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My First Scientific Article

Tips on writing an article for early career researchers

Naděžda Firsová, Barbora Šátková

Our experiences as two Ph.D. candidates

November 20, 2024

IOCB PhD Skills Day: Essential researcher competencies

The project National Centre for Information Support of Research, Development and Innovation with the identification code MS2101 is implemented with the support of the Ministry of Education, Youth and Sports.

Intended learning goals

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- Understand the role and importance of scientific communication in academia
- Gain familiarity with different types of scientific articles and their purposes
- Explore strategies for choosing appropriate journals for publication
- Introduce the publishing and peer review process and its significance in maintaining academic standards

Naděžda Firsová

- Faculty of Economics and Management, Czech University of Life Sciences Prague
- Doctoral studies in Economics and Management at Faculty of Economics and Management, Czech University of Life Sciences Prague
- NTK

Barbora Šátková

- Faculty of Environmental Technology, Analytical Chemistry, UCT
- Doctoral studies in Environmental Chemistry and Technology at UCT
- NTK

Have you ever published a scientific article?

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A. Not at all

B. Currently working on it

C. Yes, as a co-author

D. Yes, as the corresponding (lead) author

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Why do you write? What is your main reason for wanting to write an article?

Why write academic articles?

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PhD: to fulfill requirements for a PhD degree

Career advancement: to solidify my position in academia (e.g., to work towards getting a full-time research job at a university, to become full professor, to contribute to my discipline in a meaningful way)

SOURCE: Günter Blöschl - How to write (and publish) a scientific paper in hydrology

What is scientific communication?

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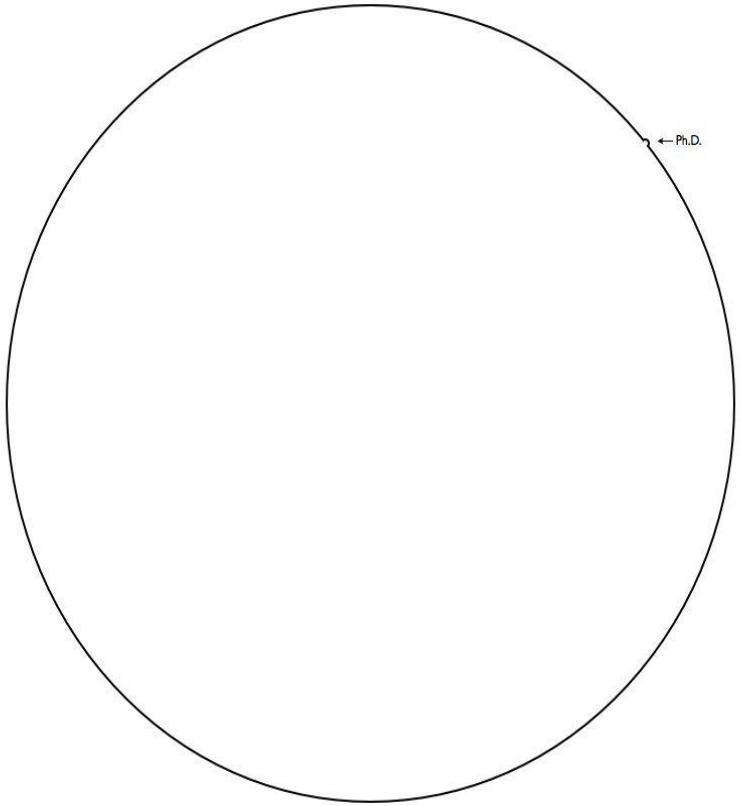
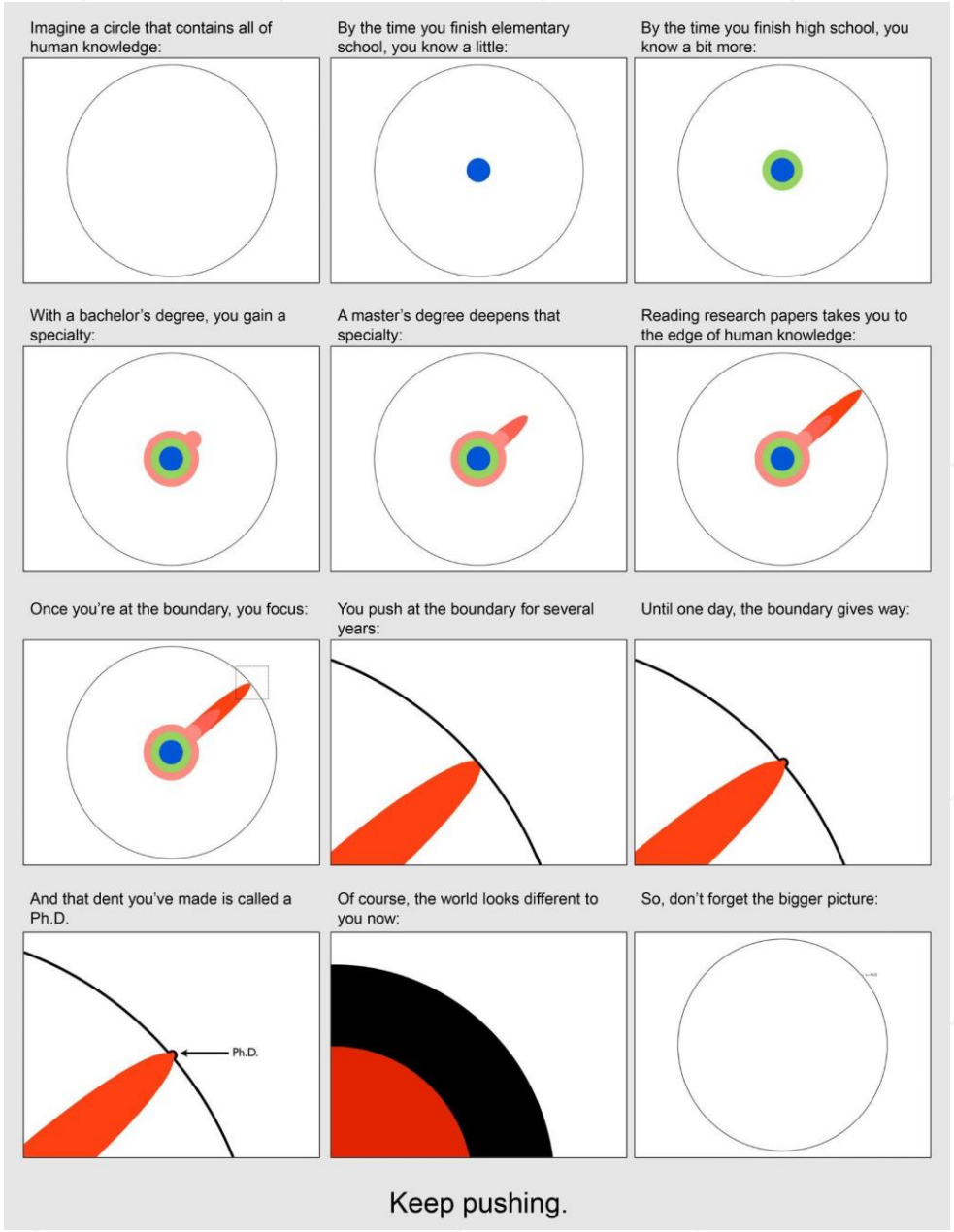
- Ongoing, documented, structured dialogue between researchers in a discipline or subdiscipline (across countries and times)
  - Ideally builds upon the research canon of those who came before (“Stand on the shoulders of giants.”)
  - **In high-quality journals, it includes high-quality peer review (and revision of work according to peer reviewer comments)** to maintain high academic standards
  - Discusses data obtained by using and applying research methods (qualitative or quantitative) in relation to the state-of-the-art/theories in one’s discipline

Your goal can be to make a dent in a circle of human knowledge



SOURCE: The Illustrated Guide to the Ph.D., created by Matt Might (http://matt.might.net/articles/phd-school-in-pictures/; 2012) and shared under Creative Commons license BY-NC 2.5.



Sample article structure

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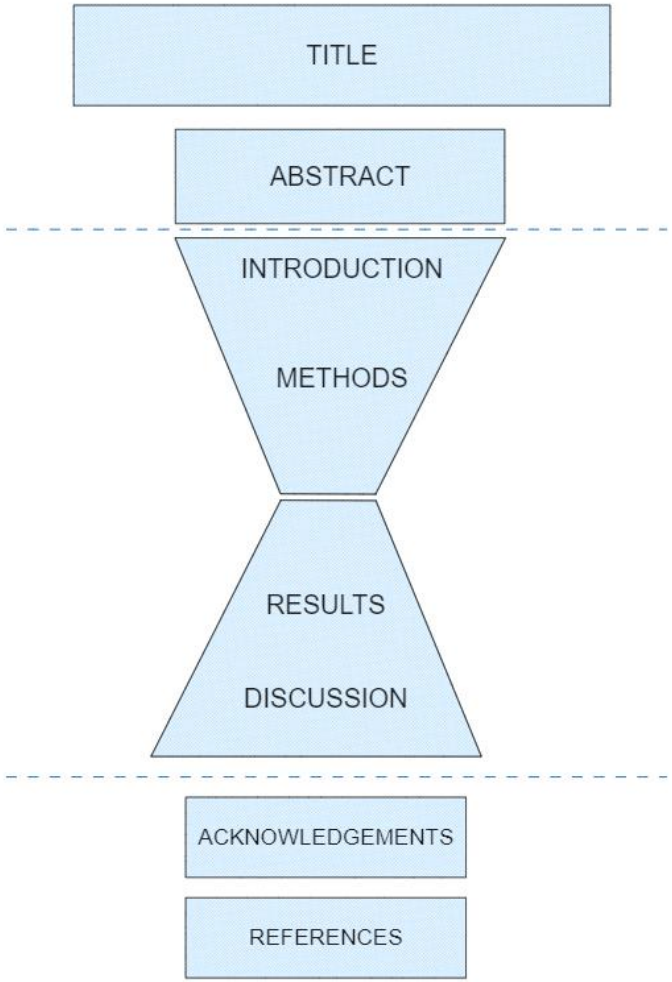
(I.M.R.A.D. structure)

	Title	What is the article about?
	Abstract	What was done, in a nutshell?
I	**Introduction**	Why is this article a contribution to your field? (e.g., research questions, previous related research, state-of-the-art/research gap being filled, theoretical background)
M	**Methods/Theory**	What research method(s) did you use to conduct your research?
R, A	**Results, Analysis**	What did you find (e.g., data description and analysis)?
D	**Discussion**	What does this description of your research effort contribute to your discipline? (e.g., in relation to state-of-the-art/theories)
	Summary and conclusions	What are the major findings?
	Acknowledgements	Who helped you? (e.g., research grants, colleagues who read your manuscript, AI writing tool used; check author guidelines for requirements)
	References	Whose work did you cite or paraphrase, or otherwise refer to?
	Appendices	Optional additional information (e.g., data, survey instrument)

SOURCE: ethz.ch and Improving the writing of research papers: IMRAD and beyond

Typical scope and structure of a scientific article



Retrieved from: Improving the writing of research papers: IMRAD and beyond

Read the guidelines

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- Most journals have author guidelines and these are crucially important to review before submitting a publication to a journal
- Read the guidelines (e.g., JACS)
  - Word limits
  - Format of manuscript and citations, graphs, and figures
  - Authorship and data management guidelines (e.g., recommended data repositories)
  - Frustrating to be rejected for formal reasons (e.g., formatting mistakes)

Title, Abstract, and Keywords

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Title

- First (and last) opportunity to attract readers' attention
- Concise, accurate, and informative
- Avoid questions, numbers, formulae, and abbreviations

Abstract

- The abstract must be self-contained
- Capture objective, methods, and findings

Keywords

- Typically 3-5 words (see the journal guidelines) that fit the research described in the manuscript
- Should not copy the title
- Help with a discoverability (indexed on search engines)

Introduction

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- State-of-the-art in your discipline
- Problem statement
- Research questions/hypothesis
- Rationale

Why?

Methods

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- Research method used
- Materials/equipment/other tools
- Use past tense for past work (What was done?)

How?

Results

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- Present results of the study in a logical sequence
- Can include tables, charts, and figures

What?

Discussion

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- Interpretation of results
- How results fit in relation to findings by others/theory
- Implications

What?

Conclusions

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- Synthesis of key points
- Limitations and future research

What?

Acknowledgements

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- Authorship contribution (CRediT)
- Conflict of interest statement (if any)
- Contributions by others not listed as authors (e.g., a colleague who read your manuscript, library support staff)
- **Funding**, if any (financial support or grants)

Acknowledgements

The research was funded by the European Commission 6th Framework Marie Curie Excellence Grant MEXT-25008 'Sport and Social Capital in the European Union' awarded to Dr Margaret Groeneveld and Bocconi University. I would like to thank Cristina Fusetti, Thomas Persson, Giovanni Fattore, Margaret Groeneveld and three anonymous reviewers for their insightful comments and critical remarks on the earlier drafts of this article.

Numerato (2009)

References

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- Complete list of all sources
- Formatted to a citation style used by the journal (APA, MLA,…)
- Ordered according to journal guidelines (e.g., alphabetical by last name, numbered)
- Must correspond to in-text citations within the paper
- Citation managers can make the process easier (Zotero, Mendeley, Endnote, …)

Supplementary materials

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- Materials that are not practical/possible to include in a manuscript
- Additional data and files
- Additional figures and tables
- Multimedia files (if applicable)
- Provide instructions for access (repository, contact info, …)

Organic Process Research & Development

Article

pubs.acs.org/OPRD

Rapid Analysis of Residual Palladium in Pharmaceutical Development Using a Catalysis-Based Fluorometric Method

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ABSTRACT: Measurement of residual metals in pharmaceutical intermediates is routinely performed using inductively coupled plasma-optical emission spectroscopy (ICP-OES) or inductively coupled plasma-mass spectrometry (ICP-MS). However, these techniques suffer from drawbacks that limit their utility in pharmaceutical process development, including the requirement for expensive instrumentation, complex sample preparation, slow turnaround time, limited sample throughput, and the difficulty of performing the required measurements on the 'spot' within pilot plants or manufacturing environments. We investigate the use of a fast and inexpensive high-throughput approach for detection of residual palladium (Pd), based on the Pd-catalyzed Tsuji–Trost deallylation of an allylic ether substrate to produce a highly fluorescent product. We demonstrate the effectiveness of this fluorescence assay for accurate quantitation of Pd levels in a variety of 'real world' samples, including mixed oxidation-state samples containing strong Pd ligands.

INTRODUCTION

Recent years have seen a dramatic upsurge in the use of palladium catalysts in the synthesis of active pharmaceutical ingredients (APIs).[1] Concurrently, a number of methodologies have been developed for removing residual palladium from APIs.[2] Typically, process development for a palladium-removal step involves the evaluation of a number of different metal-removing conditions, producing dozens or even hundreds of samples that are analyzed by inductively coupled plasma-mass spectrometry (ICP-MS) or inductively coupled plasma-optical emission spectroscopy (ICP-OES). While undeniably effective, this general approach has several significant limitations. First and foremost, the technique requires expensive instrumentation and complex sample preparation, meaning that samples are typically handed off to specialist groups, rather than being analyzed immediately in the laboratories where the samples are generated. Sample handoff can also lead to significant delay, especially for those researchers in smaller companies without ICP-MS or ICP-OES resources, where samples are often shipped to a contract analytical laboratory.

The idea of a simple and easy to use fluorometric chemosensor or chemodosimeter to monitor metal removal 'on the spot' in a laboratory or pilot-plant environment has long been recognized as a preferred solution to this problem;[3] however, until recently no Pd chemosensors or chemodosimeters were available. Several years ago, Koide and co-workers reported the development of a fluorogenic Pd chemodosimeter based on the Pd-catalyzed Tsuji–Trost deallylation of allyl Pittsburgh Green ether (APE) to produce a highly fluorescent product (Figure 1).[4] The group successfully applied an assay based on this reaction to the quantitation of palladium in a variety of samples, including synthetic samples and druglike compounds spiked with palladium. Despite these examples, the utility of this approach for successfully monitoring the removal of residual palladium impurities in routine pharmaceutical process research remained an open question. Indeed, early attempts to apply this approach at Merck were disappointing, with considerable variation between reported Pd values and the actual values as determined by ICP-MS (unpublished results). The fact that this assay proved challenging is perhaps not surprising, as Pd residues in crude API samples are often present as a mixture of different oxidation states, only some of which are effective in catalyzing APE deallylation. Furthermore, in addition to residual Pd, these reaction residues often contain strong ligands specifically designed for chelating and enhancing the reactivity of palladium—which might be expected to influence the ability of palladium to catalyze the APE deallylation reaction. Finally, some of the most difficult problems encountered in the removal of Pd from pharmaceutical intermediates involve compounds that are themselves very good ligands for Pd, a property that might be expected to alter 'typical' APE deallylation rates.

In this study, we investigate the application of the method described in Figure 1 to the detection of Pd in pharmaceutical process research samples and describe conditions that render this simple and user-friendly approach suitable for the measurement of residual Pd levels in 'real world' samples from pharmaceutical process research studies.

RESULTS AND DISCUSSION

Preliminary investigations using palladium standard solutions in the absence of any interfering compounds confirmed the ability of the APE method to measure palladium concentration at low levels (Figure 2). We also investigated the effectiveness of using a single-point fluorescence measurement after defined incubation times, finding that with these conditions, a single read following a 10 min incubation at 45 °C permitted an acceptable linear range for detection between 1 and 30 ppb.

We next studied 'real world' samples of pharmaceutical intermediates containing various levels of residual palladium.

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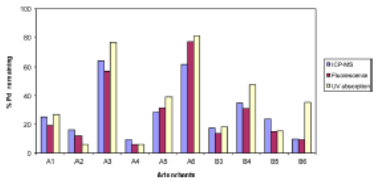

Figure 8. Case study showing the application of the reagent cocktail approach illustrated in Figure 7 to monitoring the efficacy of palladium removal from a pharmaceutical intermediate by adsorbent treatment. Measurement of residual palladium using either ICP-MS or the Koide method with fluorescence detection led to the correct identification of the two most effective treatments. In contrast, the use of UV–vis detection for quantifying palladium was less effective.

Excellent sensitivity and linearity were found with palladium standards, and a reasonably good (80–110% of actual) ability to quantify palladium in the presence of pharmaceutical intermediates was observed for samples in which appropriate pretreatments with *aqua regia* and $NaBH_4$ were performed. The linearity was significantly expanded compared to our previous studies. This is the first report that the use of $NaBH_4$ improves the signal recovery. Finally, a streamlined assay procedure utilizing a predispensed reagent cocktail that is stable for a day at room temperature (and for months in the freezer) is described.

EXPERIMENTAL SECTION

Reagents. Allyl Pittsburgh Green ether (APE) was prepared according to the published procedures.[4a] A palladium standard solution was purchased from VWR and used as received. $NaBH_4$ was purchased from VWR and used as received. Tri(2-furyl)phosphine (TFP) was purchased from TCI and used as received. Trace metal-grade HNO_3 and trace metal-grade HCl was purchased from Thermo Fisher and used as received. DMSO was purchased from J.T. Baker and used as received. A concentrated pH 7 buffer solution ([phosphate] = 1.23 M) was purchased from Thermo Fisher and used as received.

A solution of TFP in DMSO was freshly prepared before each experiment. A solution of $NaBH_4$ (2.5 M in 10 N NaOH or 1 M in 1 N NaOH) was freshly prepared weekly and stored at ambient temperature. A solution of $NaBH_4$ (30 mM) was freshly prepared before each experiment by diluting the 2.5 M solution with purified water.

Fluorescence Spectroscopy. Fluorescence spectra were recorded in a black, round-bottom, 96-well plates on a Spectra Max M5 spectrometer (Molecular Devices, Sunnyvale, CA) under the control of a Windows-based PC running software pro V5. The samples were excited at λ = 497 nm, and the emission intensity was collected at λ = 525 nm. All spectra were corrected for emission intensity by using the manufacturer-supplied photomultiplier curves.

Metal Analysis by ICP-MS. The samples were either diluted or suspended directly in concentrated acid or evaporated with a rotary evaporator first and then redissolved in concentrated acid for ICP-MS analysis. Depending on the concentration range of the element, either the Perkin-Elmer Elan 6000 quadrupole ICP-MS spectrometer (Perkin-Elmer, Norwalk, CT) or the Thermo Finnigan Element 2 high-resolution ICP-MS spectrometer (Finnigan, Bremen, Germany) was used for the analysis.

Analysis of Palladium Standards: Figure 2. A solution of TFP (200 μL, 1.8 mM in DMSO) was mixed with a palladium standard solution (30 μL, 0–100 ppb in 1% HNO_3). A concentrated phosphate buffer (pH 7, 2.57 mL, [phosphate] = 1.23 M) was added. The resulting mixture was incubated at 45 °C for 30 min. $NaBH_4$ (100 μL, 30 mM in 0.12 N NaOH) and allyl Pittsburgh Green ether (APE, 100 μL, 375 μM in DMSO) were then added in sequence. A 200 μL aliquot of the resulting solution was then transferred to a black round-bottom 96-well plate, placed into the SpectraMax M5 fluorescence plate reader at 45 °C., and the appearance of fluorescence at 525 nm was monitored as a function of time (λ_{ex} = 497 nm).

$NaBH_4$ pretreatment on Pd contaminated API samples – Figure 3. A concentrated phosphate buffer (pH 7, 2.57 mL, [phosphate] = 1.23 M) was mixed with a pretreated solution of palladium contaminated API (30 μL, API 0.1 mg mL^{-1} in 10% acid). A solution of TFP (200 μL, 1.8 mM in DMSO) was added. The resulting mixture was incubated at 45 °C for 30 min. $NaBH_4$ (100 μL, 0 or 2 mM in 0.12 N NaOH) and allyl Pittsburgh Green ether (APE) (100 μL, 375 μM in DMSO) were added in sequence. The resulting samples were incubated for 1 h at 45 °C. Following incubation, 200 μL of the solution was transferred to a black, round-bottom, 96-well plate, and fluorescence was measured.

Effect of Acid Pretreatment on Pd-Contaminated Samples of Pharmaceutical Intermediates: Figure 4. Ten milligrams of each palladium-contaminated pharmaceutical intermediate was dissolved in 10 mL of pure acid and incubated at ambient temperature for 1 h. The pretreated samples were then diluted 10-fold using 3:1 DMSO/water and analyzed as above.

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Notes
The authors declare no competing financial interest.

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(2) (a) Welch, C. J.; Albaneze-Walker, J.; Leonard, W. R.; Biba, M.; DaSilva, J.; Henderson, D.; Laing, B.; Mathre, D. J.; Spencer, S.; Bu, Wang, T. *Org. Process Res. Dev.* **2005**, *9*, 198–205. (b) Garrett, C. E.; Prasad, K. *Adv. Synth. Catal.* **2004**, *346*, 889–900. (c) Li, B.; Buzon, R. A.; Zhang, Z. *Org. Process Res. Dev.* **2007**, *11*, 951–955. (d) Bullock, K. M.; Mitchell, M. B.; Toczko, J. F. *Org. Process Res. Dev.* **2008**, *12*, 896–899. (e) Huang, J. P.; Chen, X. X.; Gu, S. X.; Zhao, W. X.; Chen, F. E. *Org. Process Res. Dev.* **2010**, *14*, 939–941. (f) Jiang, X. L.; Lee, G. T.; Villhauer, E. B.; Prasad, K.; Prasad, M. *Org. Process Res. Dev.* **2010**, *14*, 883–889. (g) Reginato, G.; Sadler, P.; Wilkes, R. D. *Org. Process Res. Dev.* **2011**, *15*, 1396–1405. (h) Wang, L.; Green, L.; Li, Z.; McCabe Dunn, J.; Bu; Welch, C. J.; Li, C.; Wang, T.; Tu, Q.; Bekos, E.; Richardson, D.; Eckert, J.; Cui, J. *Org. Process Res. Dev.* **2011**, *15*, 1371–1376.

Bu, X., Koide, K., Carder, E. J., & Welch, C. J. (2013). Rapid Analysis of Residual Palladium in Pharmaceutical Development Using a Catalysis-Based Fluorometric Method. *Organic Process Research & Development*, *17*(1), 108–113. https://doi.org/10.1021/op3003008

Scientific article: Tips

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- Important to formulate for yourself what you are trying to achieve with your research
- Can you explain to yourself and potential readers what you are trying to do in several sentences?
- Be exact and aim at avoiding information that is vague or relevant only to you

"The normalised jack-knife validation error is 0.15 in 37 Austrian catchments for the period 1980-2010."

"The model provided an excellent fit to the data."

Reading tip: chapter Providing proper emphasis (Alley, Michael. *The Craft of Scientific Writing*. New York: Springer, 1996)

Language and other tips

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- Keep it simple and clear
- Avoid redundancy
- Choose the right tense
  - When reporting what has been done, use past tense
  - Present tense: general truths
  - Future tense: perspective
  - Source: European Association of Science Editors (2018)
- Learn more
- **Academic writing involves review by peers and thus, manuscript revisions (minor or major) are almost always needed**

Reduce wordiness:

small ~~in size~~
~~true~~ facts
adequate ~~enough~~
aggregate ~~together~~
near ~~to~~

In the future, corresponding regions of the fear circuit observed in this study could serve as a basis for further study.

x

Corresponding regions of the fear circuit observed in this study could serve as a basis for further study.

Tissue examination was done by light microscopy.

x

Tissues were examined by light microscopy.

Source: University of Victoria

Types of academic publications

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- Most commonly required for PhD studies: Original research article
- Others:
  - Methods article
  - Review article
    - Literature review
    - Systematic review
    - Meta-analysis
  - Short communication (e.g., letters to the editor)
  - Case study (case report)
  - Discussion piece (e.g., commentary)

Source: Types of journal articles

Reading tip: More information about reviews

How do I choose a journal?

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- Where do you usually find relevant research?
- Ask your supervisor/ mentor and peers
- Review lists of journals indexed in the Web of Science or Scopus, if this is required for your PhD studies or the Czech “point” system (these often include journal impact factor/cite score)
  - Journal Citation Reports/ Scopus Index Journal
  - We can help if you have questions: Bibliometric services
- Sample recommender services from individual publishers:
  - Elsevier Journal Finder
  - WoS Manuscript Matcher
  - Taylor & Francis Journal Suggester

How do I choose a journal?

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- Ask your supervisor/mentor if your article needs to be published in open access form?
  - If so, are there any publication costs? How will you pay for these costs, if your manuscript is accepted?
  - Where can you publish in the open access? See Directory of Open Access Journals
  - Learn more
- What does the peer review process involve?
  - Learn more
- What are predatory journals?

A note on predatory journals

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- Often lack a quality peer review
- Often use aggressive solicitation (publishing offers via email)
- Very rapid publication timelines (days or weeks)
- High fees
- Unclear or misleading editorial board (check the list of board members and qualifications)
- Unprofessional looking website/hijacked journal
- Not sure? Check Think Check Submit Checklist or ask us

- Stop Predatory Practices
- Beall's List

A note on predatory journals

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Dear Dr. Satkova Barbora,

Good morning!

Thank you for taking time out to read our email.

Well, we are planning to release Volume 3 Issue 1 in our Peer Review Journal of Solar & Photoenergy Systems journal. So, I would like to explore an opportunity of working with you for our journal expansion.

In this instance, we need your article to publish this issue. Hence, let us know your time feasibility for manuscript submission.

Anticipate hearing from you.

Yasmine Berry
PRSP| Peer Review Journal of Solar & Photoenergy Systems

Crimson Publishers LLC, NY 10022, USA

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We understand that your busy schedule and commitments could not permit you to send us article every time, but after a long time we once again appeal you to send us any type of manuscript for the upcoming issue release to enhance the standards of our Journal.

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Your timely contribution will elevate the Journal quality. We request you to respond to this mail within 24 hrs.

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  - Gold (hybrid)

APCs: Payment options

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TOKENS

- Many Czech institutions have a discount or a complete waiver of Open Access (OA) publishing fees due to transformative agreements (via CzechELib)
- Token = opening an article under open license (OA)

<u>Transformative agreements at the IOCB</u>

- Conditions of applying for tokens:
  - Submit the paper in an eligible journal with a transformative agreement
  - Particular publishers: Bentham Publishing, Royal Society of Chemistry, Springer Nature, Wiley (tbc: American Chemical Society)
  - The primary corresponding author should be from the IOCB
  - It is necessary to use the e-mail @uochb.cas.cz
- For information about eligibility, contact your institution's OA administrator: library@uochb.cas.cz

ORCID iD

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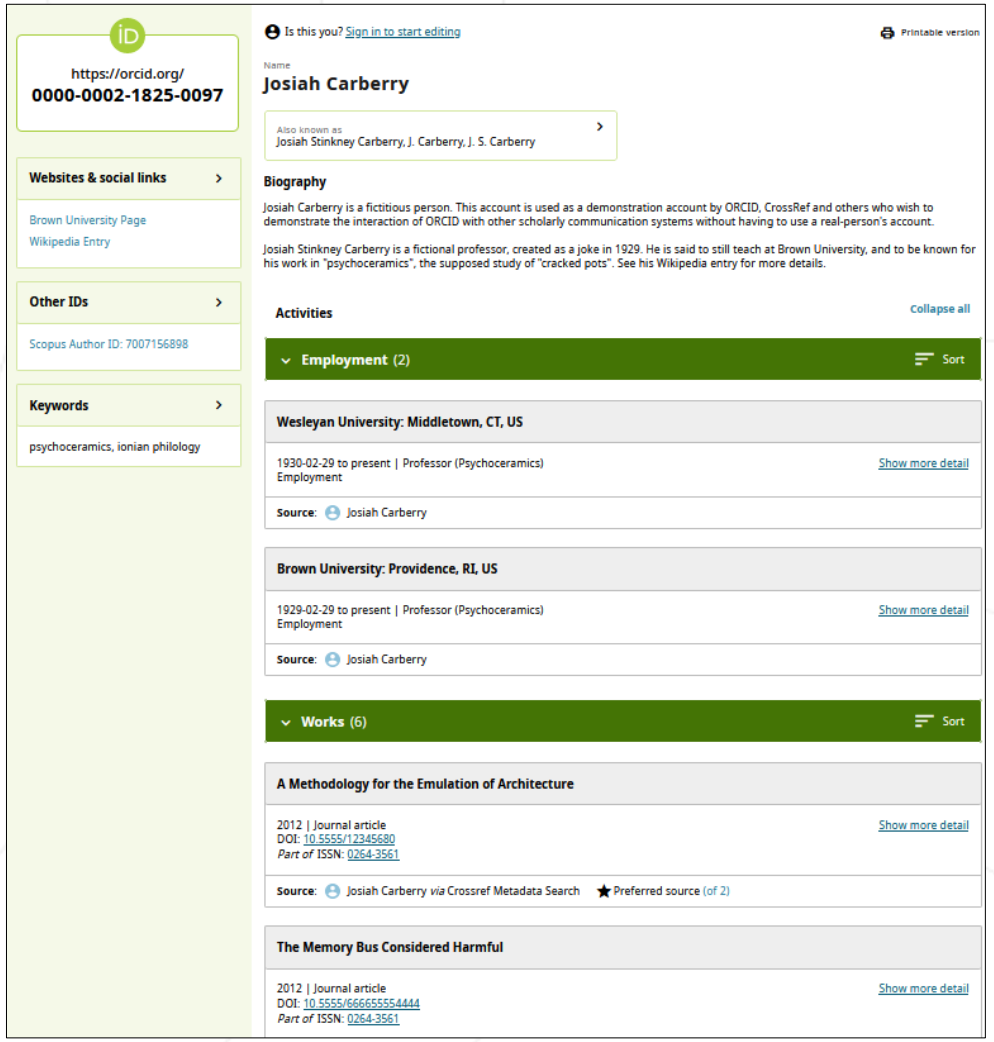
- Persistent personal identifier used by academic journals and databases to make sure work by individuals is appropriately attributed to the right person
  - Often required for a grant application or when publishing an article
  - Looks like this: https://orcid.org/0000-0002-1825-0097
  - Sign up for one here (if you don't have one already)
  - Read more



Source: orcid.org

Typical publication process

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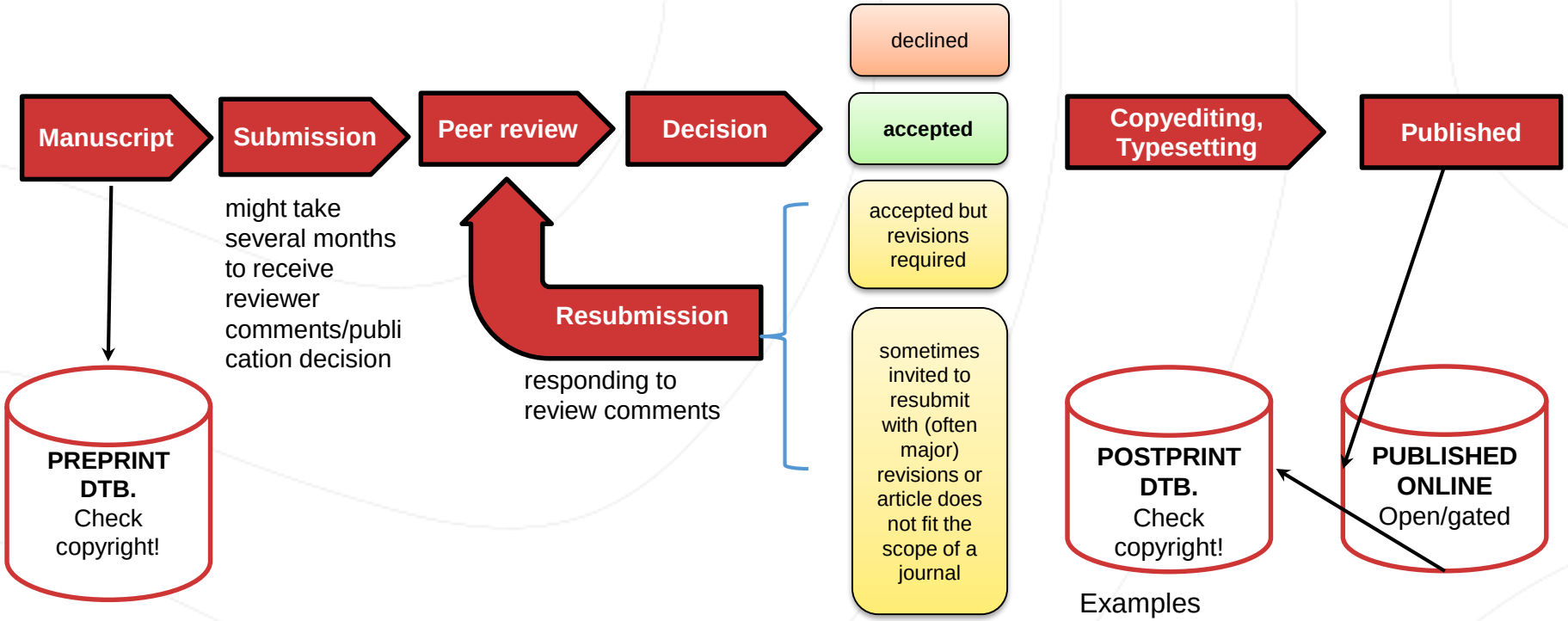

Examples:
- arXiv
- BioRXiv
- MedRXiv

Examples
- CTU repository
- ETH repository
- ResearchGate

Preprint example – when you need to present your results quickly.
Coronavirus infection on human volunteers to understand the nature of the illness.

ARTICLE

Safety, tolerability and viral kinetics during SARS-CoV-2 human challenge

Ben Killingley, Alex Mann, Mariya Kalinova, Alison Boyers, Niluka Goonawardane, Jie Zhou, Kate Lindsell, Samanjit S. Hare, Jonathan Brown, Rebeeca Frise, Emma Smith, Claire Hopkins, Nicolas Noulin, Brandon Londt, Tom Wilkinson, Stephen Harden, Helen McShane, Mark Baillet, Anthony Gilbert, Michael Jacobs, Christine Charman, Priya Mande, Jonathan S. Nguyen-Van-Tam, Malcolm G. Semple, Robert C. Read, Neil M. Ferguson, Peter J. Openshaw, Garth Rapeport, Wendy S. Barclay, Andrew P. Catchpole, Christopher Chiu

DOI: 10.21203/rs.3.rs-1121993/v1 Download PDF

Abstract

To establish a novel SARS-CoV-2 human challenge model, 36 volunteers aged 18-29 years without evidence of previous infection or vaccination were inoculated with 10 $TCID_{50}$ of a wild-type virus (SARS-CoV-2/human/GBR/484861/2020) intranasally. Two participants were excluded from per protocol analysis due to seroconversion between screening and inoculation. Eighteen (~53%) became infected, with viral load (VL) rising steeply and peaking at ~5 days post-inoculation. Virus was first detected in the throat but rose to significantly higher levels in the nose, peaking at ~8.87 log_{10} copies/ml (median, 95% CI [8.41,9.53). Viable virus was recoverable from the nose up to ~10 days post-inoculation, on average. There were no serious adverse events. Mild-to-moderate symptoms were reported by 16 (89%) infected individuals, beginning 2-4 days post-inoculation. Anosmia/dysosmia developed more gradually in 12 (67%) participants. No quantitative correlation was noted between VL and symptoms, with high VLs even in asymptomatic infection, followed by the development of serum spike-specific and neutralising antibodies. However, lateral flow results were strongly associated with viable virus and modelling showed that twice-weekly rapid tests could diagnose infection before 70-80% of viable virus had been generated. Thus, in this first SARS-CoV-2 human challenge study, no serious safety signals were detected and the detailed characteristics of early infection and their public health implications were shown.
ClinicalTrials.gov identifier: NCT04865237.

BADGES

Prescreen

PEER REVIEW TIMELINE

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Version 1
Posted 01 Feb, 2022

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SUBJECT AREAS

Ben Killingley, Alex Mann, Mariya Kalinova et al. Safety, tolerability and viral kinetics during SARS-CoV-2 human challenge, 01 February 2022, PREPRINT (Version 1) available at Research Square [https://doi.org/10.21203/rs.3.rs-1121993/v1]

Submitting your manuscript: cover letter

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- A formal letter accompanying your submission to a journal
- Introduces your work to editor(s)
- Describes how your manuscript aligns with the journal's goals
- Sample: Taylor & Francis sample cover letter

1. Address the editor
2. Title of manuscript and name of the journal
3. Originality or/and conflict of interest
4. Concise description of your research
5. Importance and innovation of your study
6. Fit to the journal's scope and readership
7. Include contact information of author (and co-authors)

Source: Taylor & Francis

How to prepare for peer review

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- Peer reviewers ensure that potential publications meet the academic standards of a journal, providing feedback on the submission
- Reviewers are (ideally) experts in their fields and they provide constructive feedback; it's important to think about their comments and write a proper response to suggested modifications
- Reviewers are often asked to evaluate the **quality, originality, relevance** and **validity** of the research described in the manuscript

Types of peer review			
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Reviewers don't know author identity(-ies). **Author doesn't know reviewer identities.**	Reviewer knows the identity of the author. Author doesn't know the identity of the reviewer.	Both identities are revealed.	**Both know each other. Reviews are published with names of reviewers. Readers may also comment on the article. (e.g., F1000Research)**

Self-study link: Video about peer review.

How to respond to reviewers

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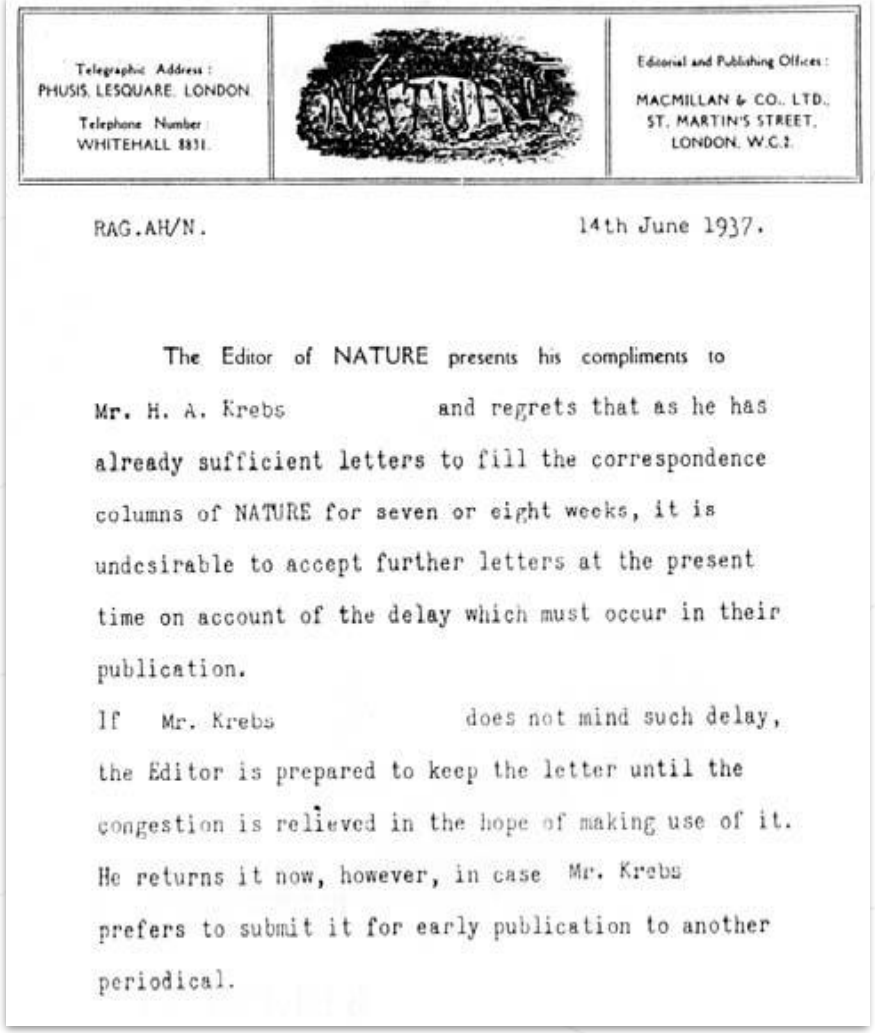
- Formal letter
- Respond to each of the reviewers' comments
- Be polite and respectful
- Indicate the page and line of changes made to make it easy for reviewers to see what you have changed; you can also list items in response
- You can disagree with a statement or say you do not understand a comment, but you should say why so that peer reviewers can understand
- Example: Copernicus Sample response to reviewers

Compilation of: Wiley, Taylor and Francis, Cushman (2023), Min (2022)

Don‘t get discouraged; even renowned scientists have had their work rejected.



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NATURE

Editorial and Publishing Offices: MACMILLAN & CO., LTD., ST. MARTIN'S STREET, LONDON, W.C.2.

RAG.AH/N. 14th June 1937.

The Editor of NATURE presents his compliments to Mr. H. A. Krebs and regrets that as he has already sufficient letters to fill the correspondence columns of NATURE for seven or eight weeks, it is undesirable to accept further letters at the present time on account of the delay which must occur in their publication.

If Mr. Krebs does not mind such delay, the Editor is prepared to keep the letter until the congestion is relieved in the hope of making use of it. He returns it now, however, in case Mr. Krebs prefers to submit it for early publication to another periodical.

Rejection letter from a *Nature* editor, who didn’t accept a letter from Sir Hans Adolf Krebs on the citric acid cycle. Authorea.com

Classical Article › J Theor Biol. 1967 Mar;14(3):255-74. doi: 10.1016/0022-5193(67)90079-3.

On the origin of mitosing cells

L Sagan [1]

Affiliations + expand

PMID: 11541392 DOI: 10.1016/0022-5193(67)90079-3

Abstract

A theory of the origin of eukaryotic cells ("higher" cells which divide by classical mitosis) is presented. By hypothesis, three fundamental organelles: the mitochondria, the photosynthetic plastids and the (9+2) basal bodies of flagella were themselves once free-living (prokaryotic) cells. The evolution of photosynthesis under the anaerobic conditions of the early atmosphere to form anaerobic bacteria, photosynthetic bacteria and eventually blue-green algae (and protoplastids) is described. The subsequent evolution of aerobic metabolism in prokaryotes to form aerobic bacteria (protoflagella and protomitochondria) presumably occurred during the transition to the oxidizing atmosphere. Classical mitosis evolved in protozoan-type cells millions of years after the evolution of photosynthesis. A plausible scheme for the origin of classical mitosis in primitive amoeboflagellates is presented. During the course of the evolution of mitosis, photosynthetic plastids (themselves derived from prokaryotes) were symbiotically acquired by some of these protozoans to form the eukaryotic algae and the green plants. The cytological, biochemical and paleontological evidence for this theory is presented, along with suggestions for further possible experimental verification. The implications of this scheme for the systematics of the lower organisms is discussed.

Groundbreaking article by Lynn Margulis on evolution by endosymbiosis was rejected by 15 journals before finally published, because the topic was too new and nobody could evaluate it.

Sagan L. On the origin of mitosing cells. J Theor Biol. 1967 Mar;14(3):255-74. doi: 10.1016/0022-5193(67)90079-3. PMID: 11541392.

Becoming better and learning more

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- Read more academic articles (from journals you want to publish in, your supervisor/mentor, or researchers that inspire you)
  - Understand the structure, flow, typical content
  - Form a peer reading club with fellow students, colleagues
    - Like book club, but for journal articles
- Check out resources recommended at: STEMskiller > Academic reading and writing
- Use our checklist if your mentor/supervisor can't assist
- Books on academic writing at the NTK
- NTK Academic Writing Q&A Series

Learning outcomes

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- Ability to articulate the principles of scholarly communication and its relevance to academic publishing
- Ability to distinguish between different types of scientific articles and understand their purpose
- Analyze and assess journal characteristics to determine the best fit for manuscript submission
- Understand and navigate the publishing and peer review process

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Thank you

Questions?