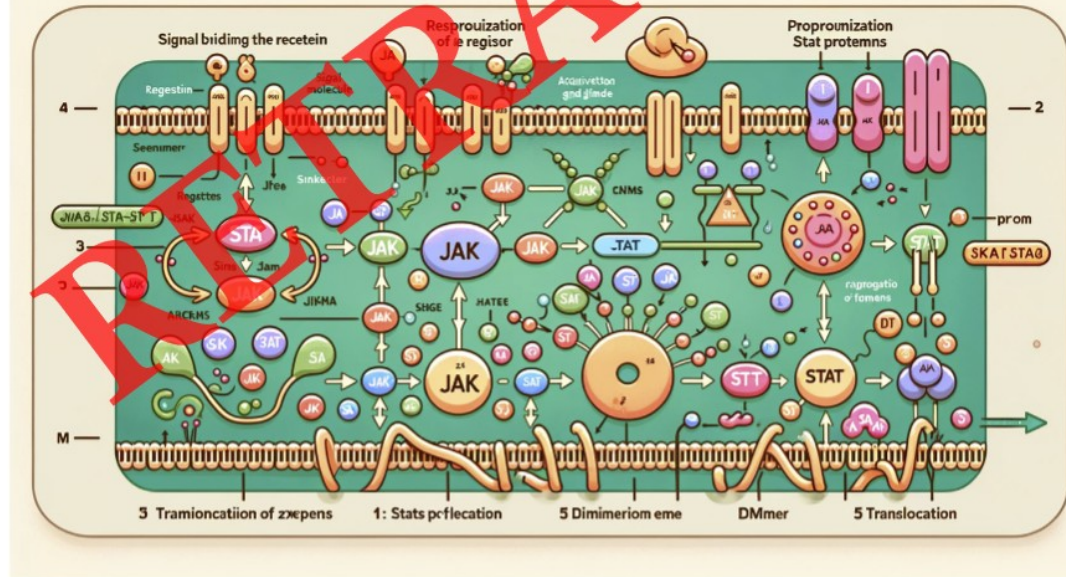
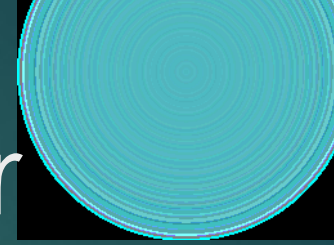


FIGURE 2
Diagram of the JAK-STAT signaling pathway: 1) Signal molecule binding to the receptor, 2) Activation of JAK kinase and phosphorylation of the receptor, 3) Recruitment and phosphorylation of STAT proteins by JAK, 4) Dimerization of STAT proteins, 5) Translocation of STAT dimers into the nucleus and initiation of gene transcription.

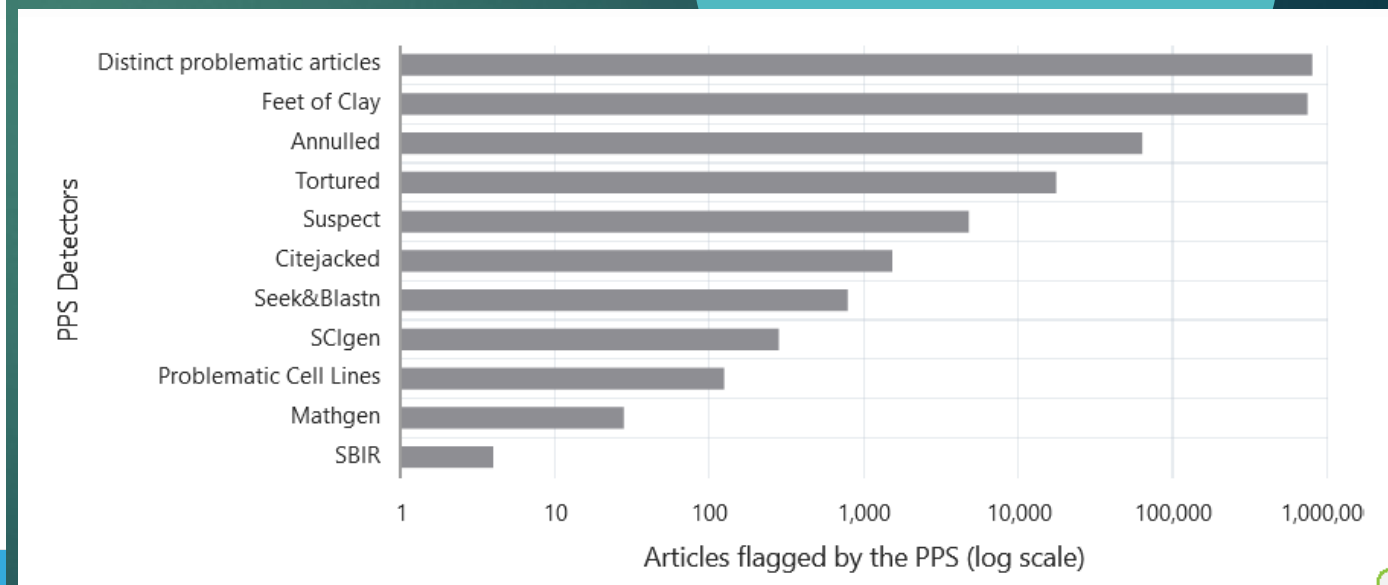
Problematic Paper Screener



Guillaume Cabanac

▶ <https://www.irit.fr/~Guillaume.Cabanac/problematic-paper-screener>

The screenshot shows the website's home page. On the left is a dark sidebar with navigation links: Home, Media Coverage, Fingerprints, All Problematic Papers, and a list of detectors (Annulled, Tortured, SClgen, Mathgen, SBIR, Suspect, Seek&Blastn, Problematic Cell Lines, Citejacked). The main content area has a blue header with the site name and logo, and a list of tools used for screening, including Automatic SBIR Proposal Generator, Dada Engine, Mathgen, SClgen, and Tortured phrases. It also lists data sources like Crossref, Dimensions, and PubPeer.



Tortured phrases

- ▶ One way how to bypass the plagiarism detection is by using paraphrasing software, which uses thesaurus to replace phrases in text with synonyms.
- ▶ It has a catch though:
- ▶ Software is paraphrasing also the established scientific terms.
- ▶ Result: Tortured phrases, which make the overall text unintelligible and can be automatically detected.

Tortured phrases found in computer-science papers

Scientific term	Tortured phrase
Big data	Colossal information
Artificial intelligence	Counterfeit consciousness
Deep neural network	Profound neural organization
Remaining energy	Leftover vitality
Cloud computing	Haze figuring
Signal to noise	Flag to commotion
Random value	Irregular esteem

NEWS | 05 August 2021 | Correction [10 August 2021](#)

'Tortured phrases' give away fabricated research papers

Analysis reveals that strange turns of phrase may indicate foul play in science.

Abuse of ChatGPT for research fabrication

#1 Guillaume Cabanac commented June 2023

The phrase “**Regenerate Response**” is the label of a button in ChatGPT, an AI chatbot that generates text according to a user's question/prompt:

↻ Regenerate response

This chemRxiv preprint contains the unexpected phrase “**Regenerate Response**” in the middle of Section 3 titled “Discussion”:

Co^{III}-Co^{II} self-exchange was found to be 3.9 (±3) eV, while for Co^{II}-Co^I, it was significantly smaller at approximately 1.4 (±0.05) eV. The high reorganization energy associated with Co^{III}-Co^{II} electron transfer suggests that the barrier for the reduction of Co^{III} by D is higher compared to Co^{II}, resulting in a lower specific rate. The driving forces (-ΔG₀) for the elementary steps are depicted in **Figure 6**. The barrier for electron transfer depends on both ΔG and λ. It was observed that the largest barrier is associated with the H₂ formation step. In the heterolytic route (curve b, **Figure 4**), H₂ is released upon protonation of Co^{III}H, leading to the generation of Co^{III}, which then needs to be converted to Co^{II}.

Regenerate response

Table 4. Co(dpgBF₂)₂(CH₃CN)₂ complexes reaction parameters ⁸

Cross reaction	k ₂₂ reaction	k ₁₁ reaction	ΔE(V) ^a	K ₁₂	k ₁₁ (M ⁻¹ s ⁻¹) ₁	k ₁₂ (M ⁻¹ s ⁻¹) ₁	k ₂₂ (acid) (M ⁻¹ s ⁻¹)	λ(eV)
7	Co ^{III} /Co ^{II}	MV ^{2+/•}	0.76	1.16×10 ¹³	5.4×10 ^{8d}	6.0×10 ⁶	9.3×10 ⁻⁷	3.97
6	Co ^{III} /Co ^{II}	[Ru(bpy) ₃] ^{3+2•}	0.97	4.74×10 ¹⁶	2.0×10 ^{9b}	5.2×10 ⁷	Avg. 9.5×10 ⁻⁸	3.9±0.3
					7.3×10 ^{6c}		2.6×10 ⁻⁵	4.19
								3.60

#1 Hoya camphorifolia commented April 2022

The text is incoherent and devoid of meaning, almost as if it had been generated by software.

"Fig. 3 show Therefore, it is difficult and presents a thorny problem: excessive financial regulation is competition in the market in up to plunder the end of the year of public property, financial innovation, to maintain the vitality of essential economic entities, the lack of financial regulation only a handful of individuals can be suppressed, it will endanger the stability of the natural financial system."

GPT-2 Output Detector Demo

This is an online demo of the GPT-2 output detector model, based on the 🤖/Transformers implementation of RoBERTa. Enter some text in the text box; the predicted probabilities will be displayed below. The results start to get reliable after around 50 tokens.

Communication and the class is typically proprietary protocol used for communication in the present case, the class. However, when a new communication method, such as IPv6 has been translated into practical use, and telephone-based appliances plane protocol must be standardized. However, all the appliances are becoming multi-functional system to control these functions are becoming increasingly large. About equipment, can also plans to work on the device using the same time standard system synchronization. In this case, an accurate time sharing system will be required to provide accurate time information for each device and the synchronization between them. In addition, this time should be based on the best information available at low cost, and stability at home. In order to achieve the desired system, various devices necessary for the time information captured may be considered, for example, real-time clock in the microprocessor unit incorporated in a plurality of appliances. However, since it is based on the principle of an inexpensive quartz oscillation circuit in this alternative low accuracy.

Real 0.68% Prediction based on 198 tokens Fake 99.32%

GPT-2 Output Detector Demo

This is an online demo of the GPT-2 output detector model, based on the 🤖/Transformers implementation of RoBERTa. Enter some text in the text box; the predicted probabilities will be displayed below. The results start to get reliable after around 50 tokens.

Our company has built classification system to identify a successful primary task of the economic

Abuse of ChatGPT for research fabrication

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Regenerate response

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Cross reaction	k ₂₂ reaction	k ₁₁ reaction	ΔE(V) ^a	K ₁₂	k ₁₁ (M ⁻¹ s ⁻¹) ^b	k ₁₂ (M ⁻¹ s ⁻¹) ^b	k ₂₂ (caicd) (M ⁻¹ s ⁻¹)	λ(eV)
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					7.3×10 ^{6c}		4.19	
						2.6×10 ⁻⁵	3.60	

Withdrawn AI-written preprint on millipedes resurfaces, causing alarm

A preprint about millipedes that was written using OpenAI's chatbot ChatGPT is back online after being withdrawn for including made-up references, Retraction Watch has learned.



by software.

Financial regulation is competition innovation, to maintain the vitality individuals can be suppressed, it

of RoBERTa. Enter some text and 50 tokens.

ion in the present
n translated into
However, all the
oming increasingly
tandard system
ovide accurate time
; time should be
o achieve the
; considered, for
pliances. However,
alternative low

Real 0.68% Prediction based on 198 tokens Fake 99.32%

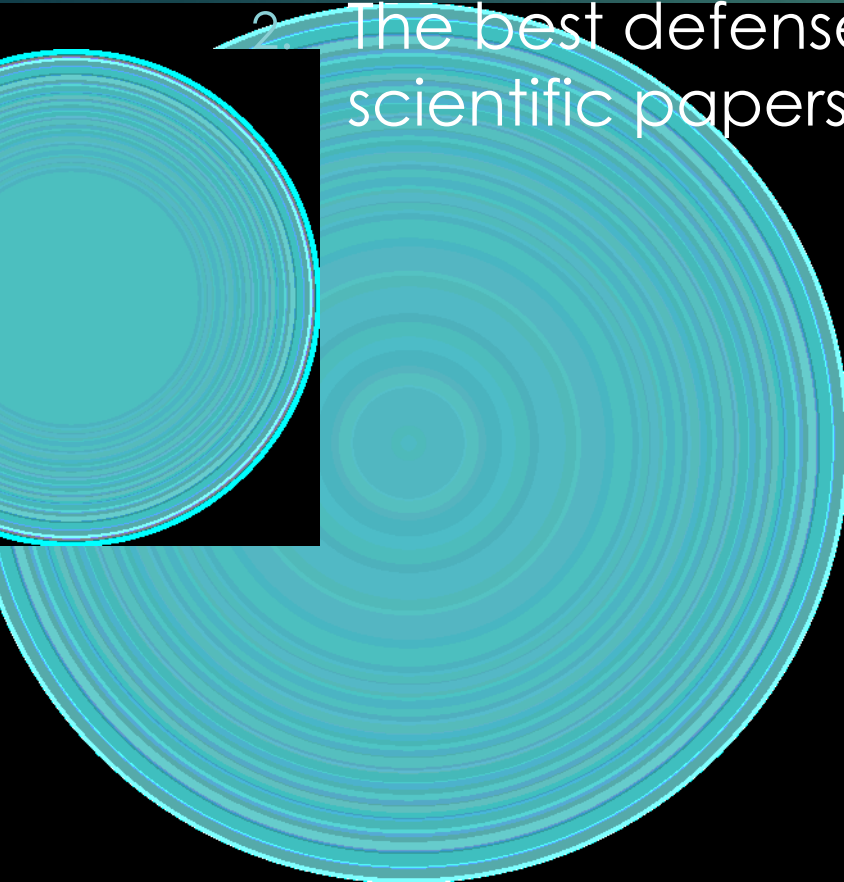
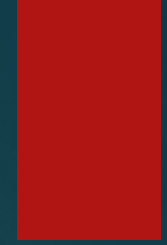
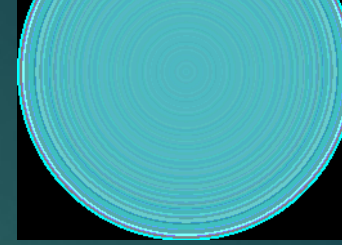
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Our company has built classification system to identify a successful primary task of the economic

What can we do?

1. Be informed.
2. The best defense is offense. Report problematic data in scientific papers, when you encounter them.



Information resources

- ▶ **Retraction Watch**

- ▶ <https://retractionwatch.com/>

- ▶ Good source of information about ongoing investigations and retracted papers.

- ▶ Also manages the database of all retractions:

- ▶ <http://retractiondatabase.org>



Ivan Oransky



Adam Marcus

Information sources

- ▶ **For Better Science**

- ▶ <https://forbetterscience.com/>

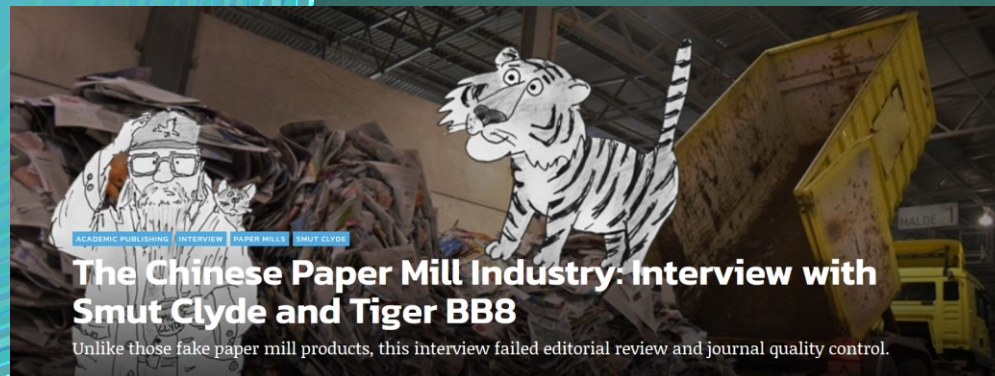
- ▶ Personal blog of Leonid Schneider.

- ▶ Writes about ongoing investigations, but also about cases which have not been investigated yet.

- ▶ Written in a humorous way.

- ▶ Contains detailed description of Paper Mills and how they were exposed:

- ▶ <https://forbetterscience.com/2021/05/26/the-chinese-paper-mill-industry-interview-with-smut-clyde-and-tiger-bb8/>



For Better Science

BY LEONID SCHNEIDER, ON RESEARCH INTEGRITY, BIOMEDICAL ETHICS AND ACADEMIC PUBLISHING



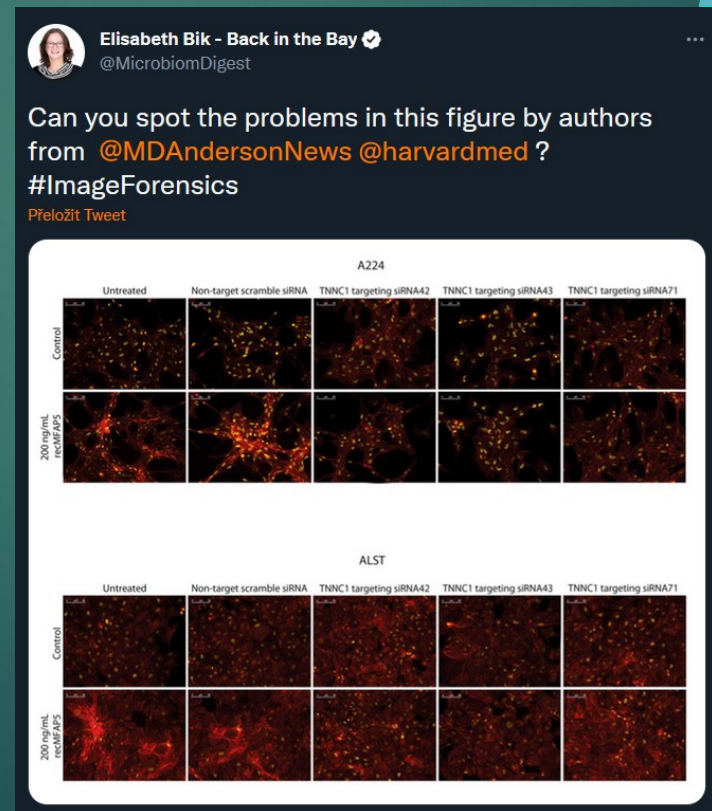
Leonid Schneider

Information sources

- ▶ **Science Integrity Digest**
- ▶ <https://scienceintegritydigest.com/>
- ▶ Blog of Elisabeth Bik, one of the leading sleuths in biomedical research.
- ▶ Also very active on Twitter/X:



Profile picture of Elisabeth Bik. Bio: Science consultant, PhD. Microbiome, science integrity, image forensics. Trolls send me nasty stuff, and then cry when I block them. She/her 🇺🇸 🇩🇪 🇳🇱 🇫🇷. Location: San Francisco, CA. Website: scienceintegritydigest.com/about/. Joined: Uživatel se připojil říjen 2013. Followers: 43,5 tis. Following: 133 tis.



Elisabeth Bik - Back in the Bay @MicrobiomDigest

Can you spot the problems in this figure by authors from @MDAndersonNews @harvardmed? #ImageForensics

Přeložit Tweet

	Untreated	Non-target scramble siRNA	TNNC1 targeting siRNA42	TNNC1 targeting siRNA43	TNNC1 targeting siRNA71
A224					
Control					
200 ng/mL ricoflavin					
ALST					
Control					
200 ng/mL ricoflavin					



Elisabeth Bik

Science Integrity Digest

A blog about science integrity, by Elisabeth Bik, for Harbers-Bik LLC. Support my work at [Patreon.com/elisabethbik](https://patreon.com/elisabethbik)

The Iranian Plant Paper Mill



elisbik

September 15, 2022

Paper mills

Paper mills

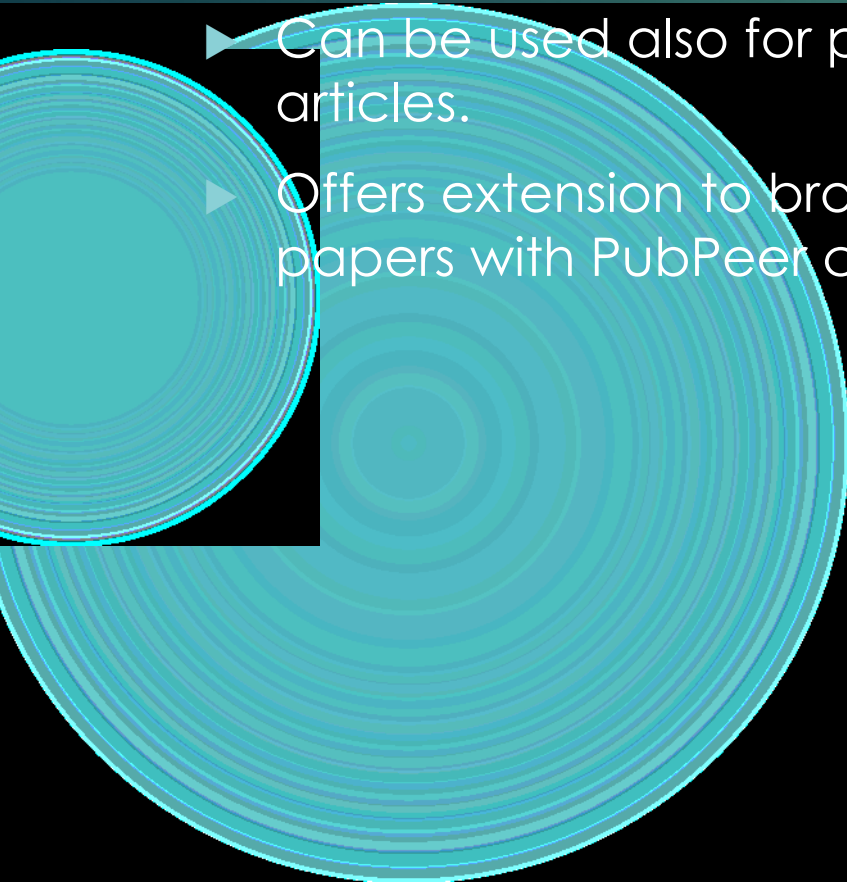
3 Comments

Previously I wrote about the [Tadpole Paper Mill](#) and the [Stockphoto Paper Mill](#) papers. [Paper Mills](#) are companies that sell fake or plagiarized scientific papers to authors who need them for their career. Certain countries have [strict requirements or monetary incentives](#) for medical doctors, graduate students, or other researchers to publish papers. In such countries, other researchers or business folks have found creative ways of making money by selling fake papers to researchers. Such paper mills are similar to [essay mills](#) where ghostwriters offer their services to undergraduate students.

Information sources



- ▶ **PubPeer**
- ▶ <https://pubpeer.com/>
- ▶ Discussion forum for individual articles (must have DOI or PMID identifier).
- ▶ Can be used also for publishing of long (post-publication) peer-reviews of articles.
- ▶ Offers extension to browsers and Zotero, which warns about the presence of papers with PubPeer comments.



There are 23 articles on this page with PubPeer comments

An official website of the United States government [Here's how you know](#)



23 potentially problematic articles out of 200 displayed!

Log in



Search bar containing "ror1 cancer" and a "Search" button.

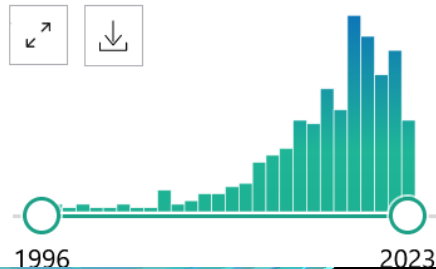
Advanced Create alert Create RSS User Guide

Save Email Send to Sort by: Best match Display options

MY NCBI FILTERS

360 results Page 1 of 2

RESULTS BY YEAR



- Tyrosine Kinase **ROR1** as a Target for Anti-Cancer Therapies.
1 Zhao Y, Zhang D, Guo Y, Lu B, Zhao ZJ, Xu X, Chen Y.
Cite Front Oncol. 2021 May 28;11:680834. doi: 10.3389/fonc.2021.680834. eCollection 2021.
PMID: 34123850 Free PMC article. Review.
Share Receptor tyrosine kinase **ROR1** plays an essential role in embryogenesis and is overexpressed in many types of malignant tumors. ...However, small molecule inhibitors targeting **ROR1** are underappreciated because of the initial characterization of **ROR1** as a pseud ...



PUBPEER

The online journal club

My Library - Zotero

File Edit View Tools Help

My Library The planar cell polarity pat... X

My Library

- Imported 4/2/2023, 5:59:24 PM
 - Baka
 - Diplomka
- My Publications
- Duplicate Items
- Unfiled Items
- Trash

Title	Creator	PubPeer
CD38 and ZAP-70 are functionally linked and mark CLL cells with high migratory potential	Deaglio et al.	1
Chronic lymphocytic leukaemia is driven by antigen-independent cell-autonomous signalling	Dühren von Minden et al.	1
Coactivation of Rac and Rho by Wnt/Frizzled signaling is required for vertebrate gastrulation	Habas et al.	1
Ryk-mediated Wnt repulsion regulates posterior-directed growth of corticospinal tract	Liu et al.	1
Protein Kinase C β Controls Nuclear Factor κ B Activation in B Cells Through Selective Regulation of the I κ B Kinase α	Saijo et al.	1
Microtubules Regulate Migratory Polarity through Rho/ROCK Signaling in T Cells	Takesono et al.	2
ADP-ribosyl Cyclase and CD38 Catalyze the Synthesis of a Calcium-mobilizing Metabolite from NADP +	Aarhus et al.	
Inturned Localizes to the Proximal Side of Wing Cells under the Instruction of Upstream Planar Polarity Proteins	Adler et al.	
Recessive Robinow syndrome, allelic to dominant brachydactyly type B, is caused by mutation of ROR2	Afzal et al.	
Signaling across the synapse: a role for Wnt and Dishevelled in presynaptic assembly and neurotransmitter release	Ahmad-Annur et al.	

Using PubPeer to notify others about problematic data



- ▶ Allows to post about the concerns connected to individual articles.
- ▶ Discussion is moderated, which prevents baseless personal attacks.
- ▶ Posts can be anonymous or under your own name.
- ▶ By posting your question or concern, you can notify authors about the discovered problems (PubPeer sends email notifications to the corresponding author).
- ▶ Even if the authors decide to not react, your post can warn other researchers about potential problems with the article.
- ▶ PubPeer posts have been recently used as a base for institutional investigation.

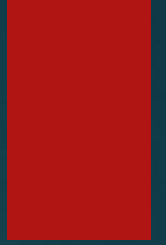
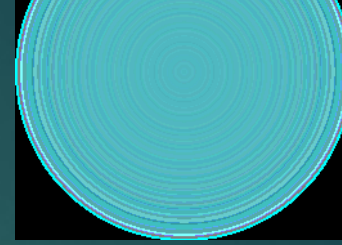


Summary

- ▶ Scientific publishing system is by large based on trust in the honest conduct of authors.
- ▶ Currently, this system fails due to multiple factors which endangers public trust in research.
- ▶ In all phases of working with literature, it is important to be aware of the existence of problematic publications and to avoid spreading their influence.
- ▶ Part of the problematic publications can be identified based on image data.
- ▶ Other types of problematic publications are hard to identify, it is therefore important to be informed about the latest developments in publishing ethics.
- ▶ Protecting human knowledge from misinformation is the main duty of a researcher. It is therefore necessary to actively address and critique problematic publications and demand their correction or retraction.

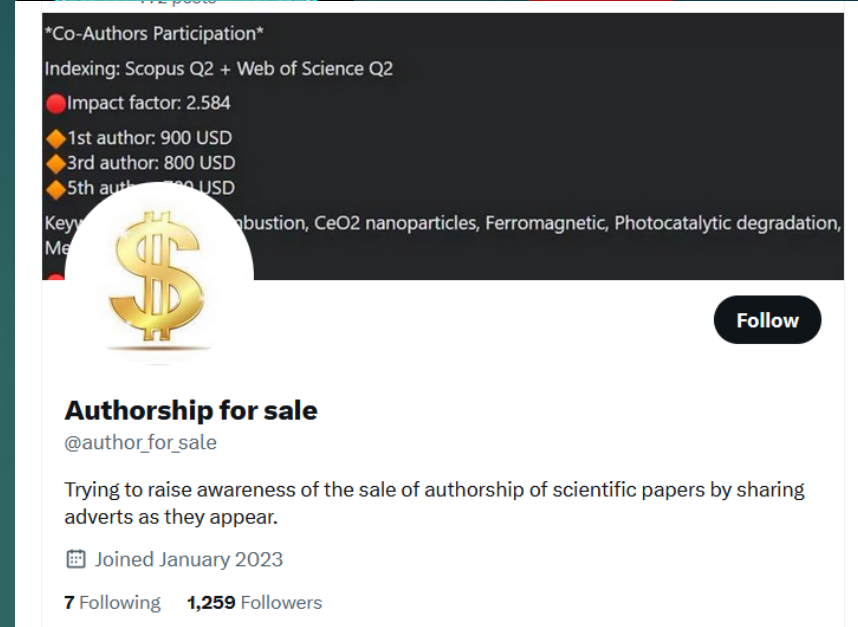


Thank you for your attention!



Bonus: Are we doing it wrong?

Publication fees too expensive? Sell the spots on your paper!



Co-Authors Participation

Indexing: Scopus Q2 + Web of Science Q2

● Impact factor: 2.584

- ◆ 1st author: 900 USD
- ◆ 3rd author: 800 USD
- ◆ 5th author: 600 USD

Key words: Combustion, CeO2 nanoparticles, Ferromagnetic, Photocatalytic degradation, Me...

Me...

Authorship for sale
@author_for_sale

Trying to raise awareness of the sale of authorship of scientific papers by sharing adverts as they appear.

📅 Joined January 2023

7 Following 1,259 Followers



Salim Kallel ▶ Education And Social Science Research Publication

7 June 2022 · 🌐

Co-Authors Participation

Indexing: Scopus + Web of Science

📈 Impact factor: 5.98

- 4th author: 950 USD
- 5th author: 900 USD
- 7th author: 800 USD
- 8th author: 750 USD
- 11th author: 600 USD

Title: The Association between Prenatal Exposure to Polycyclic Aromatic Hydrocarbons and Childhood Intelligence, a Systematic Review of Observational Studies

The association between prenatal exposure to polycyclic aromatic hydrocarbons and childhood intelligence: a systematic review of observational studies

Pushpamala Ramaiah¹, Farag M A Altalbawy^{2 3}, Ria Margiana^{4 5 6}, N Bharath Kumar⁷, Fitriani Kahar⁸, Abduladheem Turki Jalil⁹, Aan Komariah¹⁰, Virgilio E Failoc-Rojas¹¹, Mustafa M Kadhim¹², R Sivaraman¹³, A Heri Iswanto¹⁴, Yasser Fakri Mustafa¹⁵, Moslem Lari Najafi¹⁶

Frontiers retracts nearly 40 papers linked to 'authorship-for-sale'

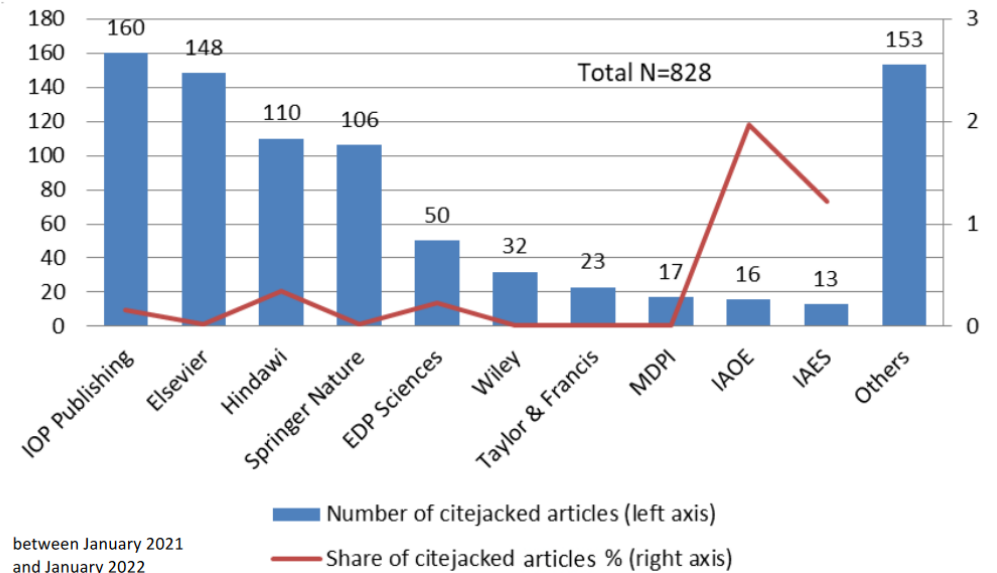
Bonus: Are we doing it wrong?

Hijacked journals

- Use cloned websites and ISSN identifiers of established journals.
- Articles do not undergo peer review and publication fee goes to hijackers.
- Using fake identifiers, the articles can be indexed in Scopus anyway and cited.
- Articles citing papers from hijacked articles are called "citejacked".
- Retraction Watch Hijacked Journal Checker:

- <https://retractionwatch.com/retraction-watch-hijacked-journal-checker/>

Number and share of **citejacked articles** per publisher (top 10 only)



https://www.irit.fr/~Guillaume_Cabanac/problematic-paper-screener/ACLM_Citejack

Bonus: Are we doing it wrong?

Sneaked references

- Citation manipulation is one of the most common “publication crimes”.
 - Self-citations.
 - Citing of irrelevant articles.
 - Omitting important sources.
- It is however not so hard to detect.
- Sneaked citations are citations only present in article metadata.
 - Not visible to readers in the article itself.
 - Not visible even to authors/editors.

<https://retractionwatch.com/2023/10/09/how-thousands-of-invisible-citations-sneak-into-papers-and-make-for-fake-metrics/>

How thousands of invisible citations sneak into papers and make for fake metrics

In 2022, Guillaume Cabanac noticed something unusual: a study had attracted more than 100 citations in a short span of less than two months of being published.

Views
375
Downloads
230

Citations

