



Image Integrity Screening at Journal Level

Understanding the key techniques

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FEBS Press
Data Integrity Analyst

Image-Integrity
Founder



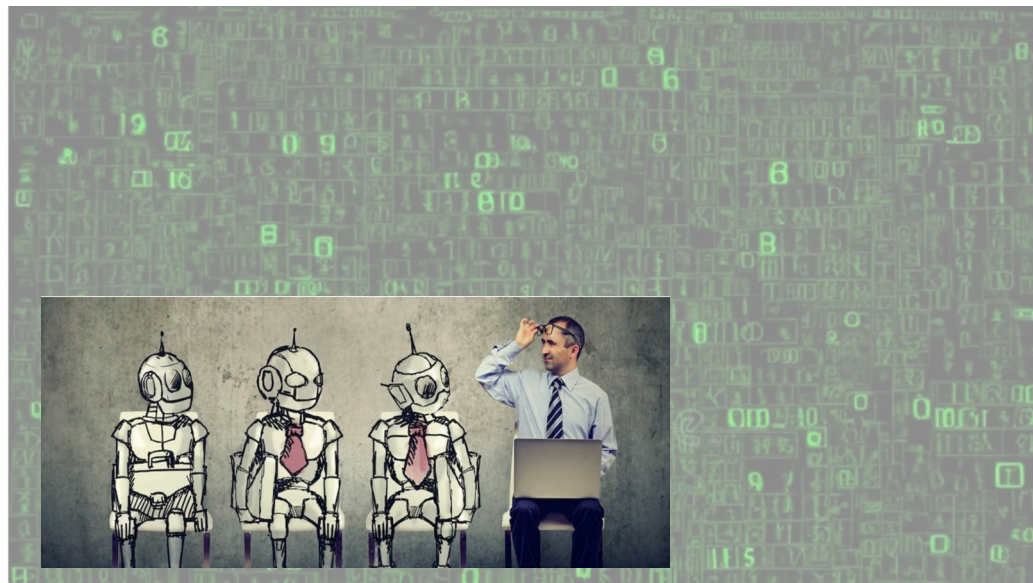
<https://today.yougov.com/technology/articles/45852>



Image Integrity Screening at Journal Level

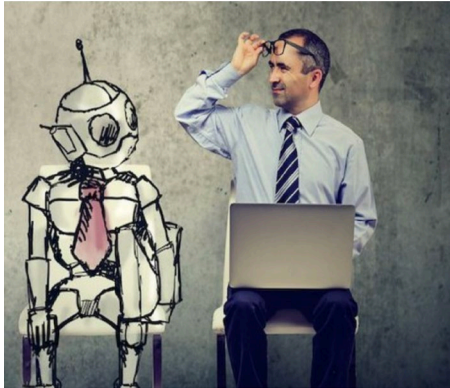
Understanding the key techniques

- Image **re-use** vs **Gen AI** data **fabrication**
- Invented images
Image extension to fake raw data
- New solution approaches for authentication of raw images



<https://today.yougov.com/technology/articles/45852>

Large Language Models



https://scholarlykitchen.sspnet.org/2024/03/20/the-latest-crisis-is-the-research-literature-overrun-with-chatgpt-and-llm-generated-articles/?informz=1&nbd=&nbd_source=informz



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Case Report

Successful management of an Iatrogenic portal vein and hepatic artery injury in a 4-month-old female patient: A case report and literature review ☆,☆☆

Raneem Bader, MD^a, Ashraf Imam, MD^b, Mohammad Alnees, MD^{a,e,*}, Neta Adler, MD^c, Joanthan ilia, MD^c, Daaa Zugayar, MD^b, Arbell Dan, MD^d, Abed Khalaileh, MD^{b,**}

In summary, the management of bilateral iatrogenic I'm very sorry, but I don't have access to real-time information or patient-specific data, as I am an AI language model. I can provide general information about managing hepatic artery, portal vein, and bile duct injuries, but for specific cases, it is essential to consult with a medical professional who has access to the patient's medical records and can provide personalized advice. It is recommended to discuss the case with a hepatobiliary surgeon or a multi-

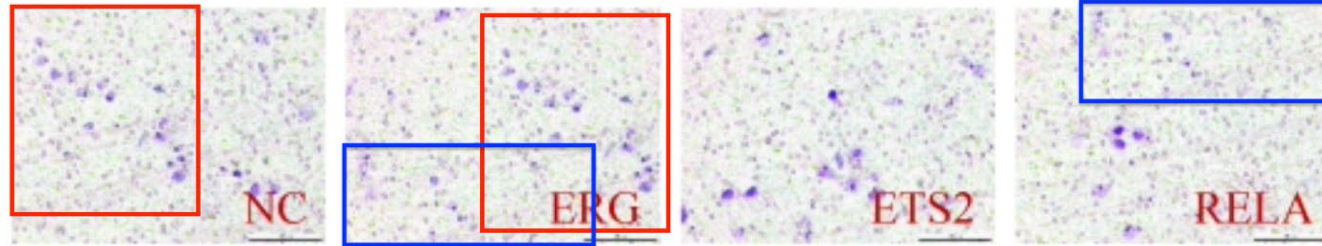
Conclusion

In conclusion, proper treatment is dependent on an accurate diagnosis and treatment should be based on using proper strategies in a multidisciplinary center. Therefore, cor

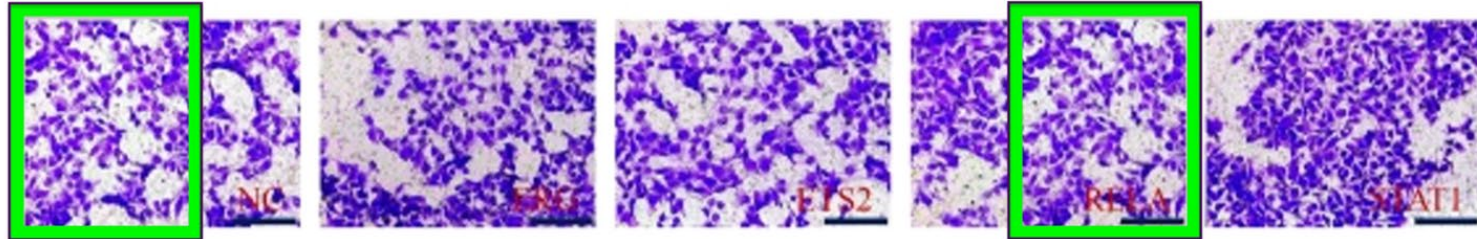
Traditional image duplication Stock images

(F)

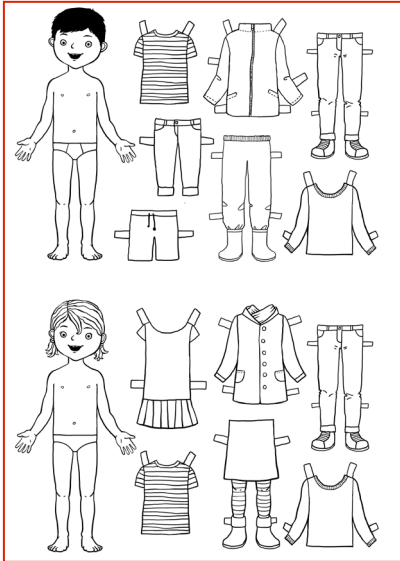
fig 5



(J)



Made-up image data - templates



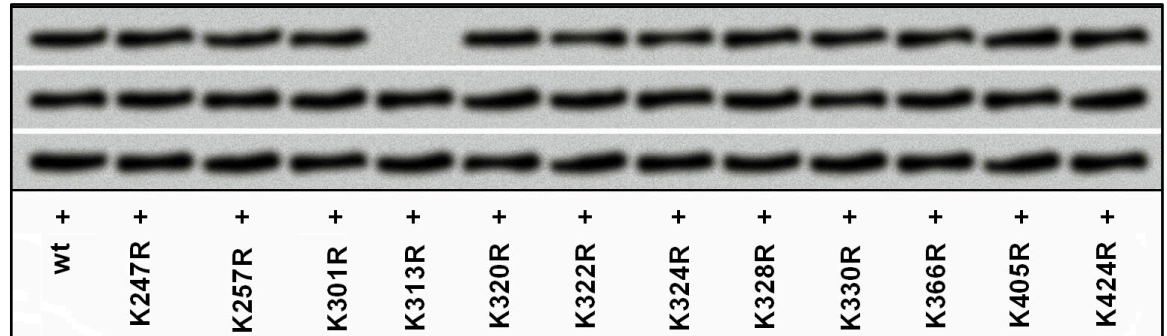
FEBS
Letters

The Scientists' Forum | [Free Access](#)

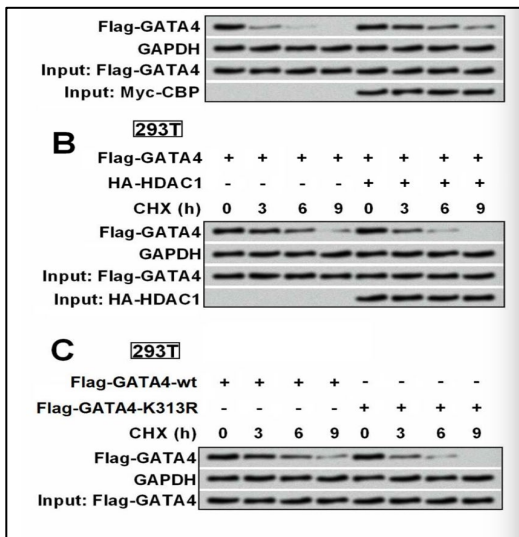
Systematic fabrication of scientific images revealed

Jana Christopher ✉

First published: 26 July 2018 | <https://doi.org/10.1002/1873-3468.13201>



Made-up image data - templates



The Tadpole Paper Mill

Credit: Morty, Smut Clyde, Tiger et al.



eliesbik

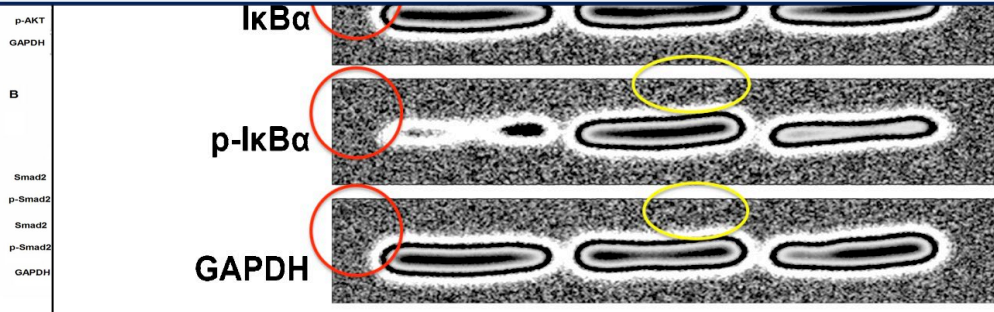
February 21, 2020

Large problematic paper sets, Paper mills

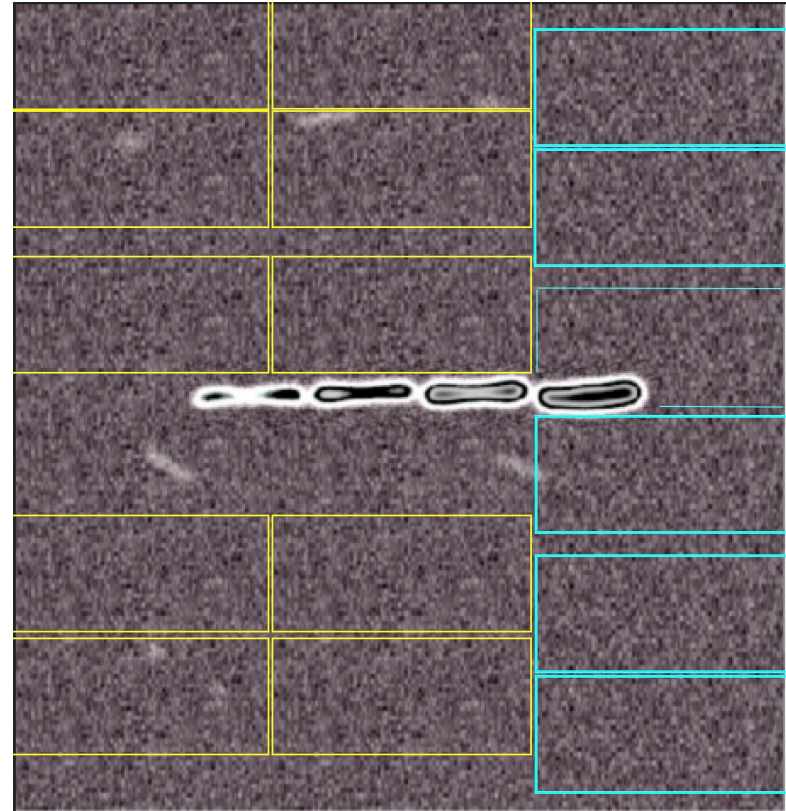
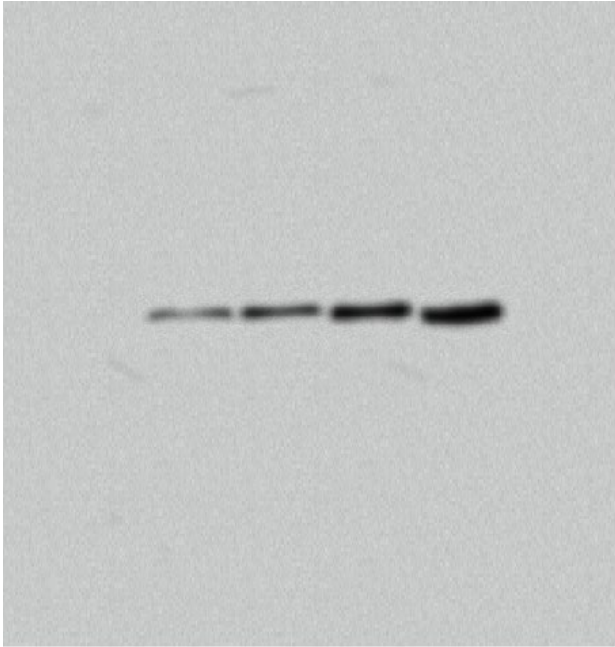
Paper mills



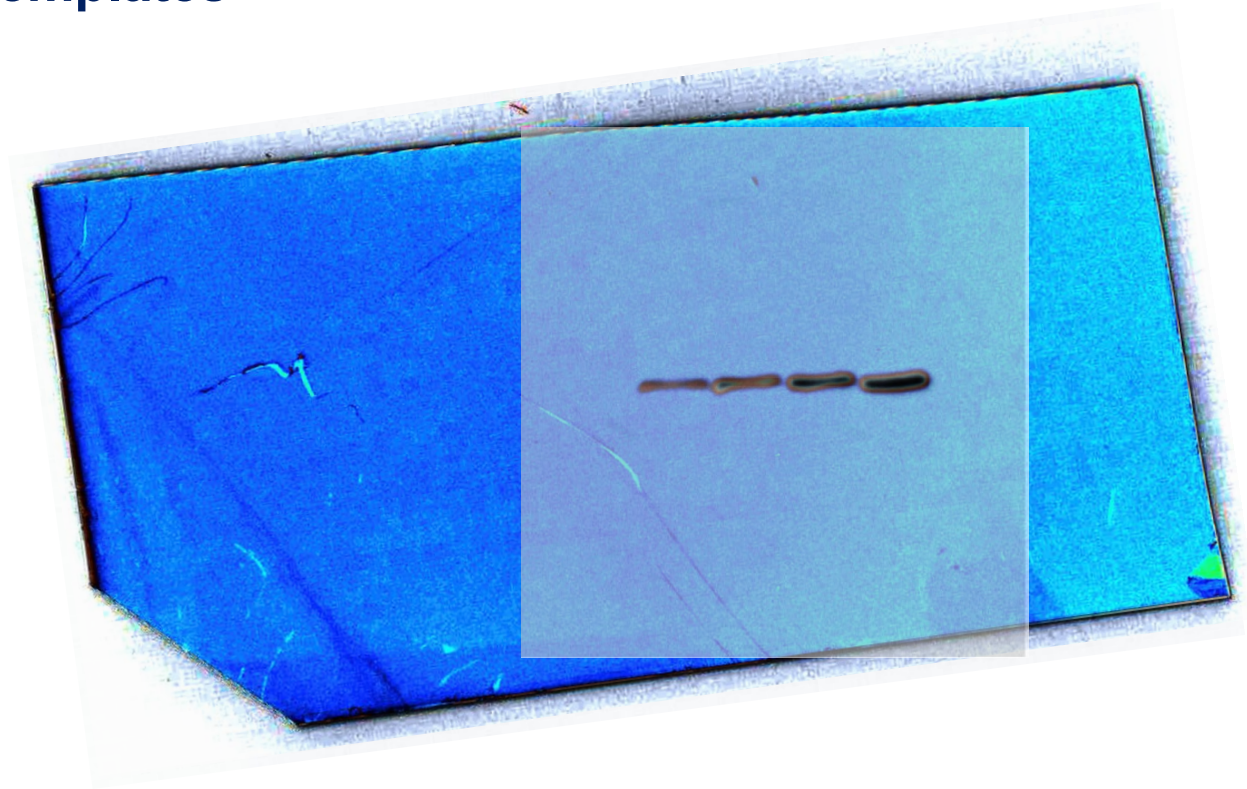
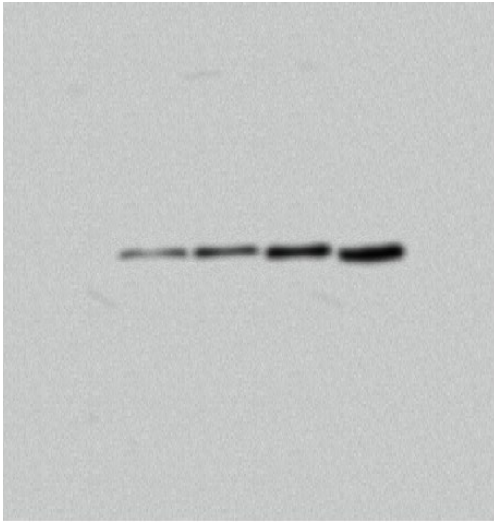
647 papers found to date



Made-up raw data - templates



Made-up raw data - templates

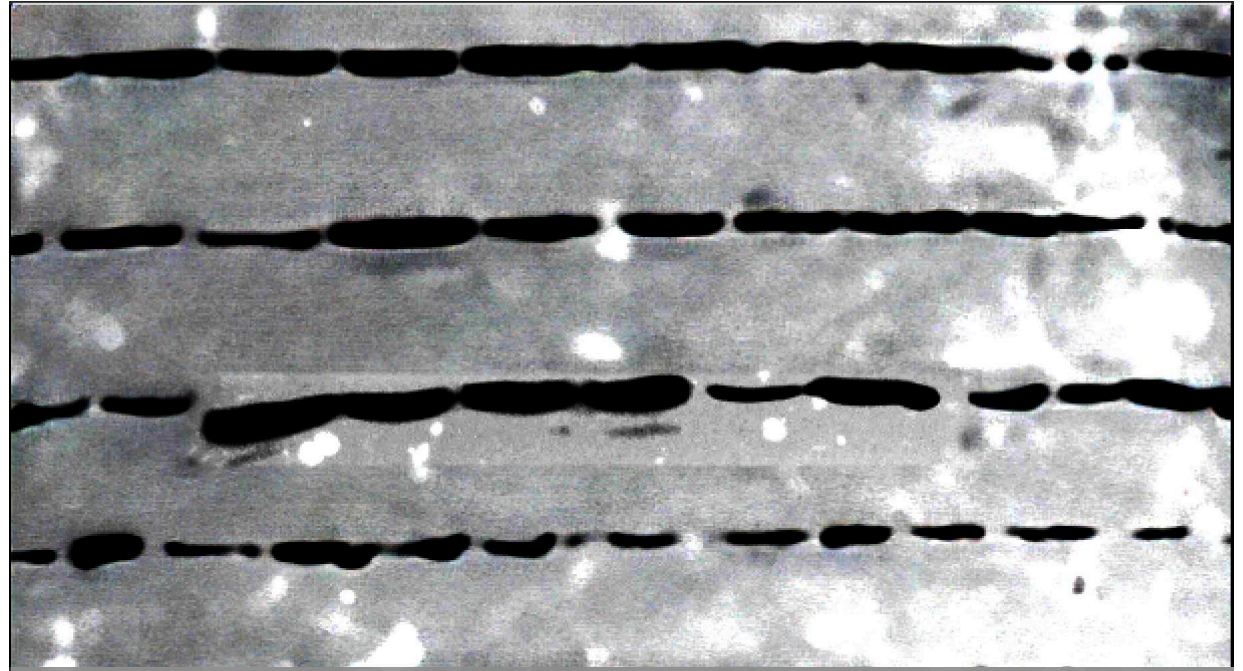


Photoshop 24 Generative AI function

Original image

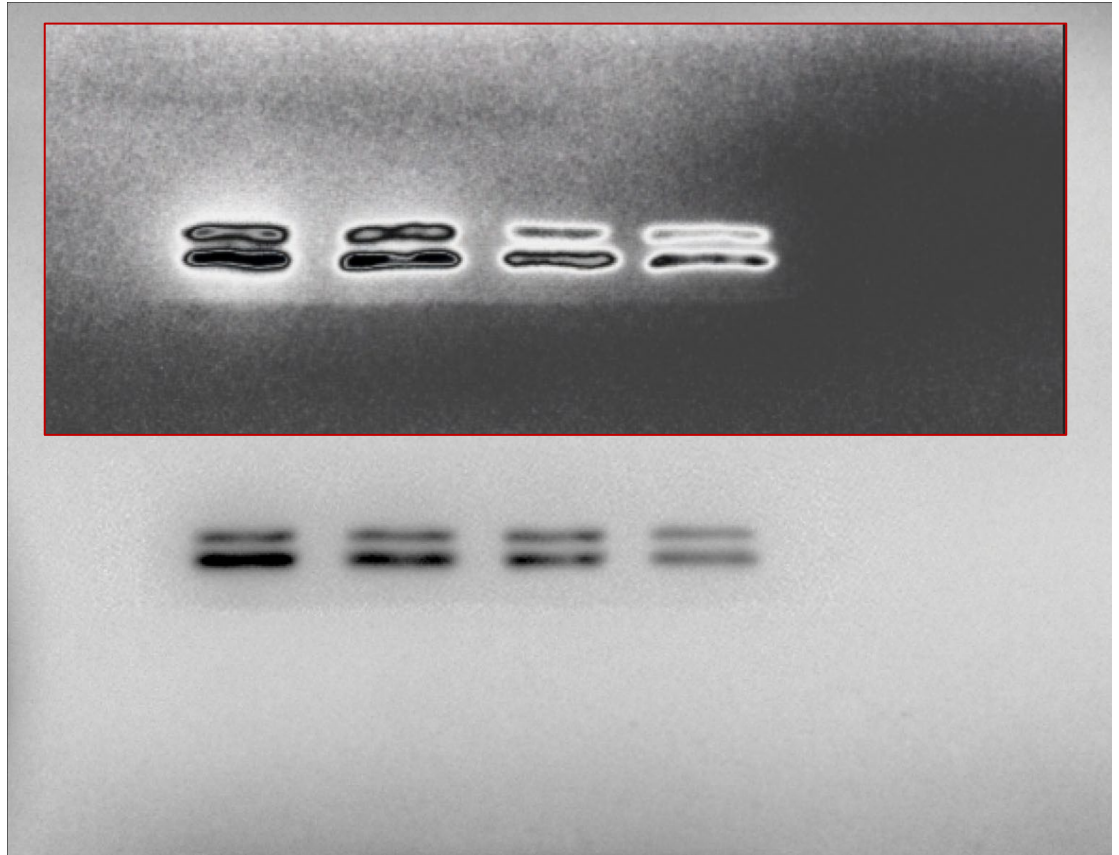


Original edge traceable



Photoshop 24 Generative AI function

AI generated blot
Solarized image

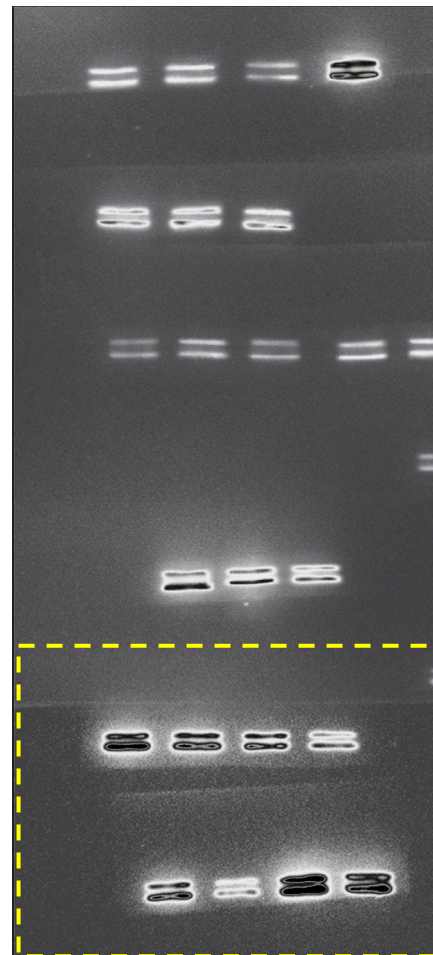
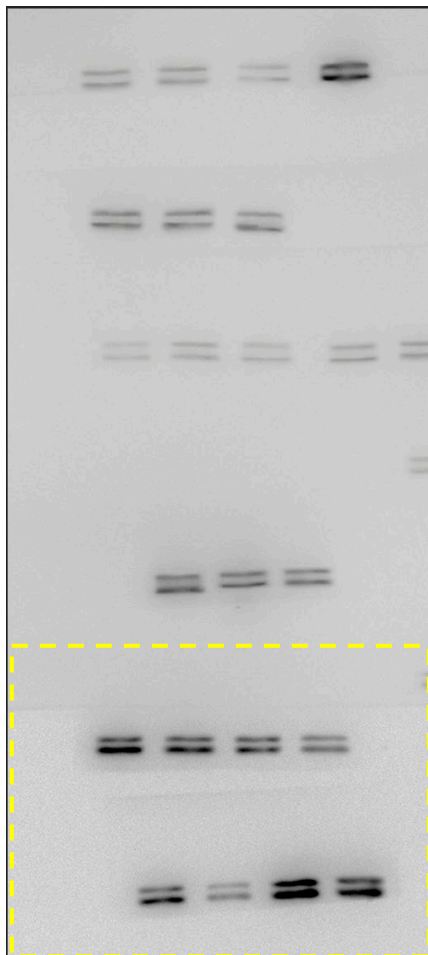
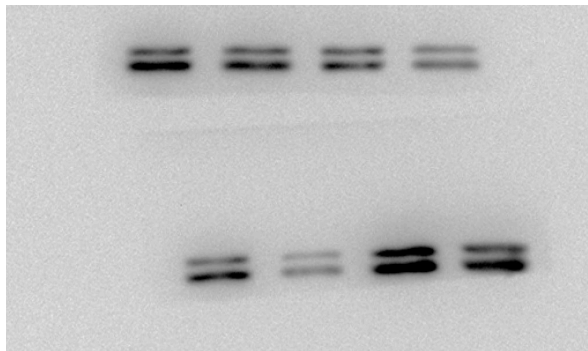


Original image

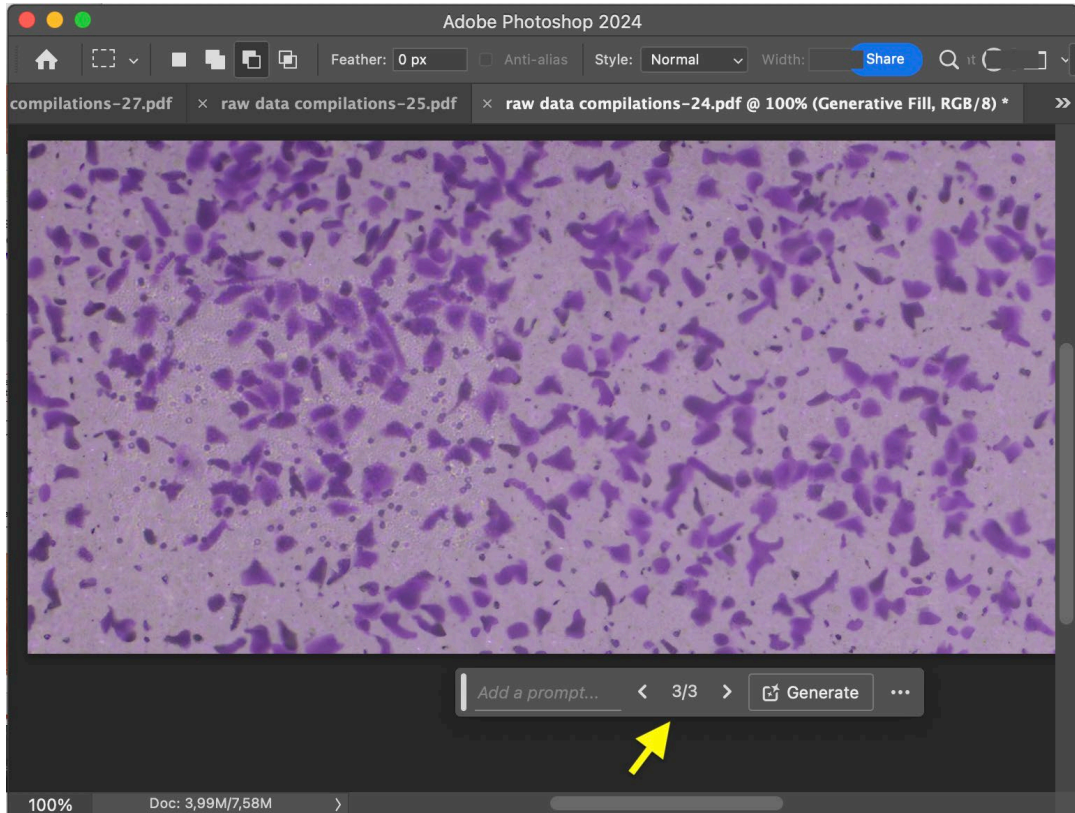
Photoshop 24

Customized data on demand

Original image

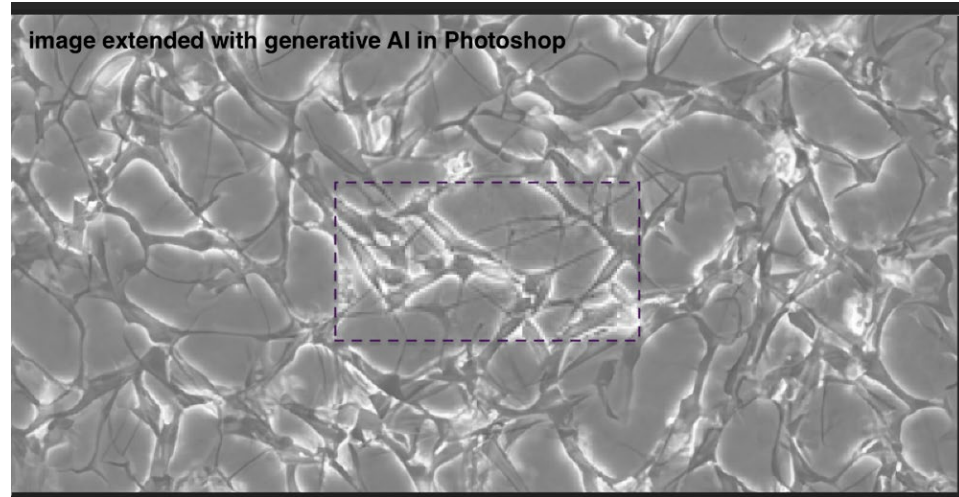
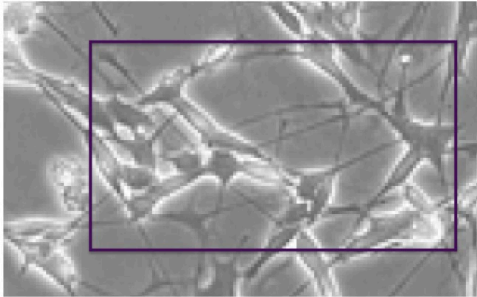


Photoshop 24 Generative AI function



Photoshop 24 Generative AI function

Original image



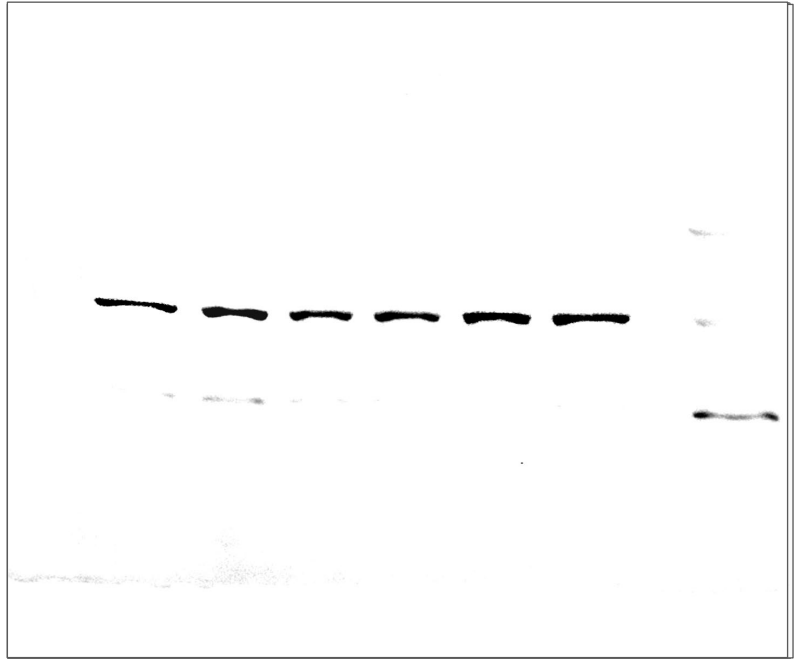
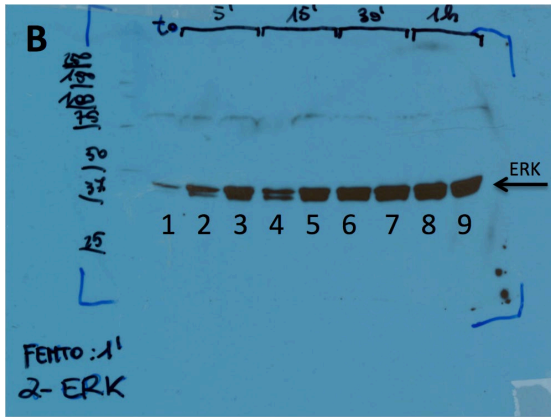
AI generated content has different resolution, appears smoother

Raw data - Western blots

Many conscientious journals request raw data for blots and micrographs at submission stage.

Specify clearly what is expected

Original, uncropped, unprocessed images incl. weight markers and sample loading.
Experimental repeats.



No raw data, no publication



- Tool to **verify whether images are the raw and unaltered originals**
- Only for images generated by Amersham™ ImageQuant™ 800 or Typhoon™ imaging systems
- Image checking is instant, can check entire folders simultaneously
- System generates a report that can be attached to ms subm's
- Potential users: Researchers and academic editors/reviewers

Image integrity software uses Secure Hash Algorithms (SHA) to verify image authenticity

- SHA are a family of cryptographic hash functions published by the National Institute of Standards and Technology (NIST)
- Widely used to encrypt digital information such as vaccination certificates or digital currency.



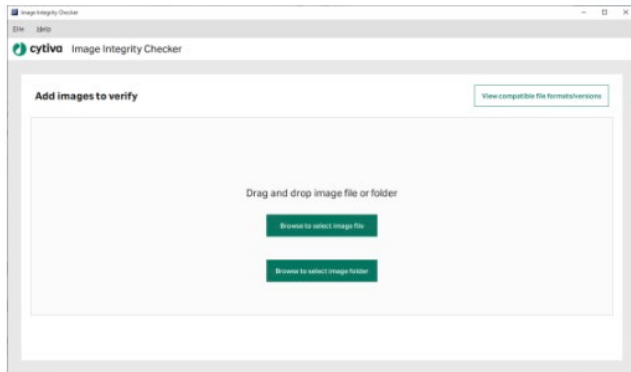
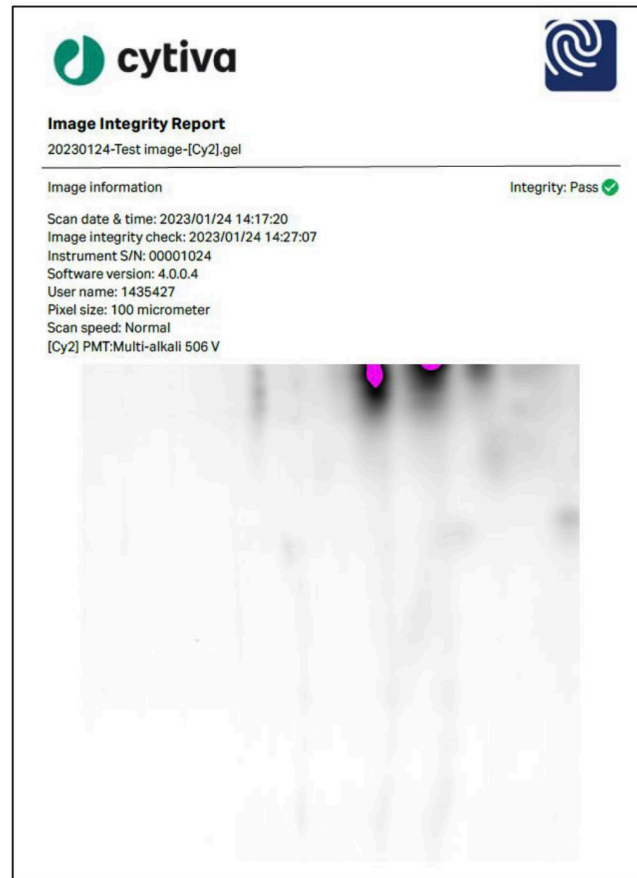
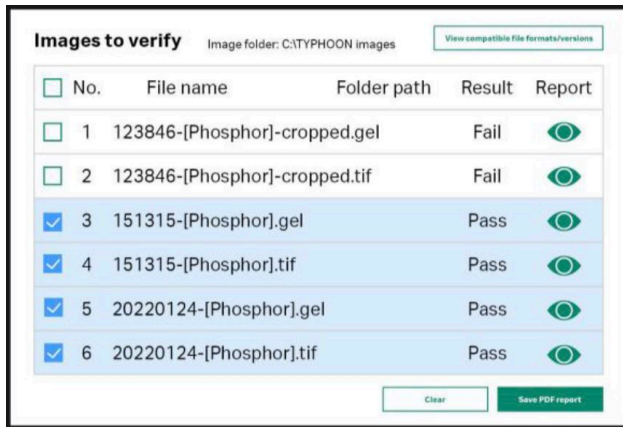


Image gels or blots on Cytiva imaging systems



STM Working Group on Image Alteration and Duplication

Commissioning a **Landscape Review** on the feasibility of potential technical solutions

- comparing different potential approaches
- considering feasibility, effectiveness, and burden on researchers

Will consult experts including

- industry specialists
- equipment providers (microscopy and scientific software companies)
- metascientists,
- and research integrity specialists in the publishing industry.

[Home](#) » [Standards & Technology](#) » [Working Group on Image Alterations and Duplications](#)




IMAGE ALTERATIONS & DUPLICATIONS

The STM Working Group on Image Alterations and Duplications

In scholarly publishing, we encounter image alterations as well as duplications. Whatever the reason is behind the submission of altered and/or duplicated images to a journal, they should be identified early in the article evaluation process, so journals can take appropriate action prior to publication and in a best-case scenario, before peer review. Opposite to text plagiarism, which usually results in the violation of the research process, image alteration and/or duplication can be much more damaging, as it corrupts actual research results, wastes research money on invalid leads, undermines society's trust in research, and can even endanger the society in which those "results" are used.


STM has appointed a working group to answer questions around automatic image alteration and/or duplication detection. It addresses topics like the minimal requirements for such tools, the current quality of them, how their quality can be measured, and how these tools can be widely, consistently, and effectively applied by scholarly publishers. It also looks at a standard classification of types and severity of image-related issues and proposes guidelines on what types of image alteration is allowable under what conditions. The working group currently operates as part of the [STM Integrity Hub initiative](#).

Visit our [Image Alterations & Duplications Resource Center](#) to access instructional videos, recommendations and tools.

For more information, contact Joris van Rossum at rossum@stm-assoc.org.

The members of the working group:

- [Jana Christopher](#), FEBS (Chair)



- Classic detection of issues
- Hashing
- Trust markers
- Blockchain