



## AI and authorship:

What does the development of AI tools mean for publication ethics and authorship?

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**SPRINGER NATURE**

# What is Springer Nature?

Leading global research publisher

9.4k employees in over 45 countries



## OUR DIVISIONS



RESEARCH



EDUCATION

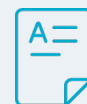


HEALTH

## IN RESEARCH ALONE



Handling  
**1.8m+**  
article submissions



Publishing  
**420,400+**  
articles a year and



**8.5 billion+**  
content downloads



**14,000+**  
research books



Coordinating a team of  
**100,000+**  
academic editors



**750,000+**  
peer reviewers



Research represents  
**c72%** of Springer Nature



# AI and Authorship: Threats

# AI Explosion in AI Solutions

## Examples of generative AI solutions for content creation

**Text**

**MARKETING**

- copy.ai
- Jasper
- Writesonic
- Ponzu
- frase
- copysmith
- Mitiny
- Moonbeam
- Bertha.ai
- anyword
- Hypotenuse AI
- Clickable
- letterdrop
- Simplified
- Peppertype.ai
- Omneky
- CONTENDA

**AI ASSISTANTS**

- Andi
- Quickchat

**SALES**

- LAVENDER
- Smartwriter.ai
- Twain
- Outplay
- Reach
- regie.ai
- Creatext

**SUPPORT (CHAT/EMAIL)**

- Cohere
- KAIZAN\*
- Typewise
- CRESTA
- XOXind

**GENERAL WRITING**

- Rytr
- wordtune
- Subtxt
- LEX
- sudowrite
- LAIKA
- NovelAI
- WRITER
- COMPOSE AI
- OTHERSIDEAI

**KNOWLEDGE**

- glean
- mem
- YOU!

**OTHER**

- Character.AI
- AI DUNGEON
- KEYS

MODELS: OPENAI GPT-3 DEEPMIND GOPHER FACEBOOK OPT HUGGING FACE BLOOM COHERE ANTHROPIC AI2 GPT-NEOX GPT-J AI21 ALIBABA, YANDEX, ETC.

**Other**

**MUSIC**

- SPLASH
- Mubert
- Ava Technologies
- Endel
- boomy
- Harmonai
- SONIFY

**GAMING**

- AI DUNGEON

**RPA**

- Adept
- māyā

**AI CHARACTERS/AVATARS**

- Character.AI
- inworld
- The Simulation
- OASIS

**BIOLOGY/CHEMISTRY**

- Cradle

**VERTICAL APPS**

- Harvey

MODELS: OPENAI JUKEBOX

**Video**

**EDITING/GENERATION**

- runway
- Fliki
- Düiverse
- Opus

**PERSONALIZED VIDEOS**

- tavus
- synthesia
- Hour One.
- Rephrase.ai
- Colossyan
- Morio

MODELS: MICROSOFT X-CLIP META MAKE-A-VIDEO

**Image**

**IMAGE GENERATION**

- MidJourney
- OpenArt
- craiyon
- PLAYGROUND
- WEMBOAI
- PhotoRoom
- ROSEBUD.AI
- alpaca
- Lexica
- Nyx + gallery
- mage.space
- KREA
- artbreeder

**CONSUMER/SOCIAL**

- MidJourney

**MEDIA/ADVERTISING**

- SALT
- THE CULTURE DAO

**DESIGN**

- Diagram
- uizard
- VIZCOM
- Aragon
- Poly
- maket
- INTERIOR AI
- CALA

MODELS: OPENAI DALL-E 2 STABLE DIFFUSION CRAIYON

**Code**

**CODE GENERATION**

- GitHub Copilot
- replit GhostWriter
- tobnine
- MUTABLEAI

**TEXT TO SQL**

- AI 2sql
- seek

**WEB APP BUILDERS**

- Debuild
- Enzyme
- durable

**DOCUMENTATION**

- Mintlify
- Stenography

**OTHER**

- excel/formulabot

MODELS: OPENAI GPT-3 TABNINE CODEGEEK

**Speech**

**VOICE SYNTHESIS**

- RESEMBLE.AI
- broads
- WELLSAID
- coqui
- podcast.ai
- descript overdub
- Fliki
- Listnr
- REPLICA
- VOICEMOD

MODELS: OPENAI

**3D**

**3D MODELS/SCENES**

- mirage
- CSM

MODELS: DREAMFUSION NVIDIA GET3D MDM APPLE ML

This list is growing by the day!

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## 4 practical Generative AI ‘text’ use cases

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1

### Text Generation

LLMs such as GPT-4 can generate text from scratch based on prompts such as “Write a report about latest developments in AI.” This use case needs to be taken with caution as **this kind of text generation often hallucinates text components which are not correct.**

2

### Text Conversion

LLMs can convert texts in many ways, from long to short (summarization) and vice versa, from complex to simple and vice versa, language translation. This is a very powerful set of use cases to be explored. **It requires human fact-checking.**

3

### Text Interrogation

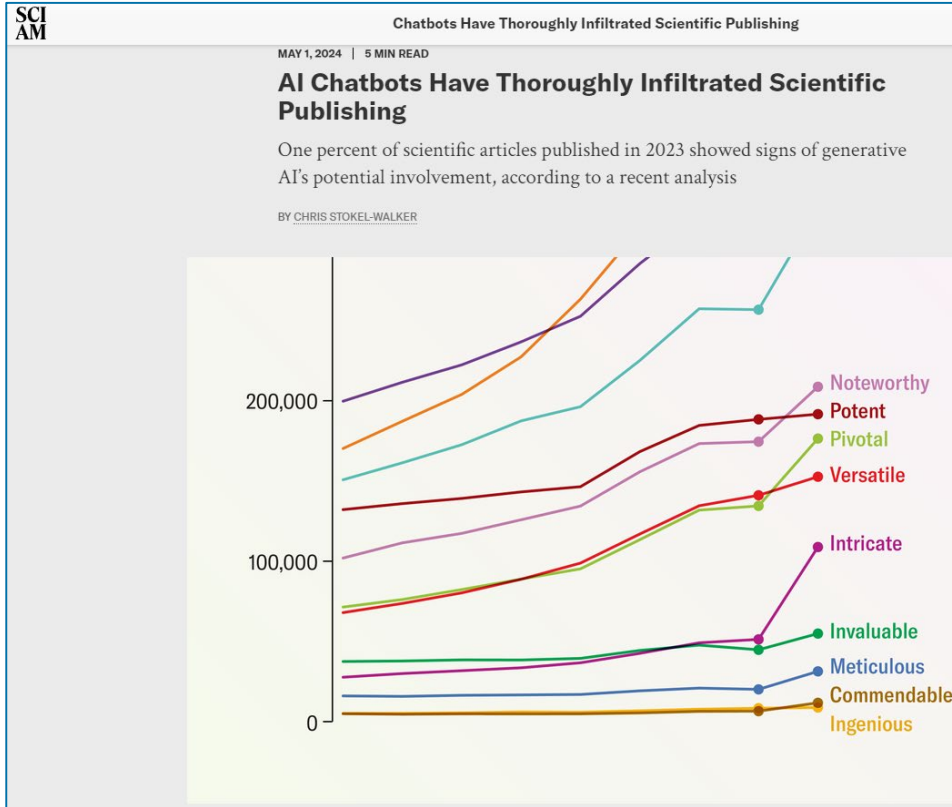
LLMs allow users to interrogate given texts such as “What are the key recommendations?” This is a very powerful use case as it holds the potential to greatly advance qualitative research. **It requires human fact-checking.**

4

### Idea Generation

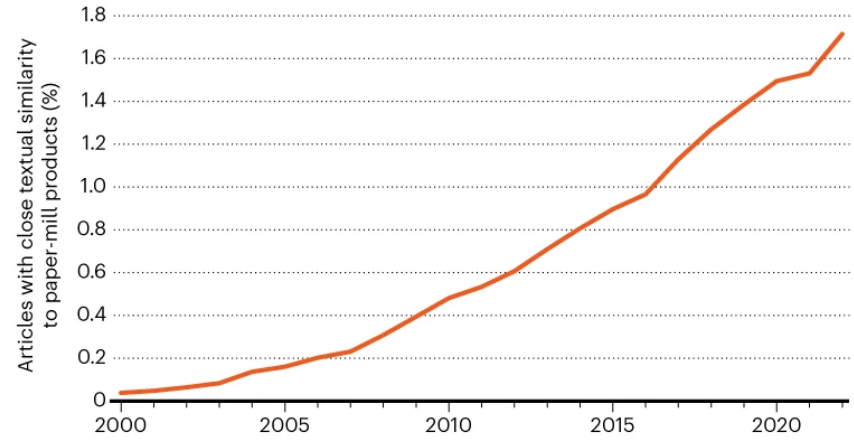
LLMs are also a powerful innovation tools accelerating ideation processes. Prompts such as “Come up with 50 ideas for my next research in Computational Linguistics” are great starting points for brainstorming and idea generation.

# AI generated manuscript text



## THE PAPER-MILL PROBLEM

A software analysis finds that articles with close textual similarity to paper-mill products are rising as a proportion of the literature.

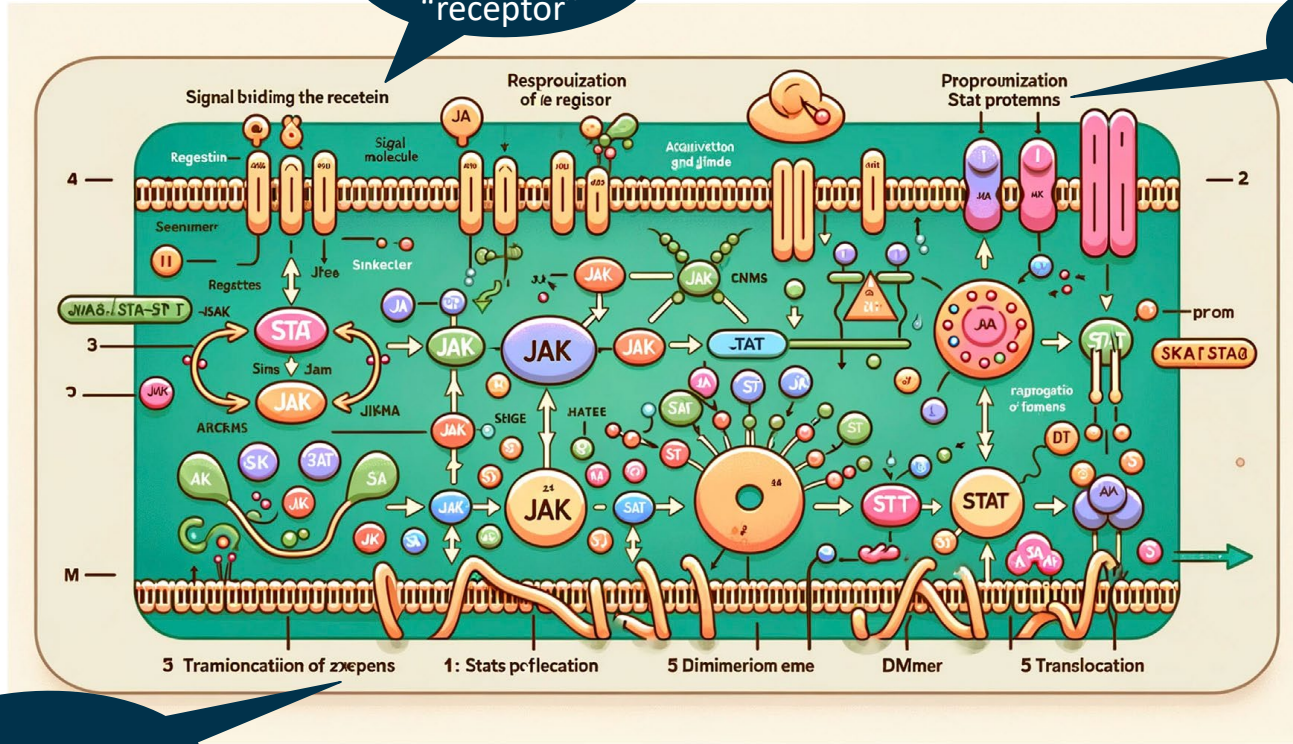


©nature

Source: Adam Day, unpublished estimates



# AI generated images



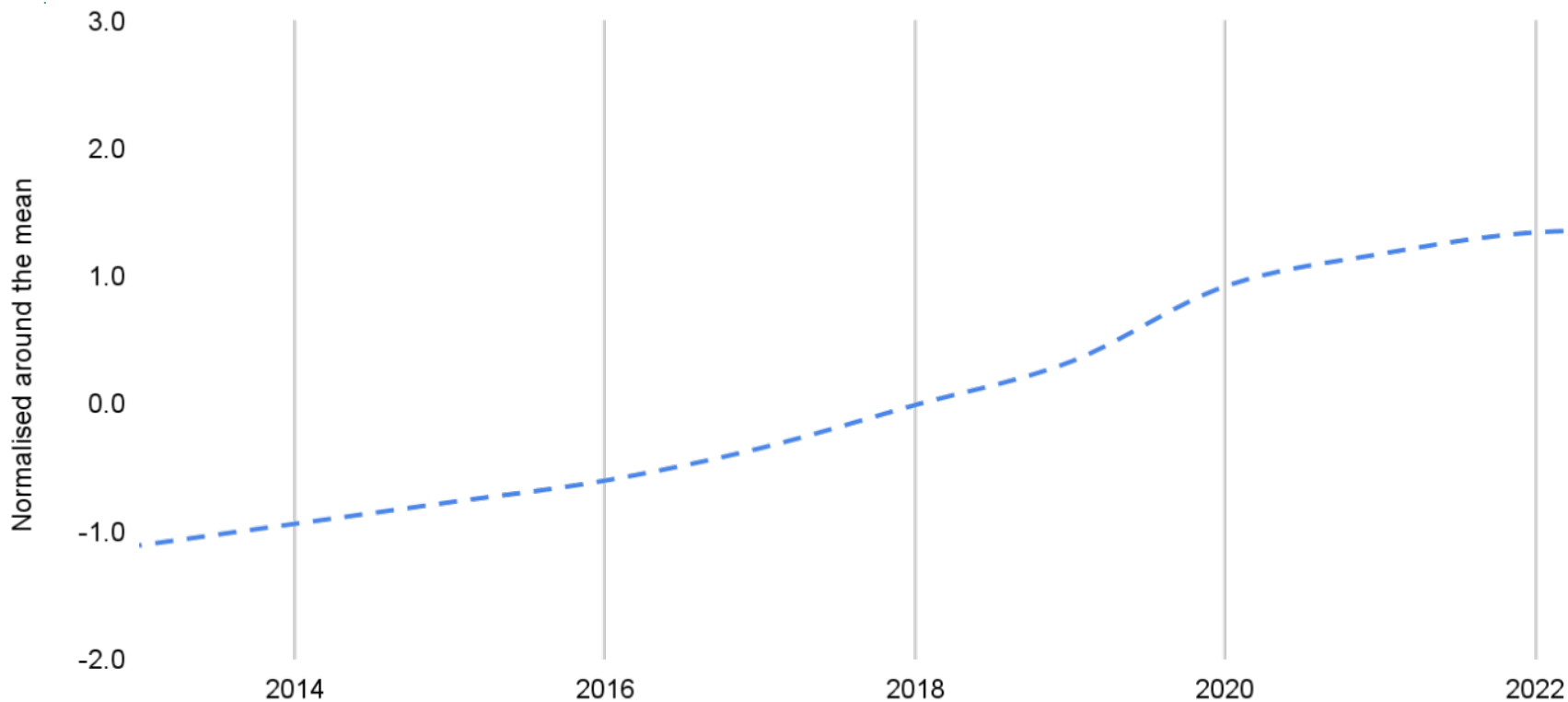
“recetain”  
not  
“receptor”

“protemns”  
not  
“proteins”

“zxpens”??

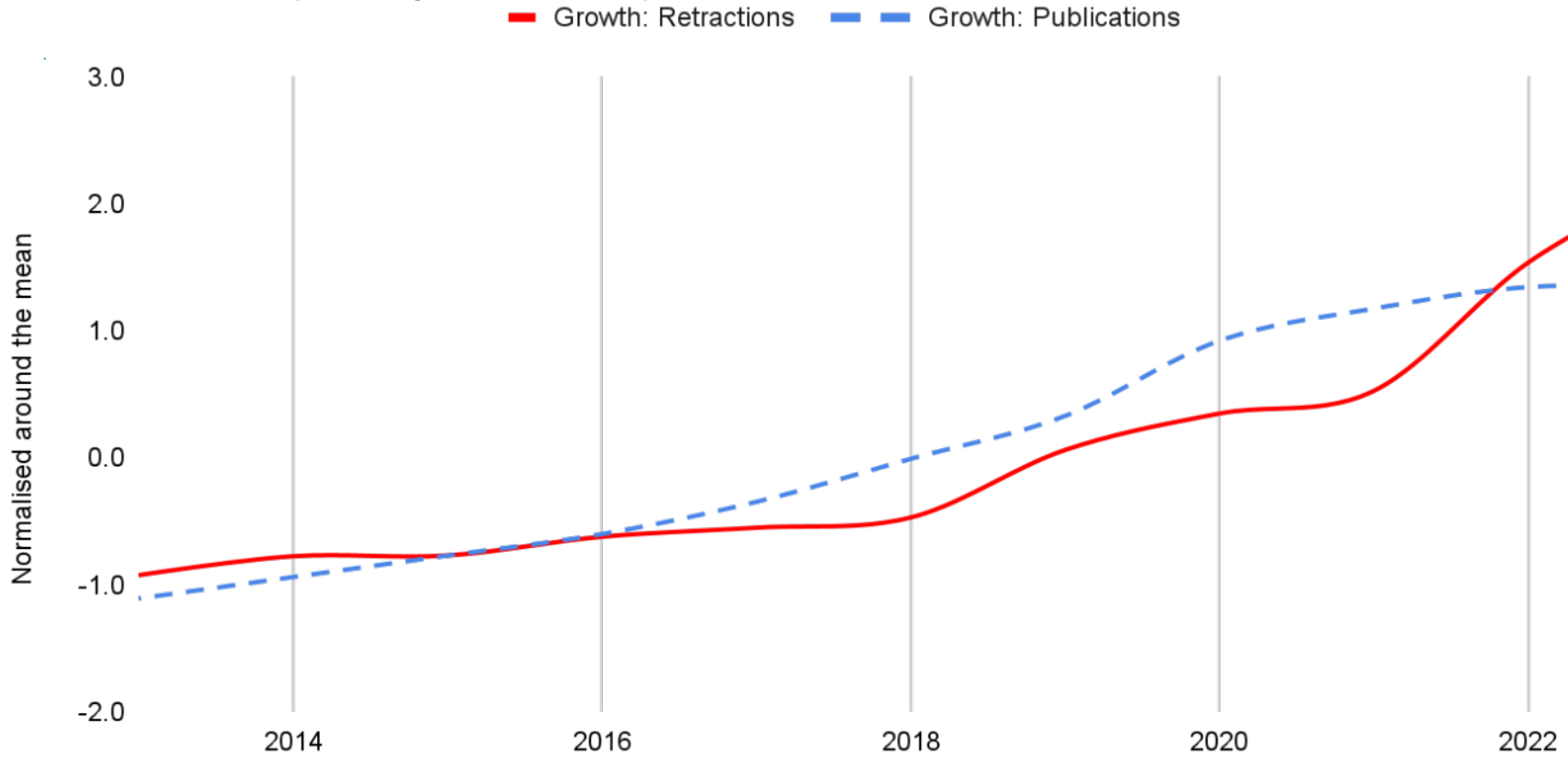
# Retractions (after publication)

Growth: Retractions    Growth: Publications





# Retractions (after publication)





**AI and  
Authorship:  
Policy**

# 5 Ethical Principles for AI at Springer Nature

## Dignity, Respect and Minimising Harm

We prioritize human well-being and dignity, and take steps to prevent harm to society and the environment.

## Fairness and Equity

We mitigate the potential for structural bias and inequities.

## Transparency

We disclose when an AI system is being used and explain our processes in accessible language.

## Accountability

We maintain human oversight of the development and outcomes generated by our AI tools and solutions.

## Privacy and Data Governance

We safeguard personal privacy and follow all relevant data protection laws.

# LLM Springer Nature Editorial Policy

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EDITORIAL | 24 January 2023

## Tools such as ChatGPT threaten transparent science; here are our ground rules for their use

As researchers dive into the brave new world of advanced AI chatbots, publishers need to acknowledge their legitimate uses and lay down clear guidelines to avoid abuse.

That's why it is high time researchers and publishers laid down ground rules about using LLMs ethically. *Nature*, along with all Springer Nature journals, has formulated the following two principles, which have been added to our existing guide to authors (see [go.nature.com/3j1jxsw](https://go.nature.com/3j1jxsw)). As *Nature's* news team has reported, [other scientific publishers are likely to adopt a similar stance](#).

First, no LLM tool will be accepted as a credited author on a research paper. That is because any attribution of authorship carries with it accountability for the work, and AI tools cannot take such responsibility.

Second, researchers using LLM tools should document this use in the methods or acknowledgements sections. If a paper does not include these sections, the introduction or another appropriate section can be used to document the use of the LLM.

# LLM Springer Nature Editorial Policy

Should *Nature* allow generative artificial intelligence (AI) to be used in the creation of images and videos? This journal has been discussing, debating and consulting on this question for several months following the explosion of content created using generative AI tools such as ChatGPT and Midjourney, and the rapid increase in these platforms' capabilities.

Apart from in articles that are specifically about AI, *Nature* will not be publishing any content in which photography, videos or illustrations have been created wholly or partly using generative AI, at least for the foreseeable future.

Artists, filmmakers, illustrators and photographers whom we commission and work with will be asked to confirm that none of the work they submit has been generated or augmented using generative AI (see [go.nature.com/3c5vrtm](https://go.nature.com/3c5vrtm)).

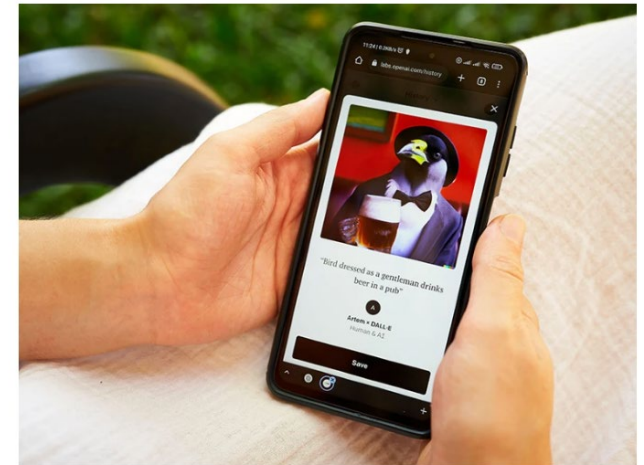
## How are publishers adapting to the popularity of these tools?

Journals differ in their policies around AI-generated imagery. Springer Nature has [banned the use of AI-generated images, videos and illustrations in most journal articles that are not specifically about AI](#) (*Nature's* news team is independent of its publisher, Springer Nature). Journals in the Science family [do not allow AI-generated text, figures or images](#) to be used without explicit permission from the editors, unless the paper is specifically about AI or machine learning. *PLOS ONE* [allows the use of AI tools](#) but states that researchers must declare the tool involved, how they used it and how they verified the quality of the generated content.

EDITORIAL | 07 June 2023

## Why *Nature* will not allow the use of generative AI in images and video

Saying 'no' to this kind of visual content is a question of research integrity, consent, privacy and intellectual-property protection.

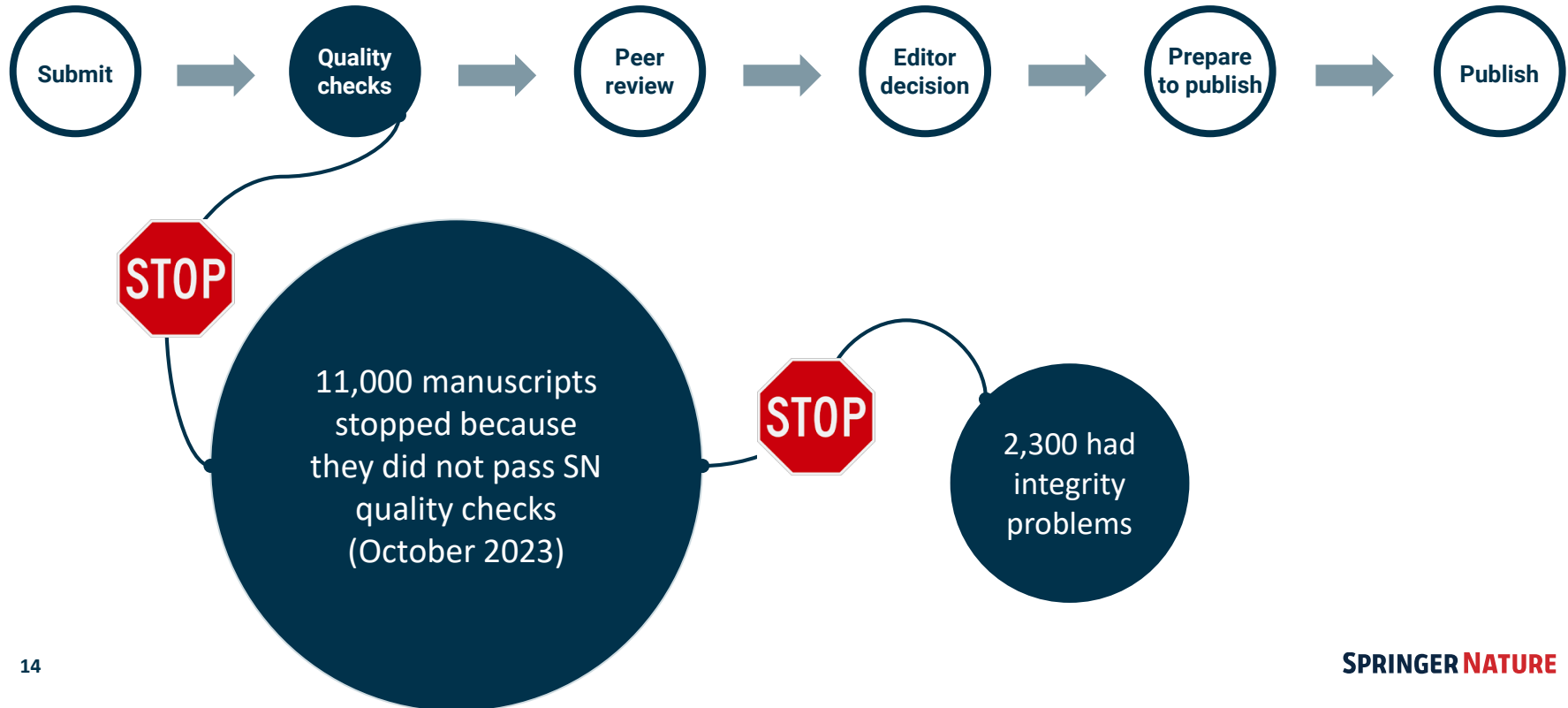


*Nature* will not publish imagery created wholly or partly using generative AI. Credit: Artem Medvediev/Alamy

**AI and  
Authorship:  
technology  
and people**

# Problem prevention (before publication)

Springer Nature removes articles with integrity problems before peer review





# LLM vs. LLM

Geppetto, launched 20 November 2023

**Distribution of  
earthquake activity in mountain area  
based on embedded system and  
physical fitness detection of basketball**

LLM vs. LLM

SnappShot, currently in testing

# Snapshot

## Pairing AI with human expertise

The screenshot displays the SnappShot interface. On the left, a sidebar shows a list of issues: Issue-edb5, Issue-4c7d, Issue-62e2, Issue-c990, Issue-bd6c, and Issue-a247. The main document area shows a Western blot with three rows of bands. The first row is labeled 'FAK<sub>207</sub>' and the second row is labeled 'perk1/2'. Each row has three columns of bands, with labels above them: 'L1<sub>S1194L</sub>/Nrp1', 'L1<sub>S1224L</sub>/Nrp1', and 'L1/Nrp1'. Each column has sub-labels '3A' and 'cont'. The bands in the 'perk1/2' row are highlighted with a green box, and a red dashed box highlights a specific band in the 'L1<sub>S1224L</sub>/Nrp1' column. On the right, a 'Compare images for Issue-edb5' window is open, showing two side-by-side images of the Western blot with a 'Scaled' manipulation detected. The interface includes various controls like 'Image filters', 'Emboss filter', 'contrast', 'brightness', 'invert', and 'Opinion' options.

Document: test document  
Collection: x1j4cYhztCRh7ybZawZn1U02GeYz3gt

Compare images for Issue-edb5

Detected manipulations: Scaled

Related Pages: Page 7 Page 7

Opinion:  Flag  Clear

Note: Add note

SHOW CONTEXT

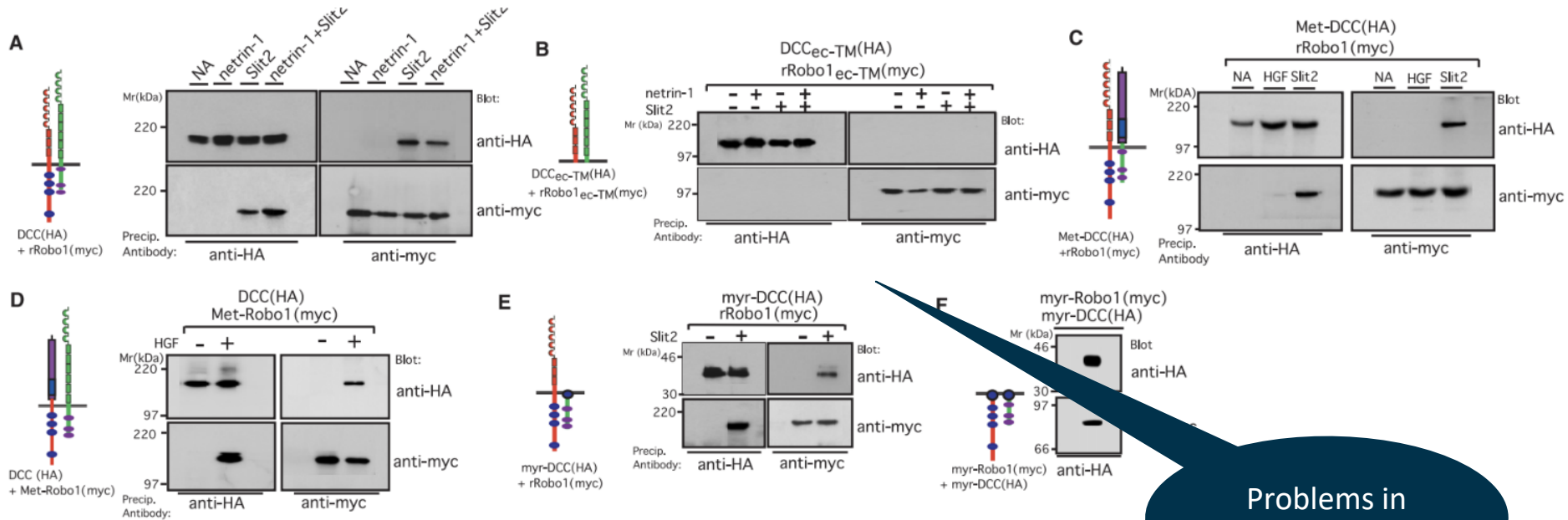
SHOW CONTEXT

18

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# University president resigns after investigation

<https://www.nature.com/articles/d41586-023-02438-3>



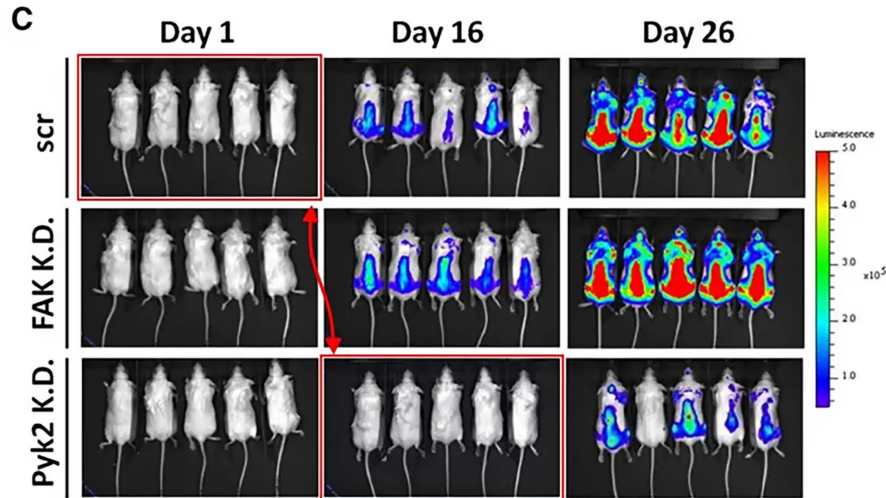
Problems in western blots

<https://www.science.org/doi/10.1126/science.adg2860>

<https://www.science.org/doi/10.1126/science.1058445>

# Using AI to detect image manipulation

## External Efforts



The New York Times

### *Top Cancer Center Seeks to Retract or Correct Dozens of Studies*

A British biologist and blogger discovered faulty data in many studies conducted by top executives of the Dana-Farber Cancer Institute.

Share full article



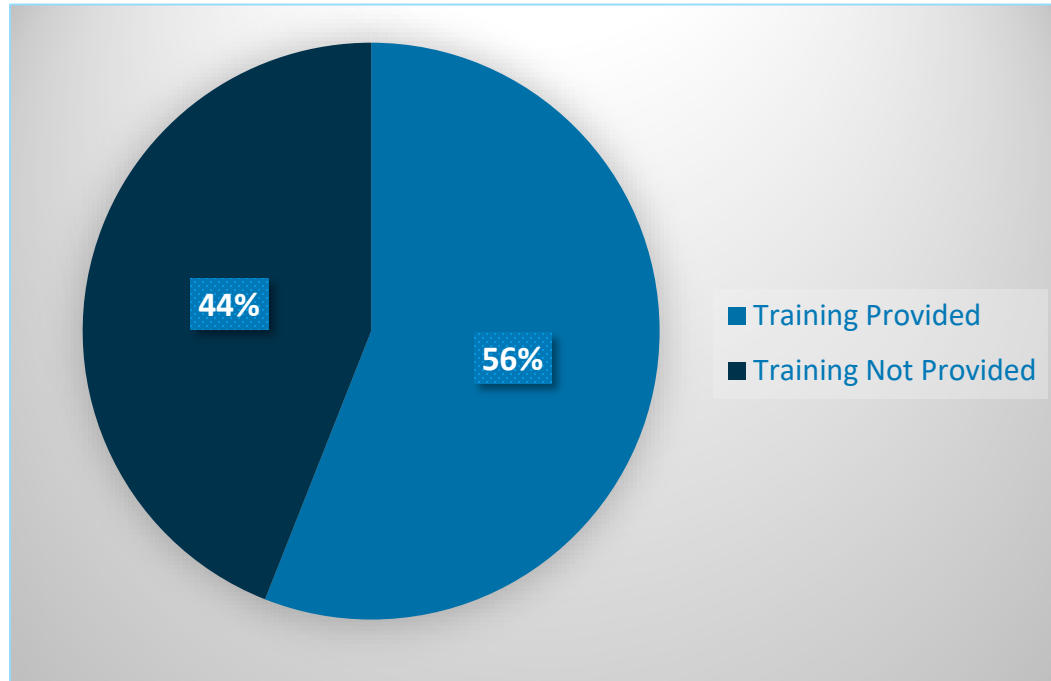
The Dana-Farber Cancer Institute in Boston is one of the nation's foremost cancer treatment and research facilities. Craig F. Walker/The Boston Globe, via Getty Images

# Resources



# 2023 SN Research Integrity US survey

Survey results indicate a need for resources and training



**56% of respondents have access to research integrity training, 44% do not**

New: April 2023

Free

# Research Integrity: An Introduction for Researchers

Research integrity is a key topic for everyone involved in science. However, it can present a bewildering array of topics, and early career researchers may receive little or no formal training in this area. How can you avoid common pitfalls and ensure your work is of the best possible standard? This course aims to give you an overview of the main areas in both research ethics and publication ethics.

We have designed this tutorial with early career researchers in mind, across all scholarly fields. Whether your work involves traditional lab work, field work or research that is literature or theory based, the principles of research ethics and publication ethics are still critical.

You will also have the opportunity to check your understanding with quiz questions as we go.



English



Self-paced



45 minutes



Menu

Home > On-demand Courses > Write & publish

## Research Integrity: Publication Ethics

New:  
September 2023

Free



For researchers in the natural sciences who want to improve their understanding of how to **publish research ethically and with integrity**



**7 experts** in publication ethics, including a Nature Portfolio journal Chief Editor, Caltech's Chief Research Policy Officer and an elected member of the Committee on Publication Ethics (COPE) Council



**Free course - available to all users who register**

8 hours of learning  
10-40-minute lessons

3-module course with a course certificate

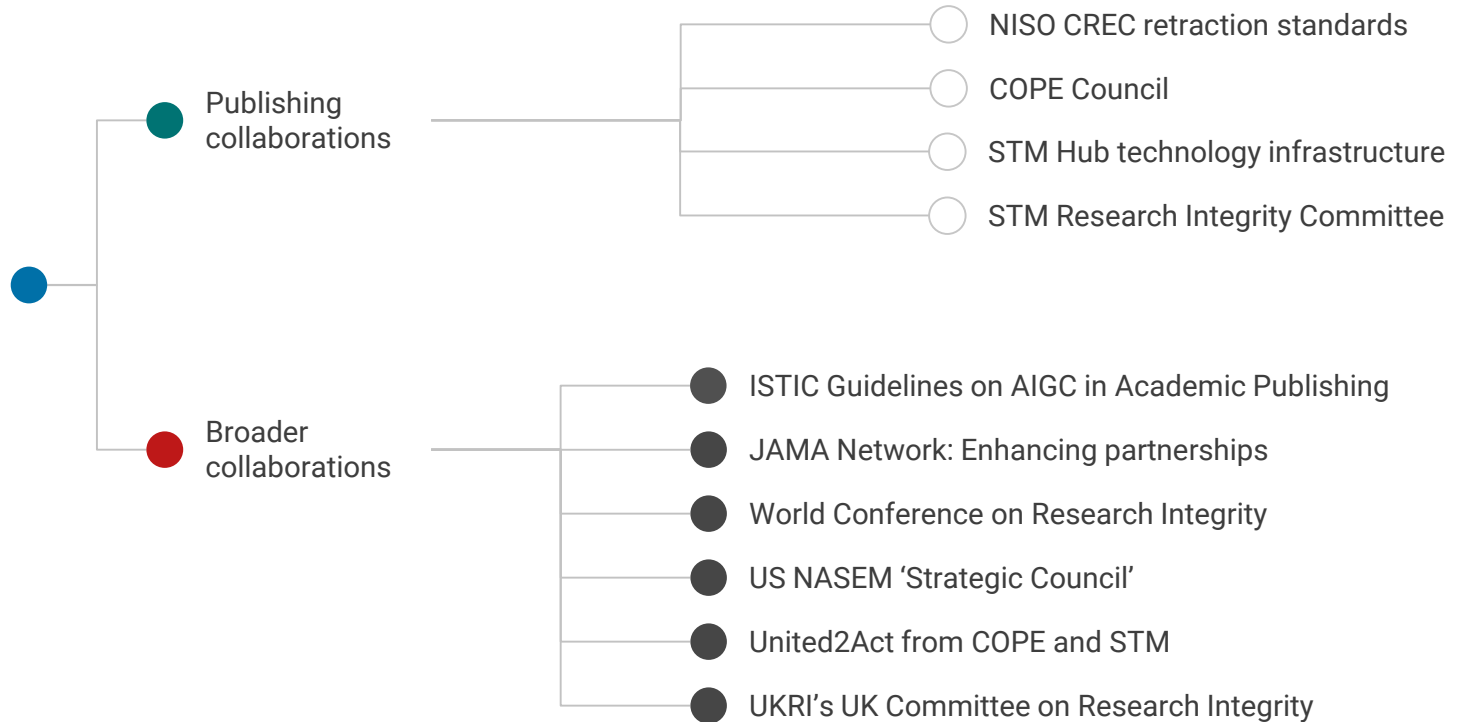
<https://masterclasses.nature.com/publication-ethics/25567404>



**Collaboration**

# Better, together

## Collaborations in Research Integrity, examples



**Thank you**

**Kaia Motter**

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