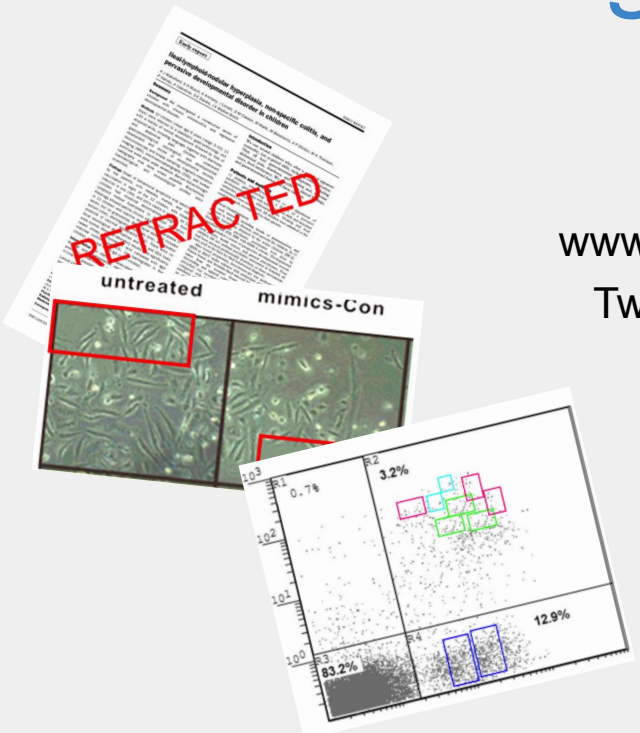
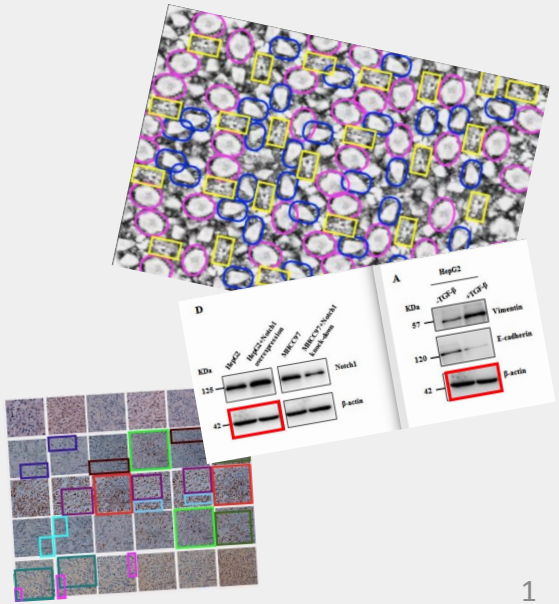
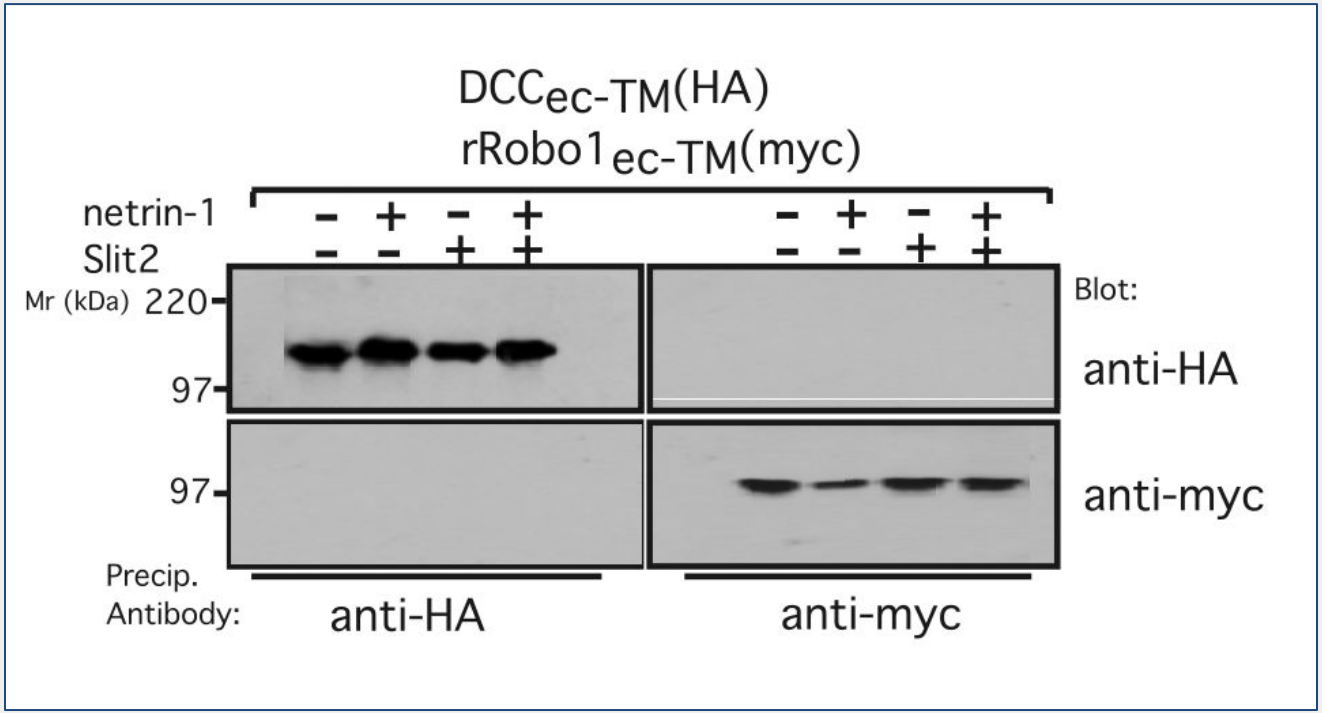
Image Screening Techniques: using tools and eyes



Elisabeth Bik
www.ScienceIntegrityDigest.com
Twitter/X: @MicrobiomDigest



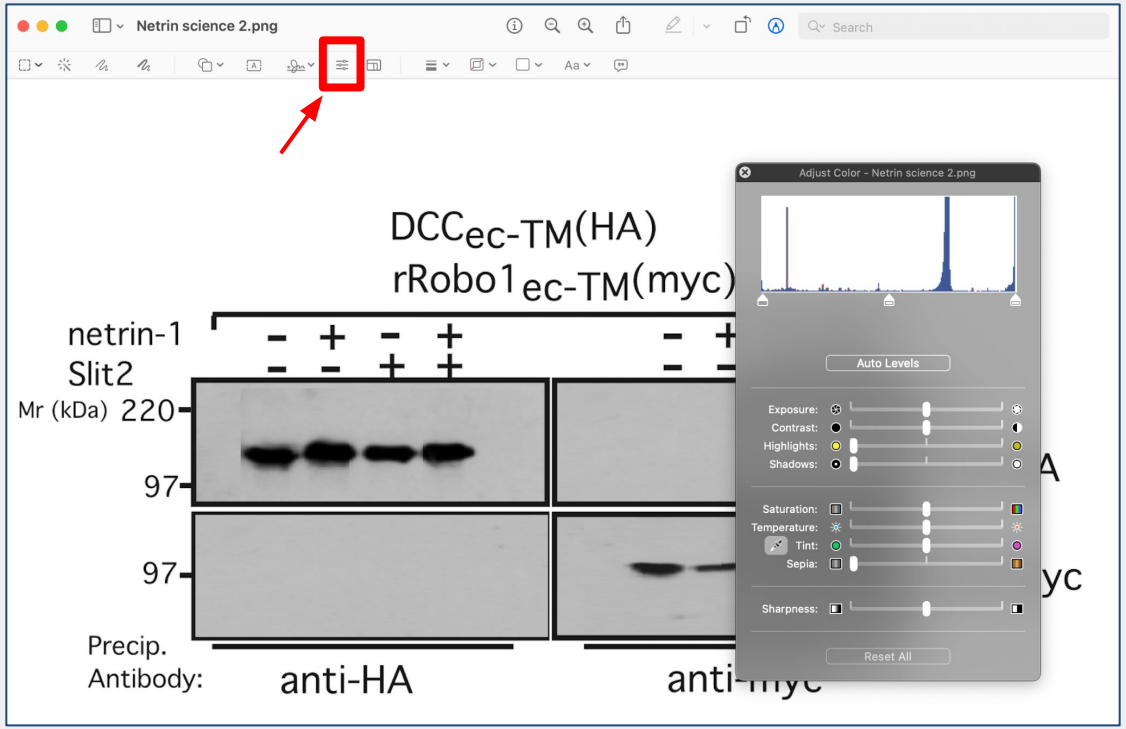
Using eyes and contrast enhancement



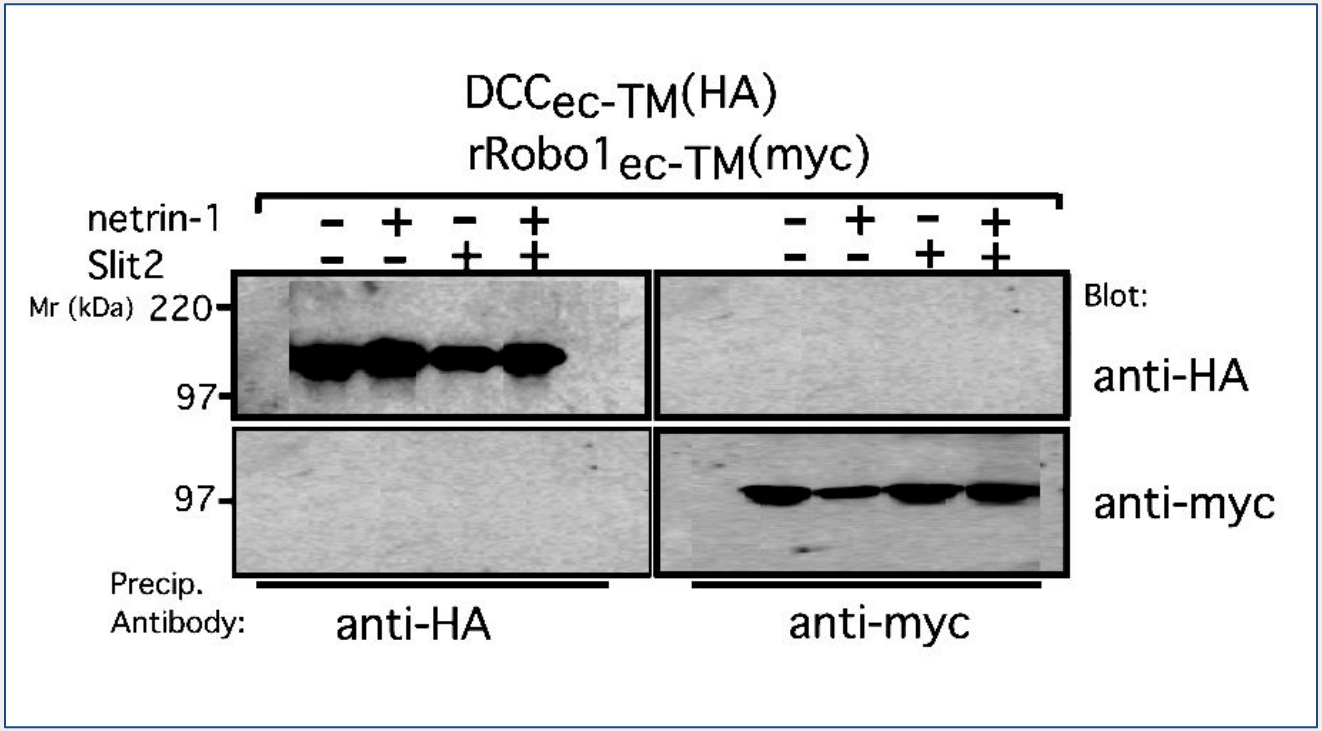
DOI: 10.1126/science.1058445, retracted 2023

Using eyes and contrast enhancement

Apple Preview: Shift+Command+A brings up editing menu
Use sliders to play with contrast

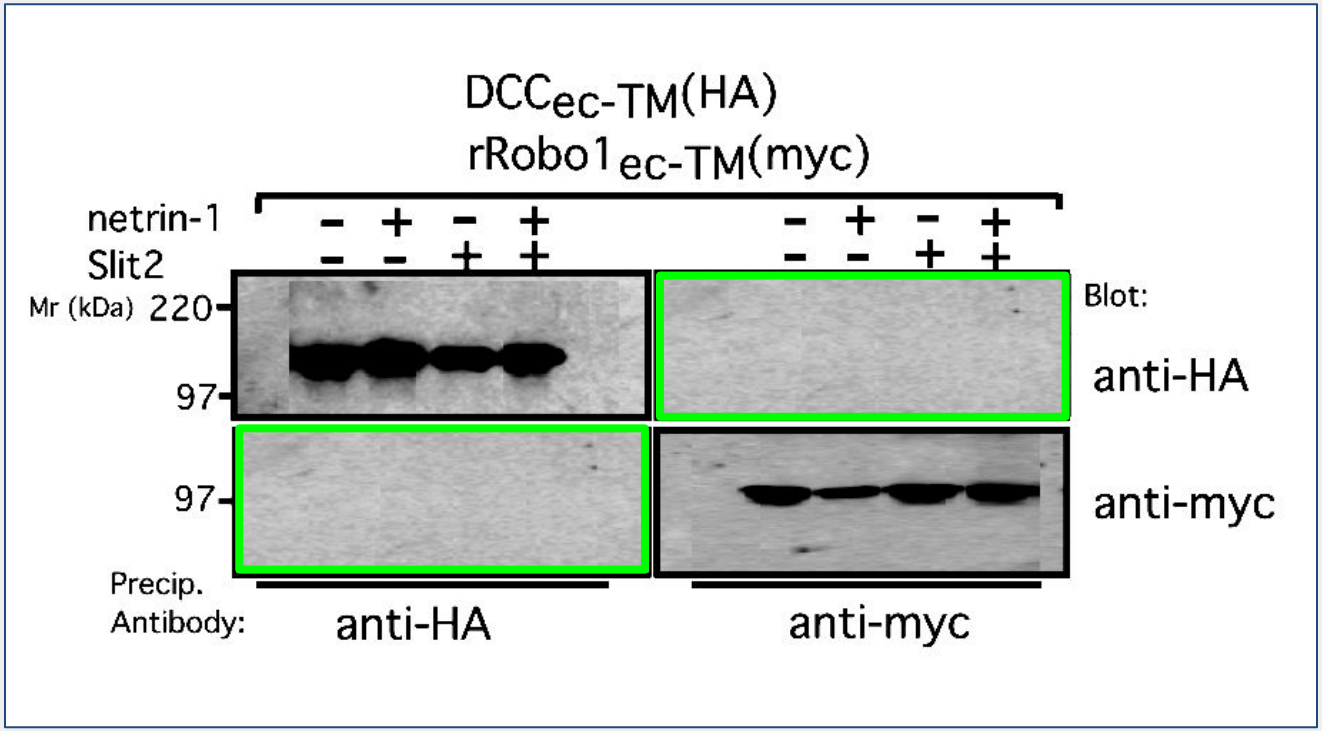


Using eyes and contrast enhancement



DOI: 10.1126/science.1058445, retracted 2023

Using eyes and contrast enhancement



DOI: 10.1126/science.1058445, retracted 2023

Software to check documents or figures

imagetwin

Forensically βeta

Proofig AI

Sherloq

ImaChek
Bringing Clarity to Research

FigCheck

JOURNAL OF EXPERIMENTAL NANOSCIENCE
2020, VOL. 15, NO. 1, 280–296
https://doi.org/10.1080/17458080.2020.1778167

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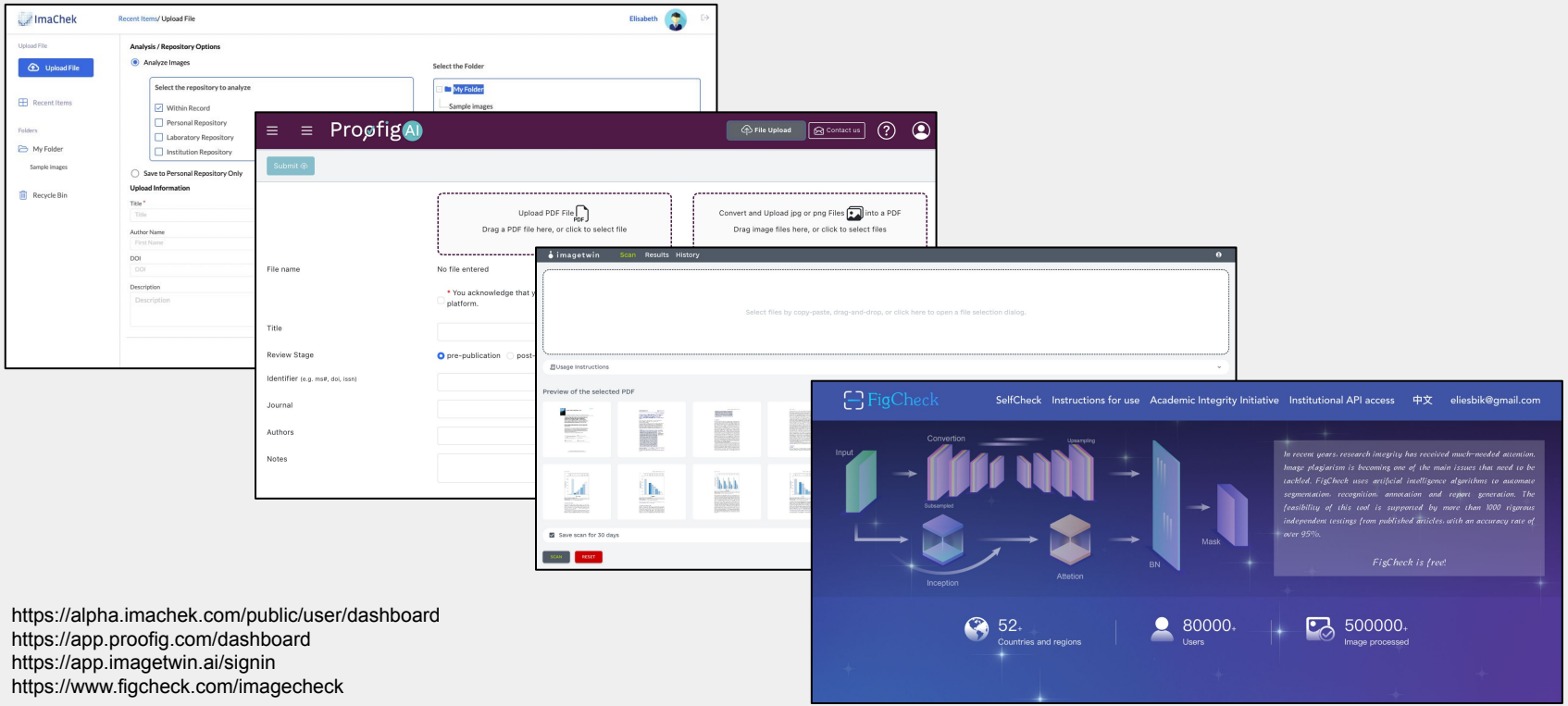
Chemical characterization and neuroprotective properties of copper nanoparticles green-synthesized by *nigella sativa* L. seed aqueous extract against methadone-induced cell death in adrenal phaeochromocytoma (PC12) cell line

Wen Yan[a], Yutang Liu[b], Shirin Mansooridara[c], Atoosa Shahriyari Kalantari[d], Nastaran Sadeghian[e], Parham Taslimi[f], Akram Zangeneh[g,h] and Mohammad Mahdi Zangeneh[g,h]

Start Demos:



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Software tool comparison

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False positive blots
OA database
Good in microscopy

Proofig AI

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3-4 min
Review subimages
Decent in blots
New: OA Database
Bad in Cat III dupls
Selectable report

ImaChek
Bringing Clarity to Research

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No review
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No OA database
Decent in microscopy
Flags line graphs

FigCheck

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Images or PDFs
1 min
No review
Bad in blots
No OA database
Decent in microscopy
Limited per day

Software: dealing with false positives

imagetwin Scan Results History

GENERATE REPORT

Summary

Dupl. within pages	15
Dupl. across pages	10
Similar gels	21

Filters

- Empty pages
- Dupl. within pages
- Dupl. across pages
- Similar gels

4 / 8 Wei Sheng 2018 1-s2.0-S0009279718308056-main.pdf

7 4 9

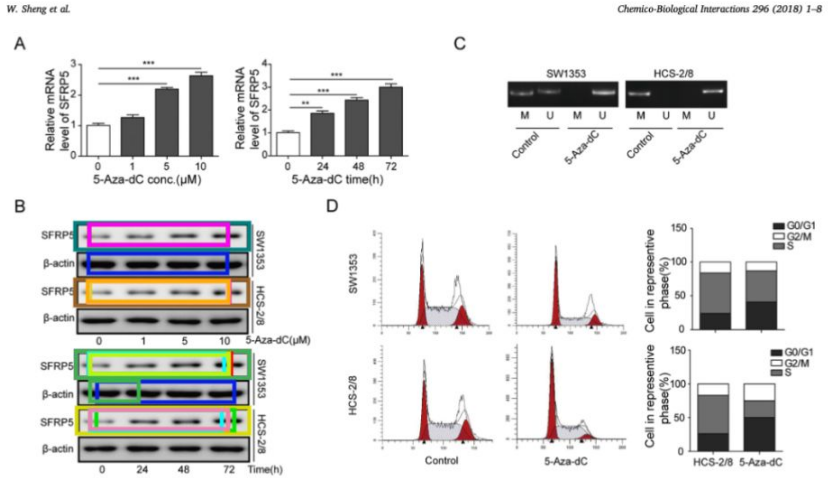


Fig. 2. 5-Aza-2′-deoxycytidine inhibited SFRP5 methylation and arrested cell cycle in chondrosarcoma cells. To measure the influence of 5-Aza-2′-deoxycytidine (5-Aza-dC) with different concentration and time of treatment on SFRP5 expression, (A) Q-PCR was performed for the mRNA level and (B) western blotting for protein level. (C) The level of SFRP5 promoter methylation was analyzed by MSP in SW1353 and HCS-2/8 cells after treated with or without 5 μM 5-Aza-dC for 48 h. (D) The cell cycle analysis by flow cytometry in SW1353 and HCS-2/8 cells after treated with or without 5 μM 5-Aza-dC for 48 h. Proportion of cells at different stages were analyzed and displayed in the hisogram. All data was illustrated as mean ± SD and the asterisks show difference significant as $^{**}p < 0.01$, $^{***}p < 0.001$.

gradually along with the increase of dose and time in a certain limits 48 h) or SFRP5-overexpressed adenovirus. The cellular morphology was

Dupl. within pages

Dupl. across pages

Page 6

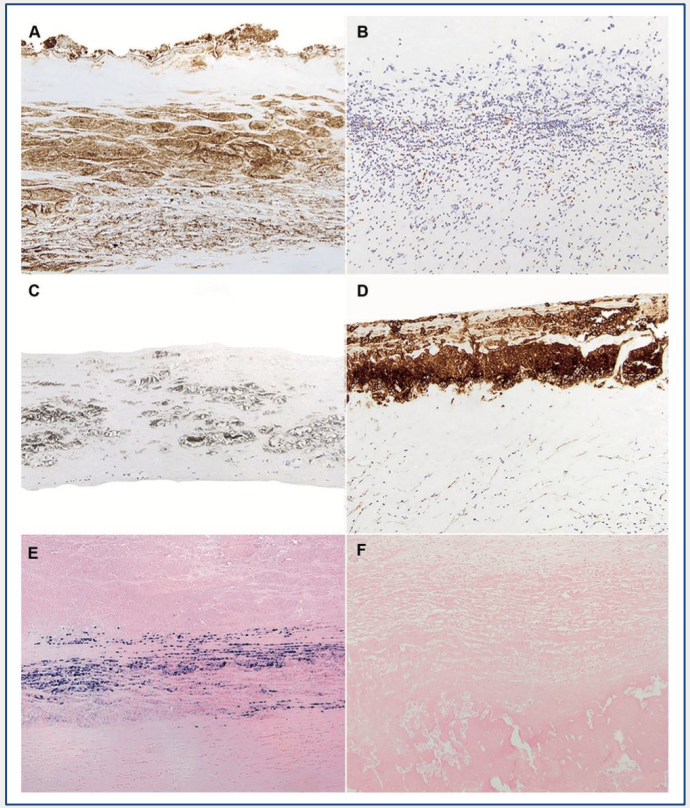
Page 6

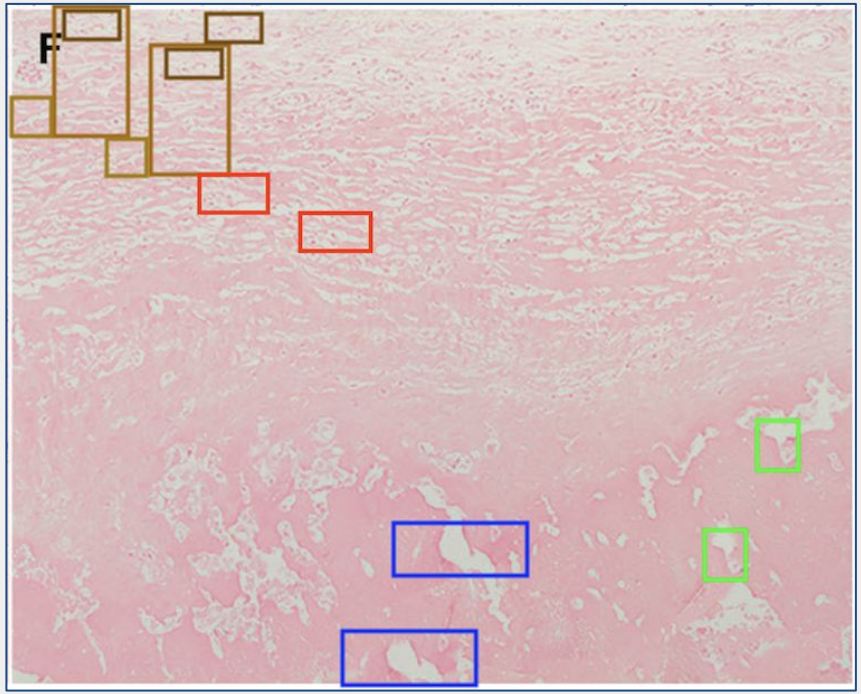
Page 6

Page 5

10.1016/j.cbi.2018.08.020

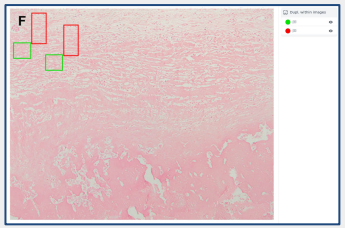
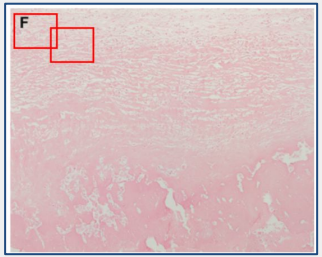
Software: dealing with false negatives



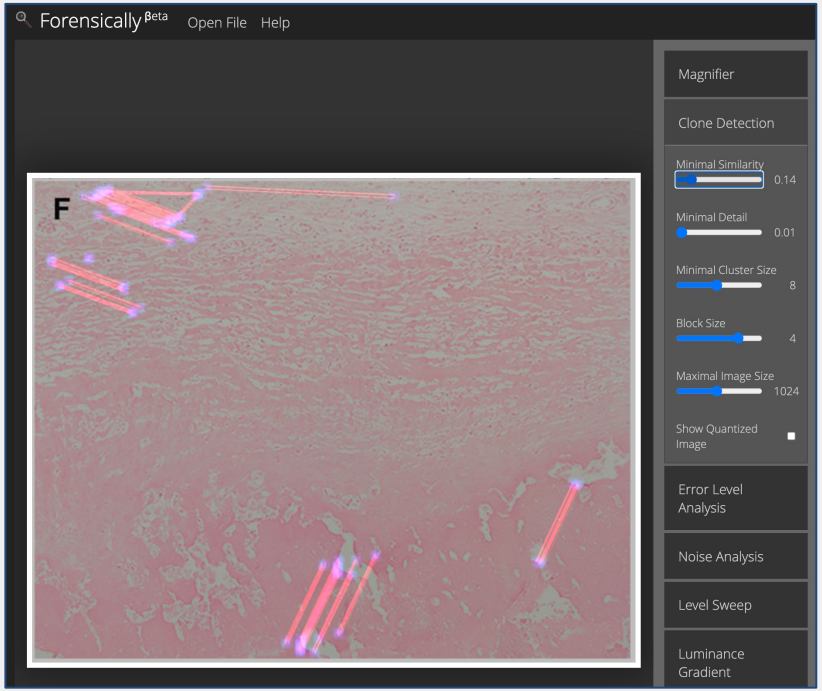


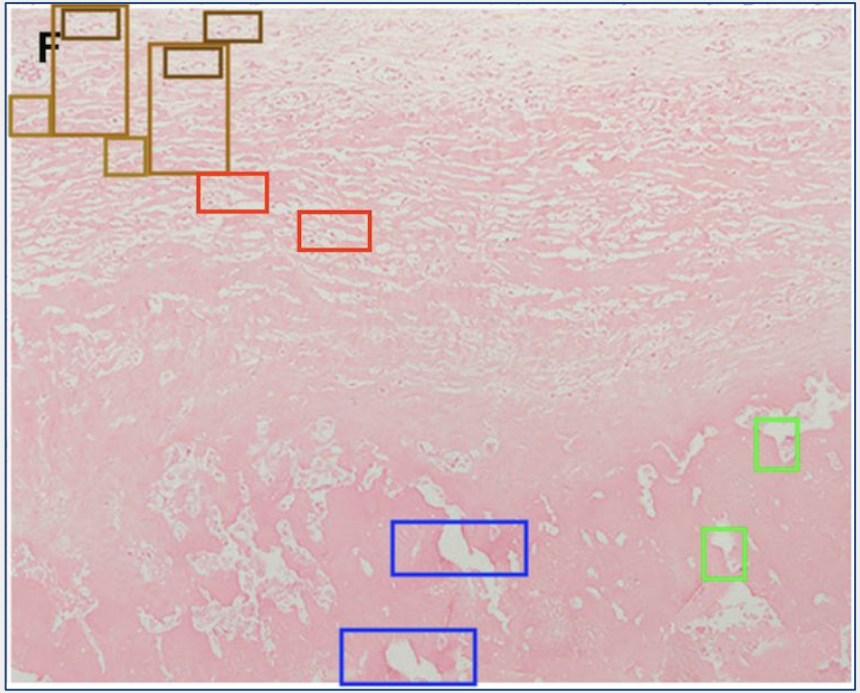
DOI: 10.1038/s41379-021-00863-1

Software: PDF vs screenshots

	imagetwin	ProofigAI	ImaChek Bringing Clarity to Research	FigCheck
PDF:	No duplications	No duplications	No duplications	No duplications
Figure:	No duplications	No duplications	No duplications	No duplications
Panel:		No duplications		No duplications

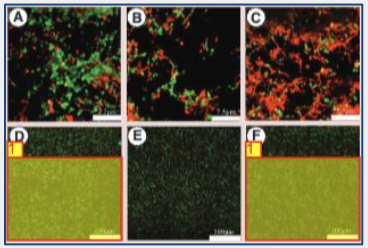
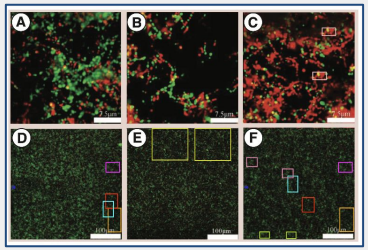
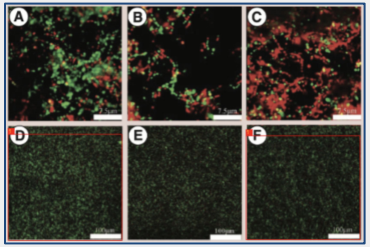
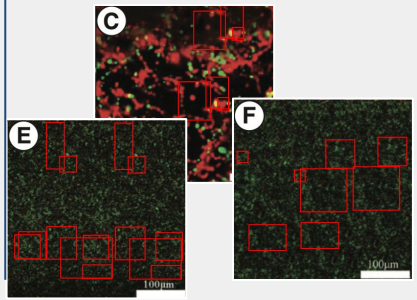
Forensically finds more





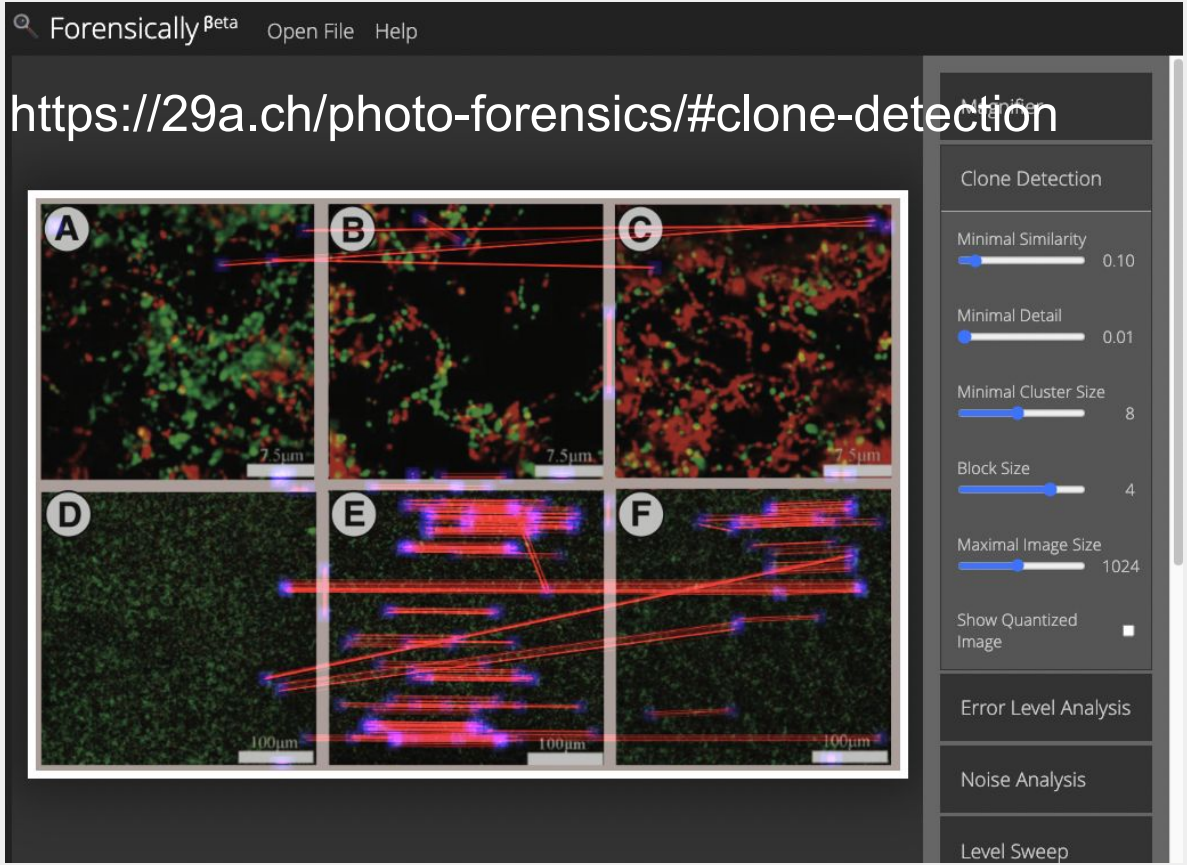
https://29a.ch/photo-forensics/#clone-detection

Software: PDF vs screenshots

	imagetwin	Proofig AI	ImaChek Bringing Clarity to Research	FigCheck
PDF:	No duplications		No duplications	No duplications
Figure:				No duplications

DOI: 10.2217/NNM.14.183

Forensically finds more



Use eyes, tools, and experience

For PDFs / Figures:

imagetwin

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ImaChek
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FigCheck

Sherlog

Duplications within a photo:

Forensically βeta

Additional scan:

Summary

- Software tools are not perfect, still being improved
- All tools are bad in:
  - small within-photo duplications
  - low-contrast photos
- Always review negative or positive findings
- Human eye is sometimes the best
- No detection of AI-generated images!