CellPress
Science that inspires

Everything you need to know to write a scientific paper
寫論文要知啲乜？

Yuen Yiu
Senior editor
Device, Cell Press

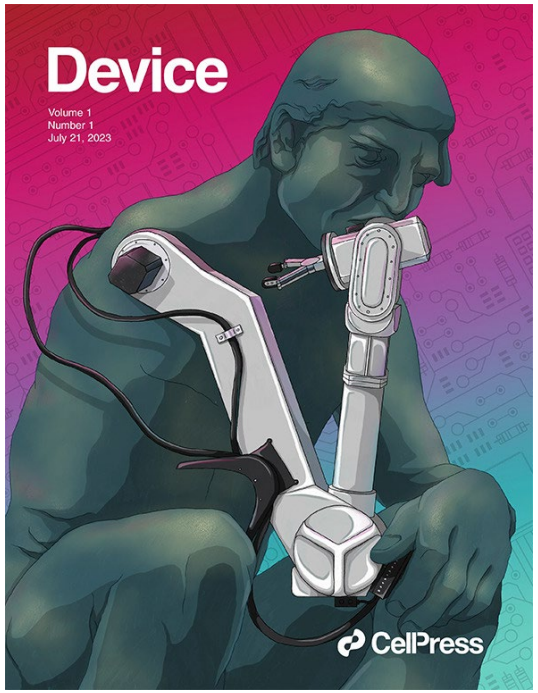
Who am I?

I was a scientist

I was a journalist

I was a press officer

I was a commentary editor



I am a full-time scientific editor (NOW)

Researchers ⇔ Editors → Press Officers → Journalists → Public/ Policy Makers

Editors → Peer Researchers

The work of an editor

Q: Ok… but what does this workflow *translate* into?

A: Filter -> Enhance -> Amplify

Basic knowledge and prep work

Putting pen to paper

Keeping the ball rolling

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The differences between creative vs technical writing

- No need for flowery languages.
- No need for stylistic variations.
- As long as possible? **NO! As short as possible!**

The differences between different kinds of technical writing

- How to write a pop-sci article vs a press release vs a textbook vs a thesis vs a scientific paper vs a user manual, etc.
- What kind of writing is required for different parts of the paper?

Front half content (Reviews, Perspectives, etc.)

- Send pre-subs and proposals
- Be original for Perspectives
- Wait 3-5 years to update a Review
- Look up “article type” information
- Just talk to us (most of us are friendly)
- Ask about opportunities for Commentary/Letters/etc.

Back half content (Research articles, Reports, etc.)

- No need for pre-subs and proposals (but inquiries about paper collections/special issue are welcome!)
- Just talk to the editors. (Be friendly but don’t pester!)

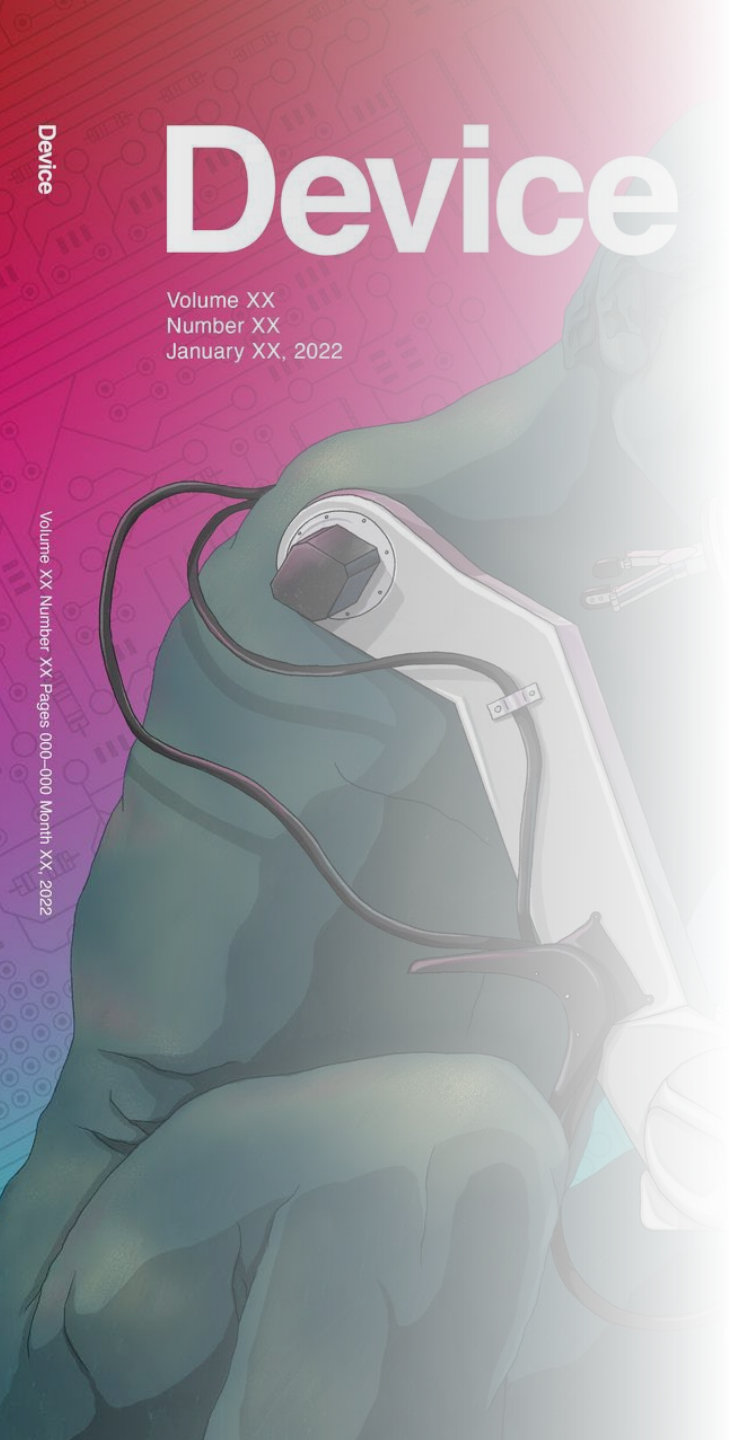
Do's

- Be transparent about incremental research
- Ask questions (most of us are friendly)
- **Cover letters are for the editors**: This is your sales pitch. What is the new part? What is the old part? How is it better? How is it worse?
- Be honest! E.g. test till failure for durability, talk about tradeoffs, etc.

Don'ts

- Don't omit references on purpose
- Don't suggest previous coworkers as references (5-year rule)
- Don't appeal without revising the manuscript
- Avoid arguing with the reviewers without revising
- Don't compare to strawman/"traditional" technology!

First question of peer review is "Are the claims supported by the data?"
So don't over sell your work!



What do we want at *Device*?

FRONT MATTER (i.e. not original research)

Reviews:
Tutorial-like, informative, non-comprehensive

Perspectives:
Insightful, original, timely

Commentary:
Societally impactful, human driven

BACK MATTER (i.e. original research)

Research articles:
Application driven, working prototypes, performance benchmark experiments, some software and theory

Reports:
Time sensitive, patented inventions, crisis related

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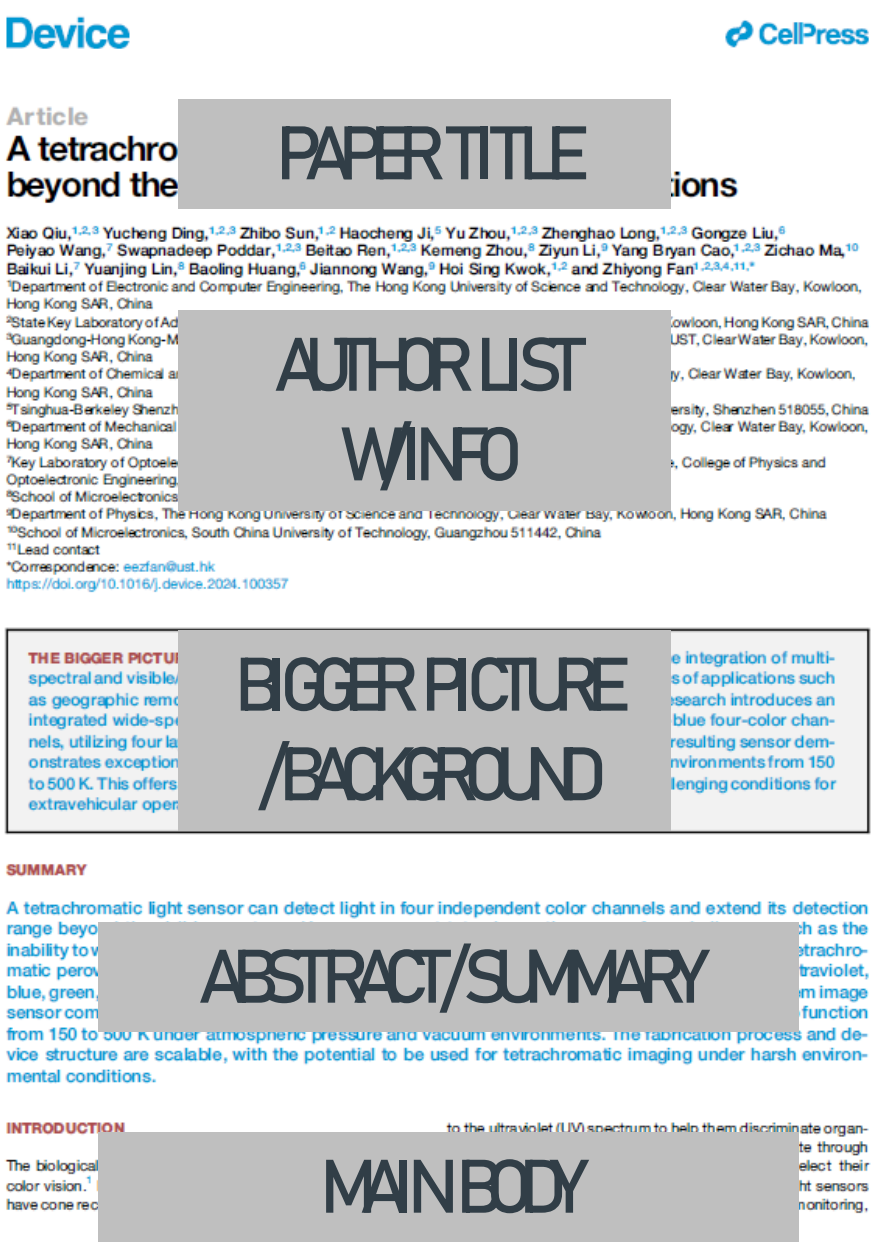
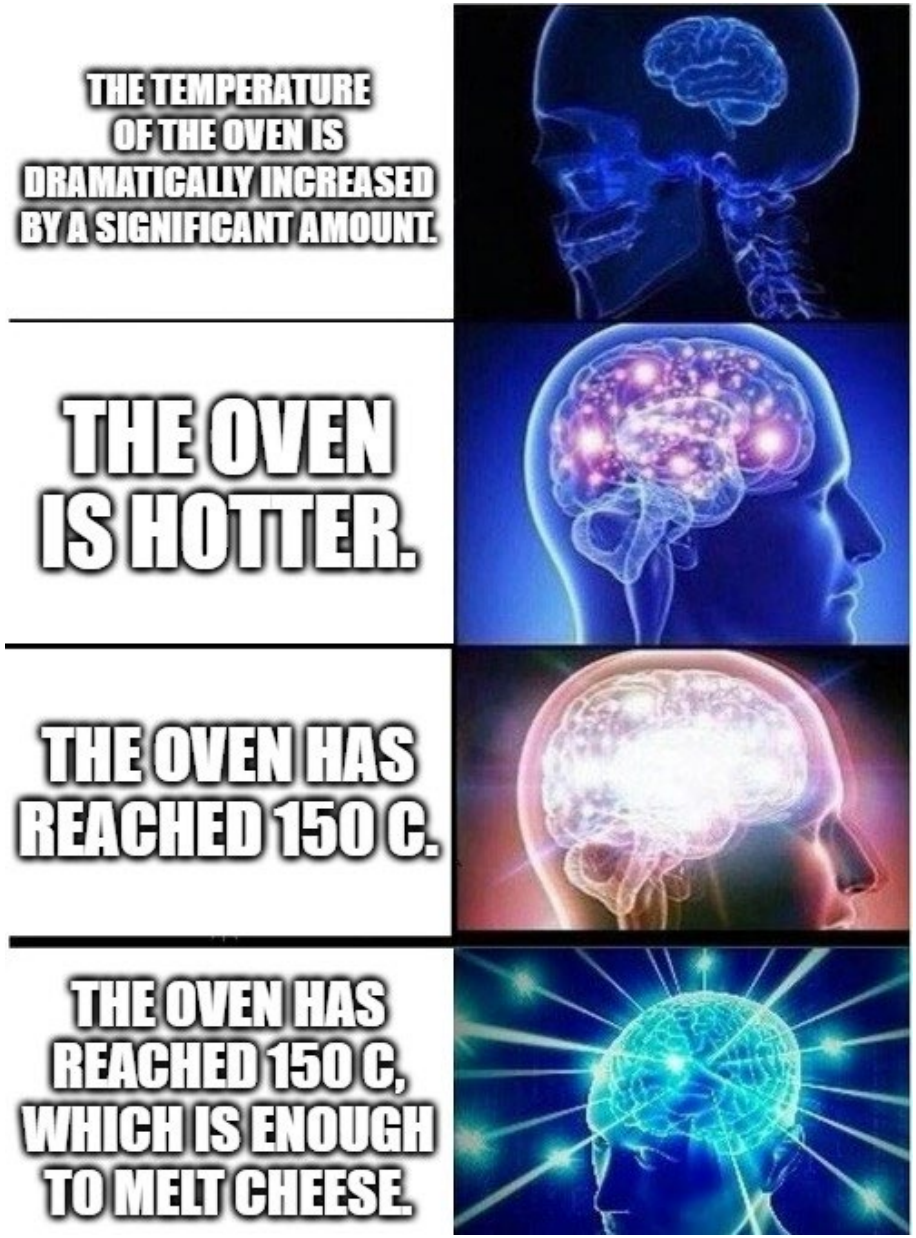


BIGGER PICTURE /BACKGROUND	"Pre" intro + Greater/societal demand/motivation
ABSTRACT /SUMMARY	Challenges faced by competitors + Your most impressive results + Specific and scientific impact
IN BRIEF/eTOC	A short version of the summary (appears on the content page)
HIGHLIGHTS	Short and concise accomplishments
GRAPHICAL ABSTRACT	A business card size picture to tell people what the research is about, not to show your results
CONCLUSION +OUTLOOK	A very short summary of accomplishments + Future directions + How others should use your research + Remaining challenges

What makes a good title/abstract?

- **Keep it short:** No fluff words (e.g. The study of…)
- **Keep it neat:** No crazy acronyms (ask yourself, can a search engine find it?)
- **Keep it specific:** No buzzwords cramping (e.g. AI-enhanced, bioinspired.)
- **Keep it explicit:** No questions or ambiguous phrasing
- **Be selective!**
- ***WHAT IS IT?*** *Is this about a theory or a fabrication method or a product? What is useful for? What is it made of?*
  ~~*"Advancing material science with this groundbreaking tool"*~~

Putting pen to paper



Not quantitative.
Wordy.

Not quantitative.
~~Wordy.~~

~~Not quantitative.~~
~~Wordy.~~

WITH EXTERNAL CONTEXT!

Example

Birds can perceive more [Missing context of existing work.] via their tetrachromatic eyes, enhancing viability by capitali[Unnecessary variations] in UV an[Unnecessary variations] organisms. However, developing a device that [Forced acronym. Pre-existing trademark.] tetrachromatic vision system remains a significant challenge now. Herein, we p[Unnecessary variations] a Fully Integrated Tandem Bird-like Intelligent Tetrachromatic system (FITBIT) inspired by avian. Four layers of all-inorganic perovskites in the FITBIT serve as detectors for the non-spectral ultraviolet, and the spectral blue, green, and red si[Filler word.] can discriminate the spectral and no[Non-specific/ill-defined terms.] space. Intriguingly, our FITBIT image sensor comprises four 32×32 colour-selective pixel arrays. Furtherm[Awkward phrasing and word choice.] camera can work steadily from 150 K to 500 K in atmospheric pressure an[Awkward phrasing and word choice.] cuum environments. Our device fabrication process and device structure are upscalable with promising potency to generate practical impac[Buzzword cramping] imaging and revolu[Vague and general speculation.] of environmental monitoring for combating climate change.

Scientifically irrelevant backstory.

Example (Final)

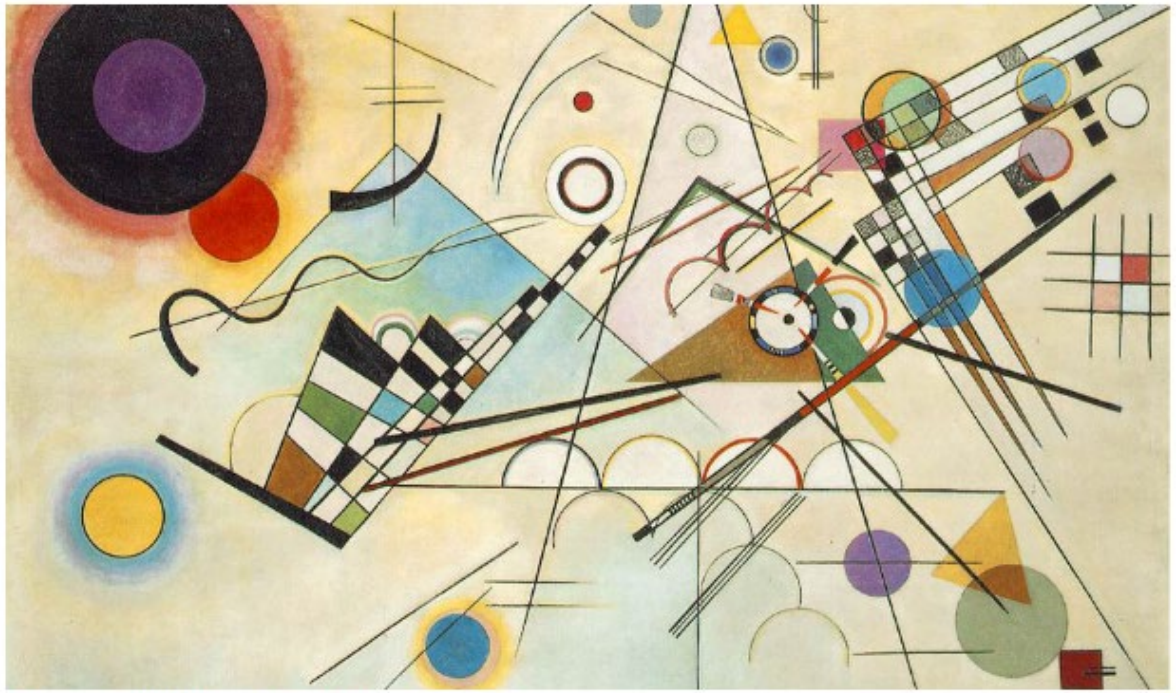
SUMMARY

A tetrachromatic light sensor can detect light in four independent color channels and extend its detection range beyond the visible spectrum. However, current tetrachromatic sensors face challenges such as the inability to work reliably in extreme temperatures. In this work, we present a fully integrated tandem tetrachromatic perovskite imaging system. Four layers of all-inorganic perovskites in the device serve as ultraviolet, blue, green, and red light detectors and can discriminate spectral and non-spectral colors. The tandem image sensor comprises four 32 × 32 color-selective pixel arrays. The non-encapsulated device is tested to function from 150 to 500 K under atmospheric pressure and vacuum environments. The fabrication process and device structure are scalable, with the potential to be used for tetrachromatic imaging under harsh environmental conditions.

何謂抽象？

What's So Abstract About Scientific Abstracts?

The etymological root of the word links nonrepresentational art and the history of scientific publications.



Composition VIII by Wassily Kandinsky

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CULTURE

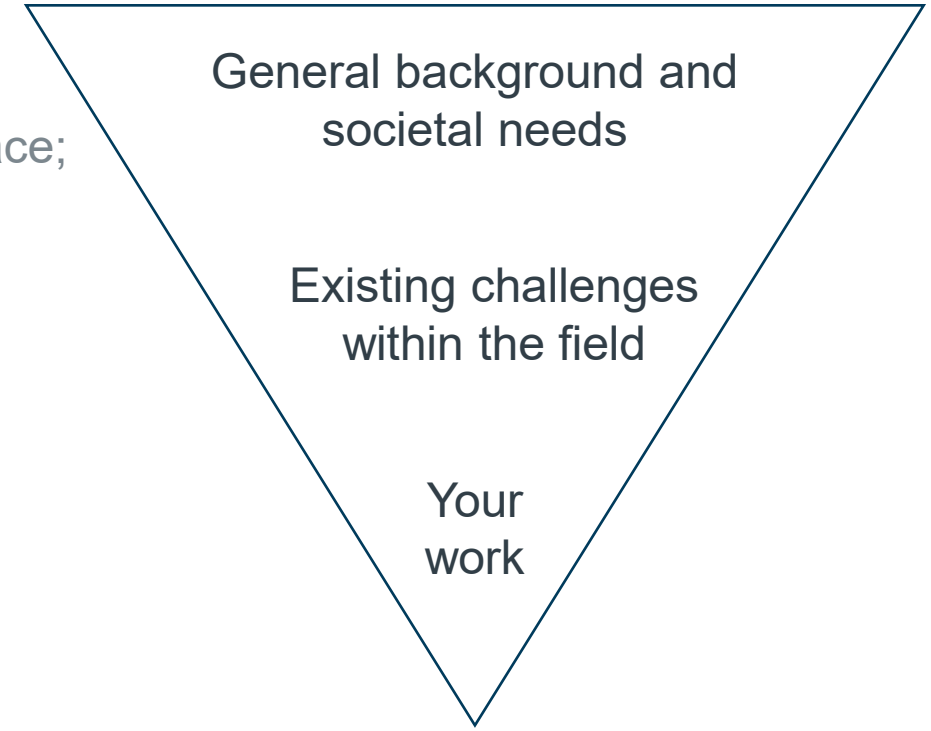
Wednesday, July 29, 2020

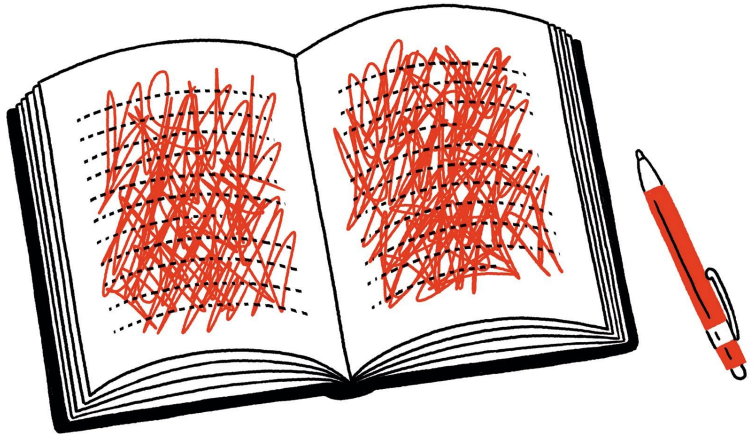
Yuen Yiu, Staff Writer

(Inside Science) -- The two meanings of the word "abstract" seem to be polar opposites of each other. One, as in an abstract painting, implies a disassociated and perhaps difficult-to-understand

Introduction

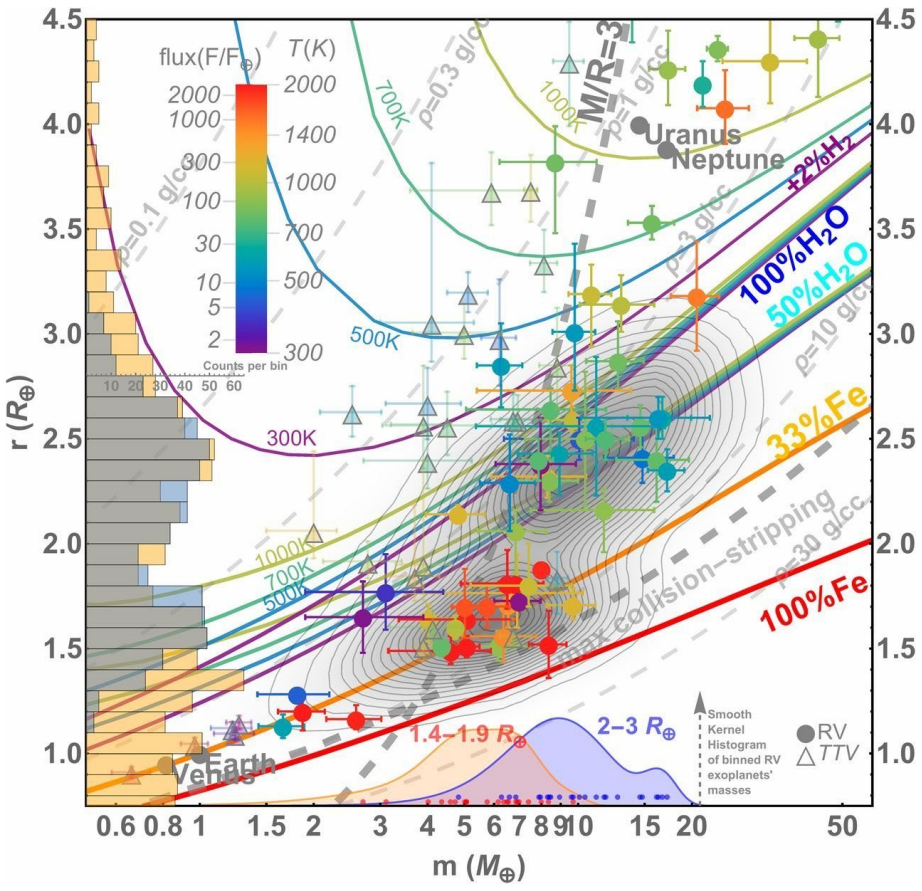
- **The inverted pyramid of journalism**
- **The inverted pyramid of technical writing**
  Make the top 1/3 as compact as possible, and cut it at the right place;
- **Do not over/underestimate your audience**
  Every sentence should flow smoothly from the previous one
- **AI tools may not have access to the latest literature**
  You may end up with gaps in the pyramid
- **Use up-to-date references**
  Be specific about focus and trade-offs
- **What is it good for?**
  Be realistic about where it will excel
- **Each layer should take up about 1/3**





The main body

- **Read the “Article type” page of the journal**
- **Read other articles from the same journal**
- **Results**
  Know what to put in the main text and what to put in the supplementary document
- **Methods**
  Can a new grad student replicate the experiment without guidance?
- **Discussion**
  Can be combined with the results. More in depth modelling/ interpretation can also go here
- Remove adjectives (e.g. significant), adverbs (e.g. successfully), and transition phrases (e.g. on the other hand).
- **No self-editorializing or time-dependent descriptions**
  No “record breaking”, “exceptional”, “superior”, “excellent” etc.



Figures

- **Don't put everything in the main figures**
  Supplementary Info is there for a reason
- **Treat Fig.1 as the graphical abstract (unless there is already a graphical abstract)**
  Can a grad student understand what the paper is about by only looking at Fig.1A?
- **Don't overcrowd each figure, don't overcrowd each panel**
  No more than 5 "things" per item, e.g. 5 lines in a graph, 5 graphs in a panel, etc.
- **DO NOT** shrink down original images to cramp into figures in reviews!
- **Consider black and white printouts and color-blind people**
  Make sure the line and data point style is used to denote different measurements

Outlook > Conclusion

- Connect with the end of the introduction, but DO NOT REPEAT yourself
- Move on from the “say what I’m about to say, say it, then say what I’ve said” model
- Provide instructive and specific speculations about the future
- REMEMBER: Your goal is NOT to impress your peers, but to inspire other researchers and have them CITE your paper!

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Tips for reviewers

- **Be nice**
- **Be responsive**
  Declination is 10x preferred over no responses,
  declination with recommended reviewers are even more preferred
- **Be constructive**
  Even if you recommend rejection
- **Be specific**
  Avoid giving only general (or personal) attacks (some is okay),
  let the editor know if you want/don't want to see the revision
- **Volunteer to write a Preview**
  Easy way to get a publication, opportunity for early researchers/grad students

Tips to promote your research

- **Social media**
  LinkedIn vs WeChat vs X/Twitter vs TikTok
  (follow trends in your community)
- **Volunteer to write a Preview**
  Easy way to get a publication, opportunity for early researchers/grad students
- **Pitch Perspectives/Reviews**
  Often the only way to get a “Front Matter” article accepted in top tier journals
- **Send cover submissions**
  An overlooked way to increase visibility: Take good photos, hire science illustrators (rough drafts are okay)
- **Work with the media/press office of your university!**
  They are often starved for content! They may be able to make videos and promotional materials for you.

A brief history of *Cell*

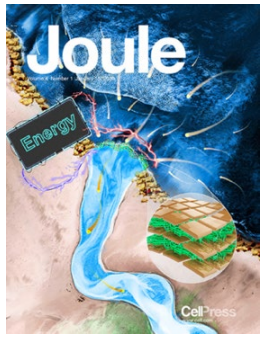
CellPress

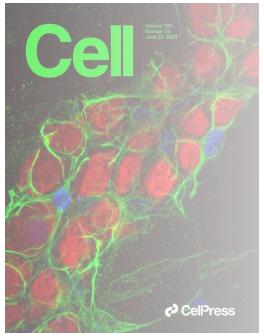
1974:
1st issue of *Cell*

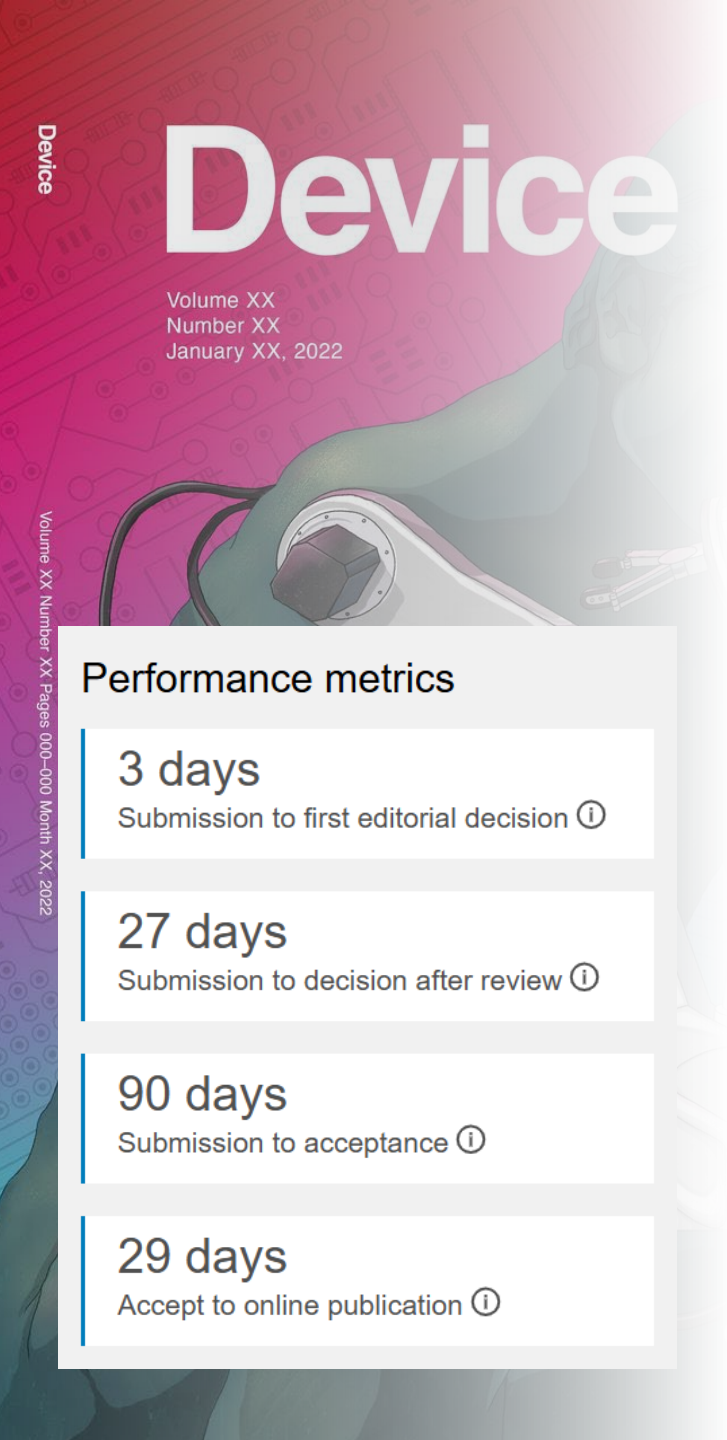
1986:
Cell Press est.

1999:
Acquired by Elsevier

The ecosystem of Cell Press







Performance metrics

3 days
Submission to first editorial decision ⓘ

27 days
Submission to decision after review ⓘ

90 days
Submission to acceptance ⓘ

29 days
Accept to online publication ⓘ

Launched in 2023

We support device and application-orientated research from all disciplines, **such as applied physics, nanotechnology, robotics, biomedical engineering, quantum computing, and so on.**

We also consider research of all scales and stages of development , ranging from **discovery to benchmarking, from optimization to integration, from deployment to scalability, as long as the research is driven by real-world challenges.**

First (partial) Impact Factor: 8.0

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