Writing for publication

Translational Biomedicine
Institute for Clinical and Translational Science
University of Iowa

February 15, 2023

Jennifer Barr, PhD
Senior Scientific Editor and Writing Consultant
Scientific Editing and Research Communication Core
Carver College of Medicine

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Who we are

Director, Scientific Editor & Writing Consultant

Christine M Blaumueller, PhD

- Laboratory researcher (14 years)
- Journal editor (6 years)
- Founder of UI Scientific Editing Service in 2006
- Founder of SERCC in 2017
- Teacher of scientific writing

Senior Scientific Editor & Writing Consultant

Jennifer Y Barr, PhD

- Laboratory researcher (11 years)
- Scientific editing Intern (2015–2017)
- Full-time editor since 2017
- Teacher of scientific writing
- Experience/training in NIH, NSF & DoD grants

Scientific Editor & Writing Consultant

Heather Widmayer, MS, MBA

- Laboratory researcher (7 years)
- Full-time editors since 2020
- Teacher of scientific writing
- Experience with/training in NIH & NSF grants
- Focus on projects from Department of Neurology

Scientific Editor & Writing Consultant

Michael R Rebagliati, PhD

- Laboratory researcher (>30 years)
- Writer/editor of grants (>20 years)
- Full-time editor since 2022
- Expert in zebrafish and frog as model systems of development
- Focus on projects from Department of Pediatrics

All have:

Advanced degrees in science I Laboratory experience I A love of clear writing!

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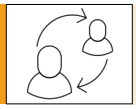
What we'll cover today

1.  Why you need to write well
2.  Ways to make the reader's job easier
3.  Ways to make your job easier
4.  Corresponding with the editorial office
5.  Questions and Resources

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Why you need to write well

I write to discover what I know.
– Flannery O'Connor

- Gain a deeper understanding of your research, how it fits into current body of knowledge
- Discover problems or limitations of your research (before someone else does)

https://fsgworkinprogress.com/2015/07/23/a-stamp-of-good-fortune/

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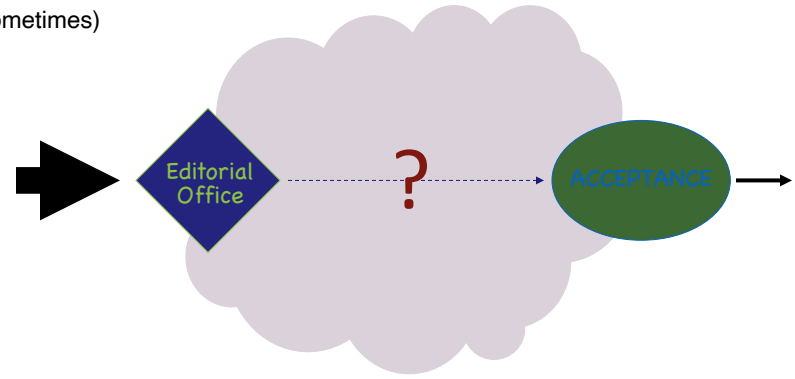
Why you need to write well

Your writing will be evaluated for publication by busy people:

- Reviewers
- Editorial Board members (sometimes)
- Editors
  - Academic
  - Professional



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Why you need to write well

Who are professional editors?

- editing is their full-time job
- trained in research, typically with a PhD or MD and postdoctoral experience
- more aligned with research community than the publishing community
- generalists relative to you
- their job: to make decisions consistent with the journal's editorial policy, and with their other published content

A difference from journals with academic editors

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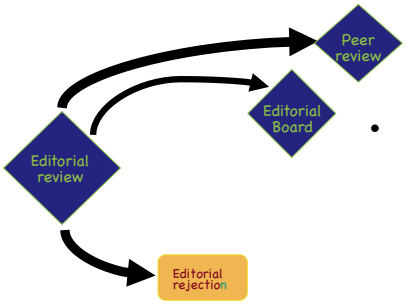
Why you need to write well

Goal: avoid "reviewer fatigue" and poor use of author time.

Editors may do pre-review screening, and this might entail:

- reading newly submitted papers
  - doing literature searches



presenting papers to other editors

- collectively making decisions about each paper, for:
  - in-depth peer review
  - Editorial Board consultation (if applicable)
  - editorial rejection (do novelty and general interest stand up?)

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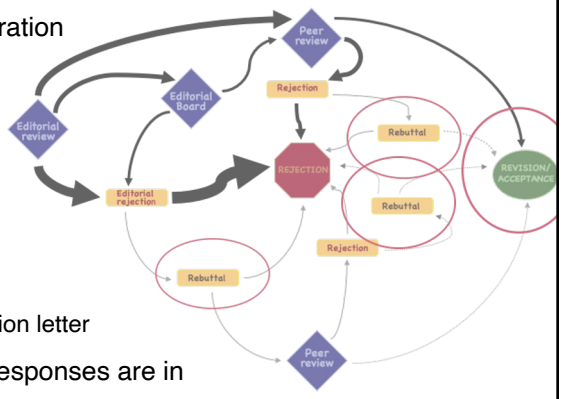
Why you need to write well

Sample day for a professional editor

- select new reviewers for papers under consideration
  - where previous day's requests were declined
- prepare to discuss each new paper
  - read, do literature search
- attend editorial meeting
  - present papers, advise colleagues
- act on decisions from editorial meeting
  - might include writing (clear, constructive) rejection letter
- make decisions on papers for which reviewer responses are in
- consider/respond to any rebuttals
- select new reviewer candidates as necessary



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Why you need to write well

Lesson:

- Most journals can accept only a small fraction of the papers submitted
- Editors (and their advisors) have heavy workloads
- Reviewers have heavy workloads/are overburdened with requests to review papers

So do everything you can to make the editor's and reviewers' jobs easier.
(also applies to grants applications)

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Ways to make the reader's job easier

1. Make the critical information easy to find
2. Make the information easy for a reader to digest
3. Use illustrations, data figures, and tables wisely
4. Make titles informative and interesting
5. Stick to guidelines/fulfill all requirements

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1. Make the critical information easy to find

Put information where it is expected:

- Abstract (or Summary)— a little of everything!
- Introduction— why you did your study (gap in literature?)
- Materials & Methods— how you did your study
- Results— what you did (logic, analysis)
- Discussion— implications and what sets study apart
- References and Acknowledgements
- Supplementary Information— data or methods that don't fit

Methods not always in this order (journal dependent)

IMRaD structure:
- Since 19th century
- Expectation since 1940s

The key is to tell readers:
- WHAT they need to know
- WHEN they need to know it

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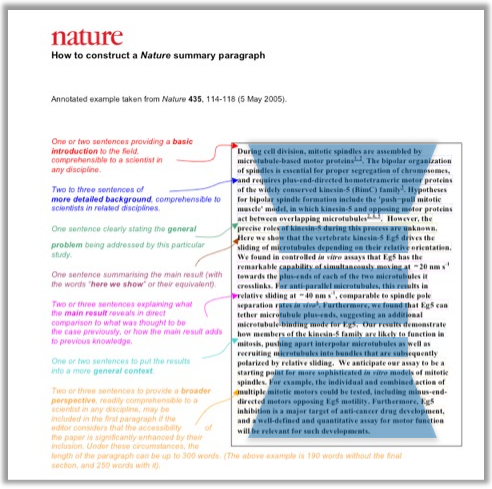
1. Make the critical information easy to find

Abstract content according to Nature instructions:



nature

How to construct a *Nature* summary paragraph

Annotated example taken from *Nature* **435**, 114-118 (5 May 2005).

One or two sentences providing a **basic introduction** to the field, comprehensible to a scientist in any discipline.

Two to three sentences of **more detailed background**, comprehensible to scientists in related disciplines.

One sentence clearly stating the **general problem** being addressed by this particular study.

One sentence summarising the main result (with the words '**here we show**' or their equivalent).

Two or three sentences explaining what the **main result** reveals in direct comparison to what was thought to be the case previously, or how the main result adds to previous knowledge.

One or two sentences to put the results into a more **general context**.

Two or three sentences to provide a **broader perspective**, readily comprehensible to a scientist in any discipline, may be included in the first paragraph if the editor considers that the accessibility of the paper is significantly enhanced by their inclusion. Under these circumstances, the length of the paragraph can be up to 300 words. (The above example is 190 words without the final section, and 250 words with it).

During cell division, mitotic spindles are assembled by microtubule-based motor proteins[1,2]. The bipolar organization of spindles is essential for proper segregation of chromosomes, and requires plus-end-directed homotetrameric motor proteins of the widely conserved kinesin-5 (BimC) family[3]. Hypotheses for bipolar spindle formation include the 'push–pull mitotic muscle' model, in which kinesin-5 and opposing motor proteins act between overlapping microtubules[4–6]. However, the precise role of kinesin-5 during this process are unknown. Here we show that the vertebrate kinesin-5 Eg5 drives the sliding of microtubules depending on their relative orientation. We found in controlled *in vitro* assays that Eg5 has the remarkable capability of simultaneously moving at ~20 nm s^{-1} towards the plus-ends of each of the two microtubules it crosslinks. For anti-parallel microtubules, this results in relative sliding at ~40 nm s^{-1}, comparable to spindle pole separation rates *in vivo*[3]. Furthermore, we found that Eg5 can tether microtubule plus-ends, suggesting an additional microtubule-binding mode for Eg5. Our results demonstrate how members of the kinesin-5 family are likely to function in mitosis, pushing apart interpolar microtubules as well as recruiting microtubules into bundles that are subsequently polarized by relative sliding. We anticipate our assay to be a starting point for more sophisticated *in vitro* models of mitotic spindles. For example, the individual and combined action of multiple mitotic motors could be tested, including minus-end-directed motors opposing Eg5 motility. Furthermore, Eg5 inhibition is a major target of anti-cancer drug development, and a well-defined and quantitative assay for motor function will be relevant for such developments.

General introduction
More detailed background
Gap in knowledge

Overall finding

Finding

Finding

Finding

Significance/general context
Broader Perspective

https://www.nature.com/documents/nature-summary-paragraph.pdf

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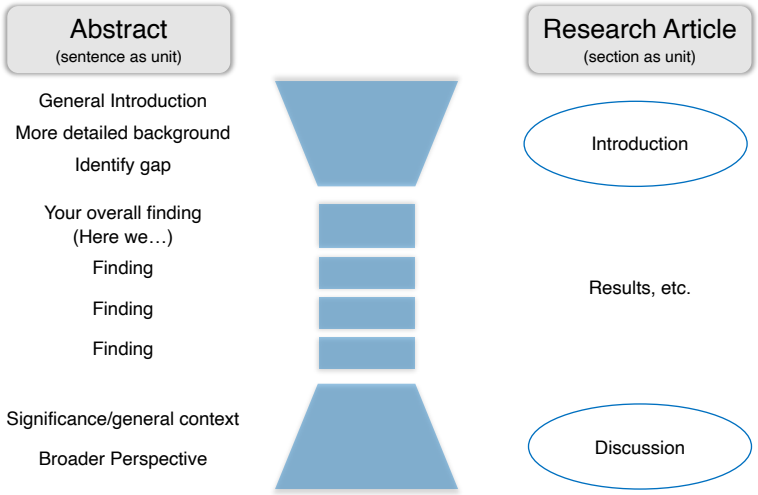
1. Make the critical information easy to find

Use a similar modular structure for the whole article



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1. Make the critical information easy to find

Provide information where the reader expects to find it.

Introduction:
- put study into context
- provide information relevant to understanding purpose, logic and significance of the study

Don't send the reader on tangents by presenting information that's not relevant to this study.

Results:
- clearly explain what each figure illustrates and logic behind experiments without delving deeply into implications
- state findings objectively

Avoid extensive repetition of information in the Results and Introduction sections – make the focus different.

Discussion:
- place work into context of the broader literature
- highlight its implications and significance

Be clear about what is speculation.

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1. Make the critical information easy to find

Provide information where the reader expects to find it.

Materials & Methods:
- — provide enough detail that every experiment can be reproduced
- — remember that criteria for rigor and reproducibility of data are becoming increasingly stringent

References:
- — check for accuracy
- — follow journal format (especially if rewriting for new journal!)

Supplementary Information/Extended View data:
- — follow journal guidelines
  - this might not be meant as a place for entire methods section
  - this might not be copy edited
- — remember that this will add to the reviewers' workload

If this is a methods paper…
- Make the need for the new method clear in Introduction
- Make the value of the new method clear in the Discussion section.
- Focus on the method in the Results section too.

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1. Make the critical information easy to find

Remember who your audience is…

- Title
- Abstract
- Introduction
- Materials & Methods
- Results
- Discussion
- Acknowledgements
- References
- Figures/Figure legends
- Supplementary information

Specialist

- Title
- Abstract
- Introduction
- Materials & Methods
- Results
- Discussion
- Acknowledgements
- References
- Figures/Figure legends
- Supplementary information

Non-specialist

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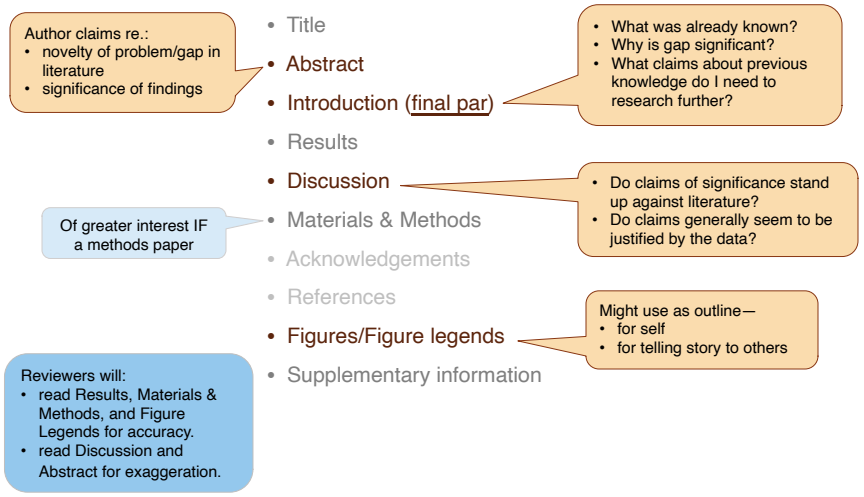
1. Make the critical information easy to find

Remember who your audience is…journal editors



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Ways to make the reader's job easier

1. Make the critical information easy to find
2. Make the information easy for a reader to digest
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5. Stick to guidelines/fulfill all requirements

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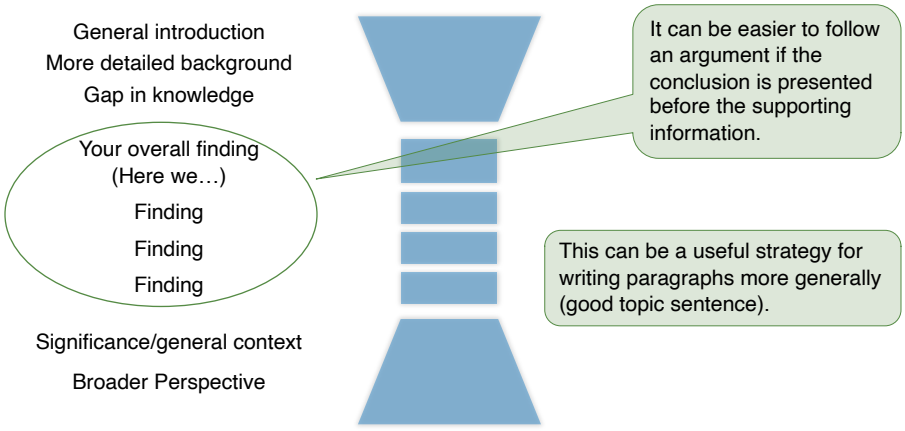
2. Make the information easy to digest

Give the punchline first…



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2. Make the information easy to digest

Present information in a sentence to fit the context.

Topic position – beginning of the sentence

- Place ”old” information here to provide perspective and context
- Circumvents having the reader hunt for the real point of emphasis
- Helps reader construct logical flow of the argument

Failure to write with these in mind can lead to:

- A hunt for the real point of emphasis
- Misinterpretation of meaning.

Stress position – end of the sentence

- Place “new” information here
- The reader naturally emphasizes material that arrives at the end of the sentence

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

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2. Make the information easy to digest

Present information in a sentence to fit the context.

The topic versus the stress position

- The reader expects the story to be about the "one who showed up first"
- Either of the following sentences can be used, depending on what came before

NADPH oxidase generates reactive oxygen species.
[if topic of paragraph is NADPH oxidases]

Reactive oxygen species are generated by NADPH oxidase.
[if topic of paragraph is reactive oxygen species]

Note that either the active or passive voice is OK to use

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

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2. Make the information easy to digest

Keep the verb near its grammatical subject

Indeed, health care providers' attitudes and perceived comfort in treating specific populations, for example in a survey of Vancouver dentists who found that only 19 percent of respondents treat elderly patients living in long-term care facilities, have been noted as contributing to the access problem.

Indeed, health care providers' attitudes and perceived comfort in treating specific populations have been noted as contributing to the access problem.
For example, a survey of Vancouver dentists found that only 19 percent of respondents treat elderly patients living in long-term care facilities.
[If intervening material is an aside]

Indeed, health care providers' attitudes and perceived comfort in treating specific populations have been noted, for example in a survey of Vancouver dentists who found that only 19 percent of respondents treat elderly patients living in long-term care facilities, as contributing to the access problem.
[If intervening material is important]

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

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2. Make the information easy to digest

Use verbs that convey the action – avoid those that don't add to the story

…diffusible factors are involved in mediating interactions.

↓

…diffusible factors mediate interactions.

We performed an analysis of the data.

↓

We analyzed the data

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

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2. Make the information easy to digest

Minimize nominalization (i.e., making useful verbs into nouns)

…a prolongation in median survival can be achieved.

↓

…median survival can be prolonged.

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

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2. Make the information easy to digest

Be judicious using nouns as adjectives

- May be referred to as compound adjectives, compound nouns, noun strings, or noun stacks

… Nox1-containing NADPH oxidase-induced $O_2^{\bullet-}$-mediated EGFR transactivation

↓

…$O_2^{\bullet-}$-mediated EGFR transactivation induced by Nox1-containing NADPH oxidases

Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

https://www.enago.com/academy/noun-stacks-why-you-should-avoid-them-in-scientific-writing/

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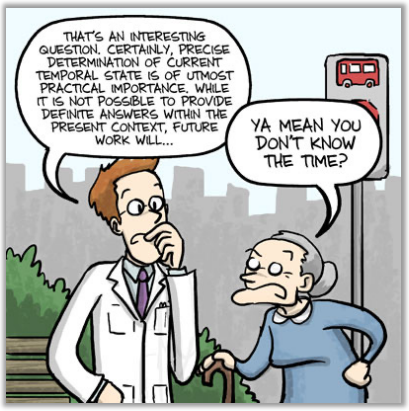
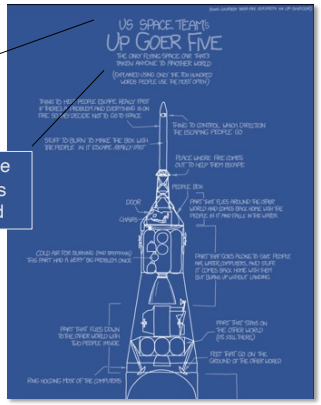
2. Make the information easy to digest

Know your audience – don't let language be an impediment:



Too complicated

US Space Team's Up Goer Five
The only flying space car that's taken anyone to another world



Too simplified (dumbed down)

Nature Education

https://www.nature.com/scitable/ebooks/english-communication-for-scientists-14053993/communicating-as-a-scientist-14238273/

https://xkcd.com/1133/
https://splasho.com/upgoer5/

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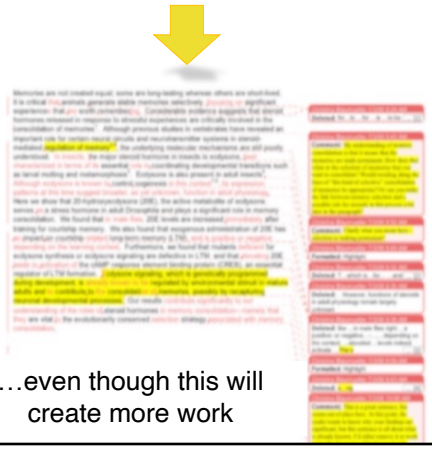
2. Make the information easy to digest

- Get feedback from colleagues:
  - in the field
  - and outside the field
- Revise your writing based on their feedback
- Start early



…even though this will create more work

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Ways to make the reader's job easier

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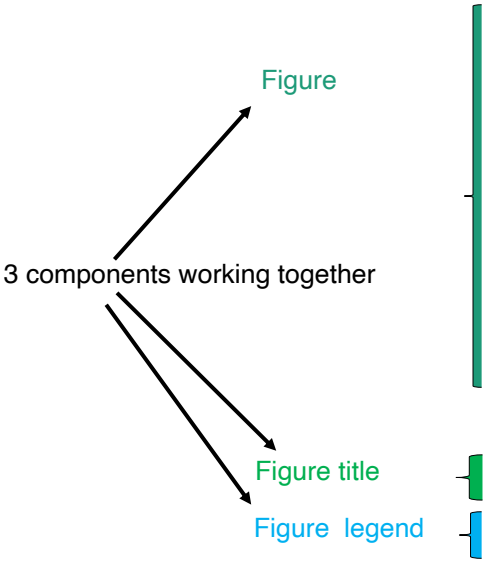
3. Make good use of illustrations, data figures, & tables



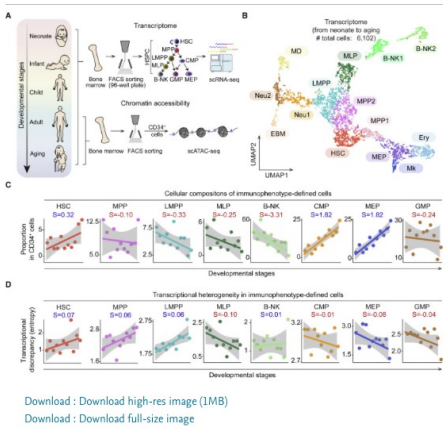


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Figure 1. Single-cell RNA sequencing (scRNA-seq) of human hematopoietic stem and progenitor cells during post-natal development

(A) Schematic diagram of the experimental design. Eight cell populations of bone-marrow-derived hematopoietic stem and progenitor cells (HSPCs) during human post-natal development were enriched by FACS respectively and

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3. Make good use of illustrations, data figures, & tables

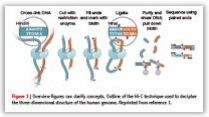
Figures are the foundation of your paper

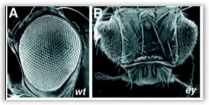
Shoddy figures breed skepticism about the believability of your data.

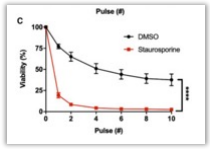
- Can serve as an outline of the results section
  - Use titles to guide reader through the logic of the paper
  - Have them tell the story for you
- Legends should stand alone

Detail sufficient to follow what was done without looking elsewhere

- Data should be presented in the most reader-friendly format
  - Schematic figures: for overviews, models
  - Data figures: for eye-catching results
  - Graphs: to show trends
  - Tables: to provide exact numbers and large data sets







Wong, Nature Methods, 8, 365, 2011, DOI: https://doi.org/10.1038/nmeth0211-101
Blaumueller & Mlodzik, Mechanisms of Development, 2000, doi: 10.1016/s0925-4773(00)00246-x.
Moose et al, Cell Reports, March 17, 2020, DOI: https://doi.org/10.1016/j.celrep.2020.02.080
Waldman et al, Cell, December 8, 2022, DOI: https://doi.org/10.1016/j.cell.2022.11.002

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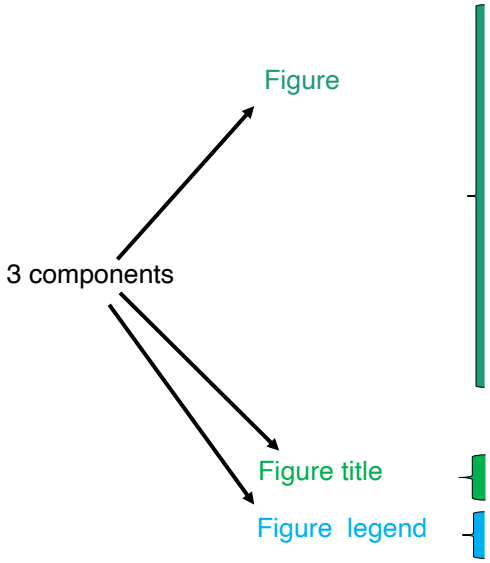
3. Make good use of illustrations, data figures, & tables



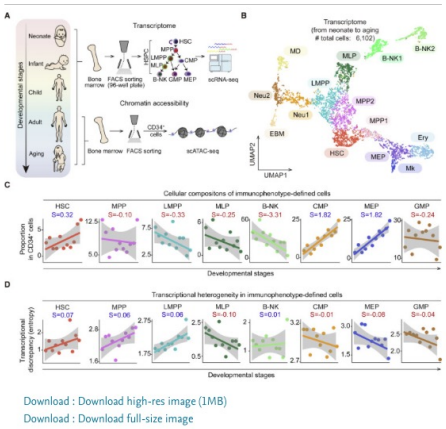


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Figure 1. Single-cell RNA sequencing (scRNA-seq) of human hematopoietic stem and progenitor cells during post-natal development

(A) Schematic diagram of the experimental design. Eight cell populations of bone-marrow-derived hematopoietic stem and progenitor cells (HSPCs) during human post-natal development were enriched by FACS respectively and

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3. Make good use of illustrations, data figures, & tables

- Present information in a logical order that is easy to describe
  - Include enough information to orient the reader

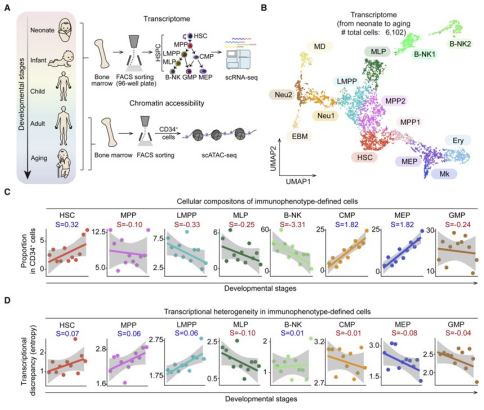

Figure 1. Single-cell RNA sequencing (scRNA-seq) of human hematopoietic stem and progenitor cells during post-natal development

(A) Schematic diagram of the experimental design.

(B) UMAP display of 6,102 hematopoietic stem and progenitor cells

(C) Varied proportions of immunophenotype-enriched cell populations in CD34⁺ cells during the developmental stages.

(D) Transcriptional discrepancy in each immunophenotype-enriched cell population during the developmental stages

Developmental Cell
Volume 57 Issue 24 Pages 2745-2760.e6 (December 2022)
DOI: 10.1016/j.devcel.2022.11.013

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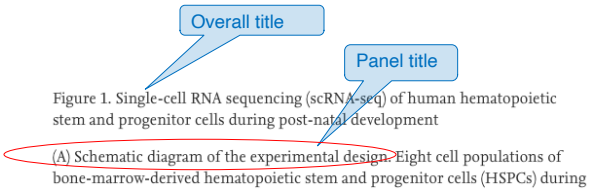
3. Make good use of illustrations, data figures, & tables

Guidelines for figure legends (and tables)

- Include overall title and panel titles
  - Cover all aspects of figure in overall title
  - Make it clear what makes each panel unique



33

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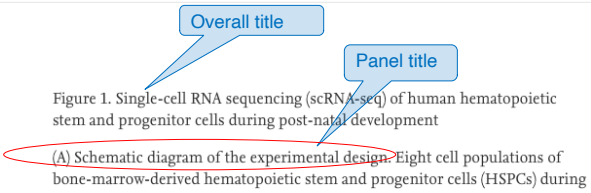

- Give information necessary to understand what is shown (not more)
  - E.g., do not restate methods or draw conclusions
- Make legend text consistent with figure labels, layout, and main text
- Include statistics, significance values, descriptions of symbols *

* Specify n values in all cases.

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3. Make good use of illustrations, data figures, & tables

Guidelines for using tables

- Use only for at least two columns of information
- Use as little space as possible
  - make titles descriptive but not lengthy
  - use footnotes instead of subtitles where possible
  - combine closely related information where reasonable (e.g., Mean/SD + range)
- Avoid repeating information
- Be as uniform as possible, especially with formatting
- Provide units of measurement
- Footnotes
  - use for explanatory information, defining abbreviations, etc.
  - use symbols for easy identification

From Olsen: CSE 2013 Short Course for Manuscript Editors, Table Editing, May 3, 2013

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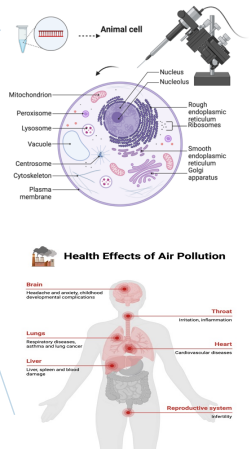
3. Make good use of illustrations, data figures, & tables

- Choose software
  - Adobe Illustrator/Photoshop (powerful tools)
    - https://its.uiowa.edu/support/article/101386
  - BioRender (editable icons)
    - https://medicine.uiowa.edu/sercc/resources/biorender-loaner-license
- Save and keep raw image data uncompressed
  - Saving as a JPEG loses information/quality, but does reduce size
- Follow journal guidelines
  - Often limits on the dpi (dots per inch) (usually < 600 dpi)
- Get feedback
  - And revise your figure for clarity.



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Ways to make the reader's job easier

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5. Stick to guidelines/fulfill all requirements

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4. Make titles (and headings) informative and interesting

- Purpose
  - capture reader's attention
  - highlight what is new
- Should be
  - Informative…
    - what makes this different from other papers
    - not merely a description of the investigation, but of outcome
    - consider using a verb
  - Yet succinct

Notch processing and its consequences for receptor trafficking

Intracellular cleavage of the Notch receptor produces a surface heterodimer

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4. Make titles (and headings) informative and interesting

Ask yourself:

- Does the draft title accurately predict the focus and content?
  - Does it match the conclusion?
  - Is the contribution or potential application clear?
- If using a verb/full sentence:
  - Are the findings sufficiently supported to justify this?
  - Is the key finding stated simply?

Intracellular cleavage of the Notch receptor produces a surface heterodimer

Rare coding variants in ten genes confer substantial risk for schizophrenia

- Can use modal verbs (may/might/could) to suggest:
  - a direction of research or a potential eventual contribution

Circadian rhythms in hippocampal microglia may contribute to age-related neuroinflammatory sensitization.

39

4. Make titles (and headings) informative and interesting

Ask yourself:

Is it easy for a reader to understand the draft title? If not…

- Are there too many nouns?
  - "Compound nouns" (also called "compound adjectives") can make relationships confusing
  - Example:

    An oil can opener repair technician training program

- Are there too many prepositions?
  - Example:

    A filter with a model for the contrast sensitivity of the visual system for modeling human performance in detection tasks with different viewing angles

A program that trains technicians to repair openers for oil cans?

A program that trains repair technicians to open oil cans?

Hilary Glasman-Deal
Science Research Writing: For native and non-native speakers of English, 2nd Edition
World Scientific, 2020

40

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World Scientific, 2020

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Ways to make the reader's job easier

1. Make the critical information easy to find
2. Make the information easy for a reader to digest
3. Use illustrations, data figures, and tables wisely
4. Make titles informative and interesting
5. Stick to guidelines/fulfill all requirements

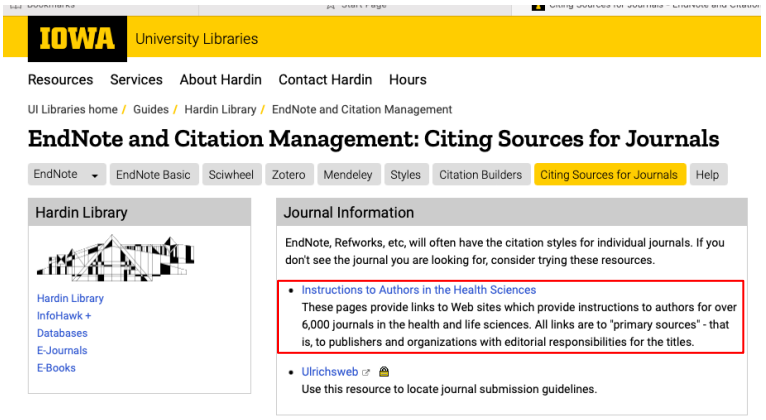
Looking at examples in the journal can help

Often, authors fail to read or follow instructions carefully.

42

5. Stick to guidelines/fulfill all requirements

Finding the “Instructions to Authors”



43

5. Stick to guidelines/fulfill all requirements

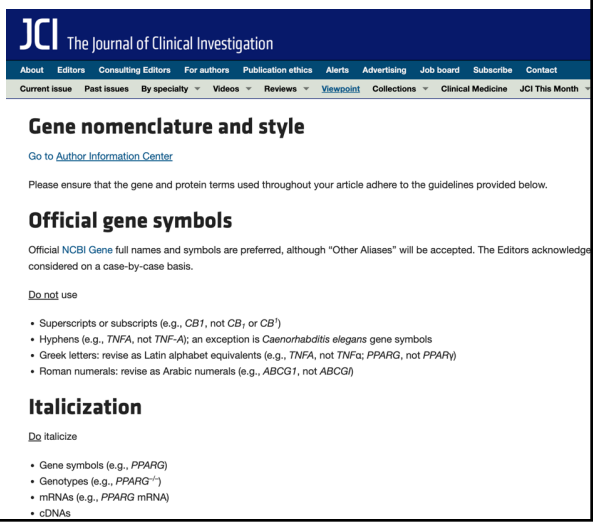
Some journals have their own nomenclature guidelines:

For humans

- human alpha-1-B glycoprotein gene: *A1BG*
- human alpha-1-B glycoprotein protein: A1BG

For mice

- mouse alpha-1-B glycoprotein gene, *A1bg*
- mouse alpha-1-B glycoprotein protein, A1BG



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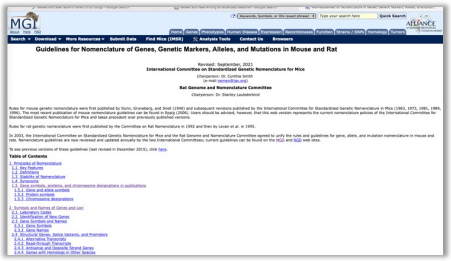
5. Stick to guidelines/fulfill all requirements:

Otherwise, each field/animal model has online nomenclature resources

HUGO Gene Nomenclature Committee
https://www.genenames.org



Mouse Genome Informatics database
http://www.informatics.jax.org/mgihome/nomen/

45

Ways to make your job easier

- Record experimental details right away
- Draft your method sections as you do the experiments
- Generate figures and write the legends as soon as you get the data (while the details are fresh in your mind).
- Have the philosophy that the images you acquire should always be publication quality. (unless the first step of the experiment is a high-throughput screen).
- Load your gels the way you want to present the data in a figure

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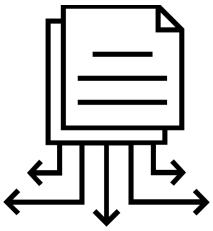
Ways to make your job easier

- Develop an outline
  - Figures/Results -> Introduction -> Discussion -> Methods
  - Write the figure legends/results as you collect the data (or at least headers)
- Plan the function (major point) of each paragraph within each section
  - Stick to 1 major point for each paragraph
  - Identify the key pieces that are needed to make the major points
- Order the paragraphs logically before you start writing
- Plan the function and order of sentences within paragraphs
  - Start with known (contextual information before bringing in new information)



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Science Research Writing: For native and non-native speakers of English, 2nd Edition
World Scientific, 2020

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How to make your job easier

Use reference management software

- Endnote Desktop (free to UI students, staff, faculty).
  - For Mac, Windows, and Linux. Can insert citations with a Word plug-in
- Sciwheel (free to UI students, staff, and faculty).
  - Cloud-based citation management tool, can insert citations into Microsoft Word and Google Documents.
- Zotero is free software to collect, organize, cite, and share research.
  - For Mac, Windows, and Linux. Can insert citations with a Word plug-in

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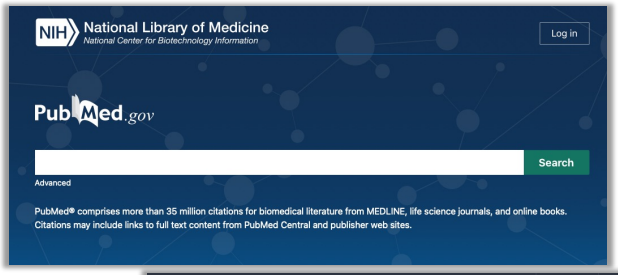
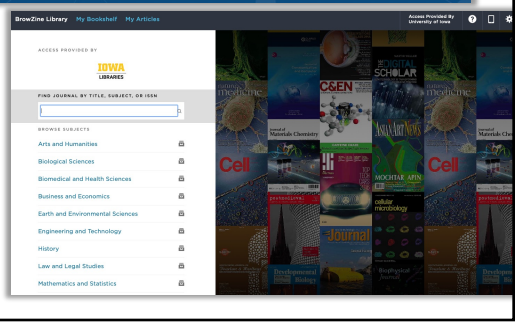
How to make your job easier

Find and Organize Resources

- Pubmed
  - Free through US gov
- Mendeley
  - Free through Uiowa
- BrowZine
  - Free through Uiowa
  - Can download app on phone





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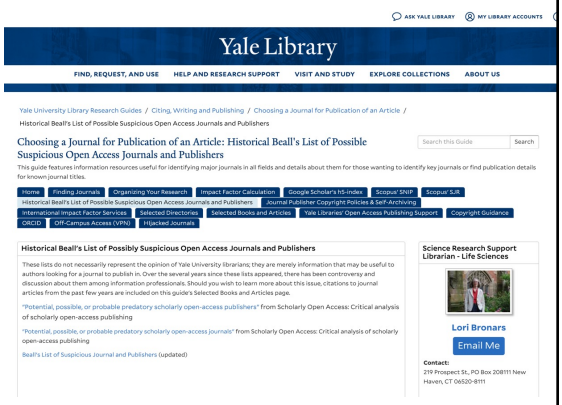
Ways to make your job easier

Figure out where to publish

- If you are choosing the journal
  - ask colleagues or mentors for suggestions
  - have criteria to guide your choice
- Criteria:
  - A good peer review process
  - Targets your desired audience
  - Visibility (impact factor)
  - Speed
  - Open Access policy
- Avoid journals on suspect lists
  - https://guides.library.yale.edu/c.php?g=296124&p=1973764



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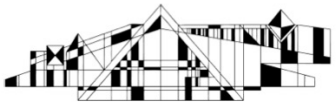
Journal Impact Factors



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Hardin Library for the Health Sciences

Journal Citation Reports

What are Impact Factors?

Impact factors are a quantitative measure of the frequency with which the "average article" published in a given scholarly journal has been cited in a particular year or period; this is used in citation analysis (definition retrieved from http://exchanges.wiley.com/authors/finding-a-journal-for-your-research-_271.html)

$$\text{Impact Factor for Journal X} = \frac{\text{Citations in 2013 to articles published in X in 2011 and 2012}}{\text{Articles published in X in 2011 and 2012}}$$

Not all journals have impact factors, and impact factors are not the only indicator of quality. In addition, impact factors vary greatly between subject areas/disciplines.

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Finding Journal Impact Factors

UI Libraries home / Hardin Library for the Health Sciences

Web of Science and Journal Citation Reports (JCR)

Web of Science is a multidisciplinary database that covers over 12,000 journals. It allows you 1) to search articles on a topic and 2) to track an article's cited and citing references.

Journal Citation Reports (JCR) is the offical source to find a journal's impact factor.

Access to Web of Science and JCR is provided by Web of Knowledge, a research platform by Thomson Reuters (formerly ISI).

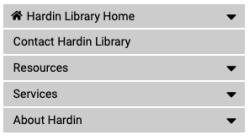
Guides for Web of Science by its supplier Thomson Reuters

- Web of Science Quick Reference Guide (PDF): an introductory guide with pictorial illustrations
- Web of Science Help: an online help document that allows browsing and searching.
- Web of Science video tutorials: short video on topics such as search tips, cited reference searching, and H index.

Guides for Journal Citation Reports (JCR)

- JCR Help: an online help document that allows browsing using it index or Table of Content. (Thomson Reuters)
- Finding Impact Factors via Journal Citation Reports (Hardin Library)

For further help contact your librarians.



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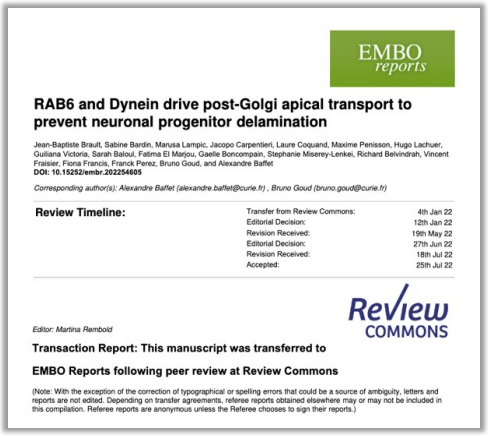
Corresponding with the Editorial Office



EMBO reports

RAB6 and Dynein drive post-Golgi apical transport to prevent neuronal progenitor delamination

Jean-Baptiste Brault, Sabine Bardin, Marusa Lampic, Jacopo Carpentieri, Laure Coquand, Maxime Penisson, Hugo Lachuer, Guiliana Victoria, Sarah Baloul, Fatima El Marjou, Gaelle Boncompain, Stephanie Miserey-Lenkei, Richard Belvindrah, Vincent Fraisier, Fiona Francis, Franck Perez, Bruno Goud, and Alexandre Baffet
DOI: 10.15252/embr.202254605

Corresponding author(s): Alexandre Baffet (alexandre.baffet@curie.fr) , Bruno Goud (bruno.goud@curie.fr)

Review Timeline:

Transfer from Review Commons:	4th Jan 22
Editorial Decision:	12th Jan 22
Revision Received:	19th May 22
Editorial Decision:	27th Jun 22
Revision Received:	18th Jul 22
Accepted:	25th Jul 22

Review COMMONS

Editor: Martina Rembold

Transaction Report: This manuscript was transferred to

EMBO Reports following peer review at Review Commons

(Note: With the exception of the correction of typographical or spelling errors that could be a source of ambiguity, letters and reports are not edited. Depending on transfer agreements, referee reports obtained elsewhere may or may not be included in this compilation. Referee reports are anonymous unless the Referee chooses to sign their reports.)

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The cover letter *

- Send it with any submission and remember that it is for the editor's benefit
- These should be succinct and convey your enthusiasm
- It is opportunity to make case for publication of your paper in this journal:
  - highlight what is new, why it is significant
  - highlight who among readership will be most interested, and why
- They provide an opportunity to:
  - explain a special need (co-submission, controversy in field)
  - suggest appropriate reviewers (name, contact info)
  - indicate possible conflict of interest for potential reviewers

* The journal might have specific formula for the cover letter

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Responding to decisions

Sending your paper off…

…is obviously not the end of the story

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Responding to decisions

If the outcome is 

:

- read editor's letter and reviewer reports objectively
- use comments constructively in rewriting for new journal
- if you feel your work has been misunderstood
  - consider why
  - have you explained everything clearly?

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Responding to decisions

Submit a Rebuttal :

- only if you have logical arguments
- be succinct
- clearly outline gist of problem
- offer to submit a point-by-point list detailing
  - changes that would be made
  - responses to individual concerns
- maintain respectful tone throughout

Examples:
- The study addresses a key controversy in the field
- The problem addressed is a major stumbling block and this study overcomes that
- Novel aspects weren't highlighted sufficiently

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Responding to decisions

If the outcome is a request for REVISION :

- address reviewer/editor concerns
  - as fully as possible
  - within the time limit for revision
- if major requests seem unrealistic, check with editor
  - does publication depend strictly on full compliance?
- prepare cover letter outlining gist of changes made
- make it easy for reviewers and editors to follow changes!
  - point-by-point list of changes/responses to criticisms
  - possibly include manuscript copy with changes highlighted

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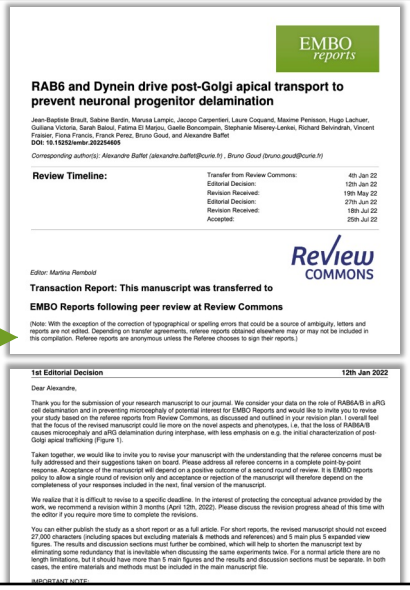
For examples of how the editorial process works…

Some journals post author correspondence for accepted research articles
- with author permission



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Questions?

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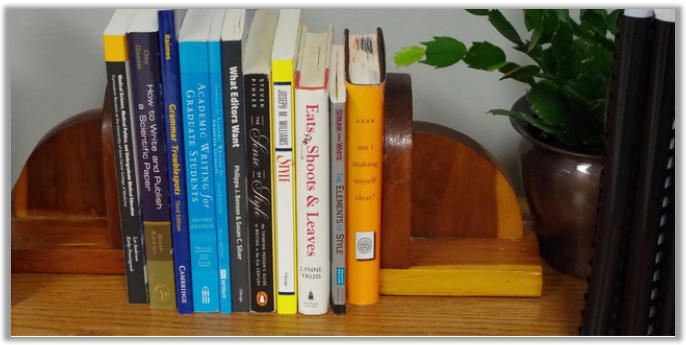
Resources



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Resources – Research Articles

- Our lectures and tips for writing research articles
- Resources for creating figures
- Articles and books about paper writing
  - Frank, D.J. (2018). How to Write a Research Manuscript. *Current Protocols*. 16 e20. doi:10.1002/cpet.20

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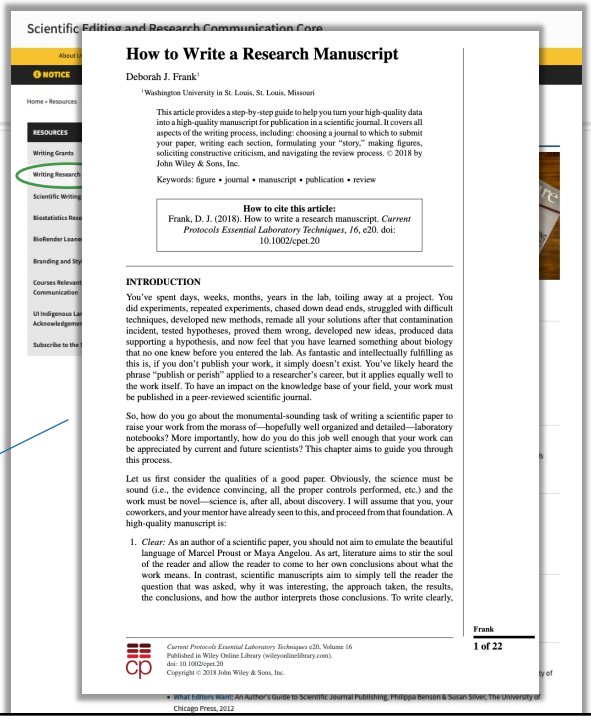

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How to Write a Research Manuscript

Deborah J. Frank[1]

[1]Washington University in St. Louis, St. Louis, Missouri

This article provides a step-by-step guide to help you turn your high-quality data into a high-quality manuscript for publication in a scientific journal. It covers all aspects of the writing process, including: choosing a journal to which to submit your paper, writing each section, formulating your "story," making figures, soliciting constructive criticism, and navigating the review process. © 2018 by John Wiley & Sons, Inc.

Keywords: figure • journal • manuscript • publication • review

How to cite this article:
Frank, D. J. (2018). How to write a research manuscript. *Current Protocols Essential Laboratory Techniques*, *16*, e20. doi: 10.1002/cpet.20

INTRODUCTION

You've spent days, weeks, months, years in the lab, toiling away at a project. You did experiments, repeated experiments, chased down dead ends, struggled with difficult techniques, developed new methods, remade all your solutions after that contamination incident, tested hypotheses, proved them wrong, developed new ideas, produced data supporting a hypothesis, and now feel that you have learned something about biology that no one knew before you entered the lab. As fantastic and intellectually fulfilling as this is, if you don't publish your work, it simply doesn't exist. You've likely heard the phrase "publish or perish" applied to a researcher's career, but it applies equally well to the work itself. To have an impact on the knowledge base of your field, your work must be published in a peer-reviewed scientific journal.

So, how do you go about the monumental-sounding task of writing a scientific paper to raise your work from the morass of—hopefully well organized and detailed—laboratory notebooks? More importantly, how do you do this job well enough that your work can be appreciated by current and future scientists? This chapter aims to guide you through this process.

Let us first consider the qualities of a good paper. Obviously, the science must be sound (i.e., the evidence convincing, all the proper controls performed, etc.) and the work must be novel—science is, after all, about discovery. I will assume that you, your coworkers, and your mentor have already seen to this, and proceed from that foundation. A high-quality manuscript is:

1. *Clear:* As an author of a scientific paper, you should not aim to emulate the beautiful language of Marcel Proust or Maya Angelou. As art, literature aims to stir the soul of the reader and allow the reader to come to her own conclusions about what the work means. In contrast, scientific manuscripts aim to simply tell the reader the question that was asked, why it was interesting, the approach taken, the results, the conclusions, and how the author interprets those conclusions. To write clearly,

Frank
1 of 22

Current Protocols Essential Laboratory Techniques e20, Volume 16
Published in Wiley Online Library (wileyonlinelibrary.com).
doi: 10.1002/cpet.20

• What Editors Want: An Author's Guide to Scientific Journal Publishing, Philippa Benson & Susan Silver, The University of Chicago Press, 2012

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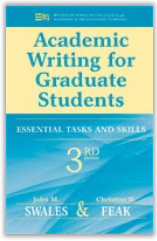
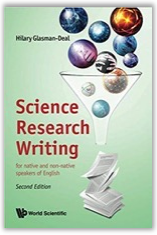
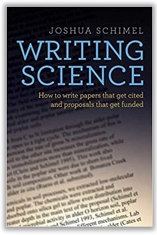
Resources on writing strategy – Publication



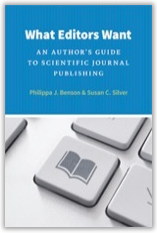
John Swales & Christine Feak
Academic Writing for Graduate Students, 3rd Edition
University of Michigan Press, 2008

Hilary Glasman-Deal
Science Research Writing:
For native and non-native speakers of English, 2nd Edition
World Scientific, 2020





Joshua Schimel
Writing Science: How to Write Papers That Get Cited and Proposals That Get Funded (Illustrated Edition)
Oxford University Press, 2011



Philippa Benson & Susan Silver
What Editors Want: An Author's Guide to Scientific Journal Publishing
The University of Chicago Press, 2012

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Resources – Scientific Writing

- Our lectures on scientific writing
- Resources from the graduate college
- Books and articles about scientific writing
- Books and articles on writing generally

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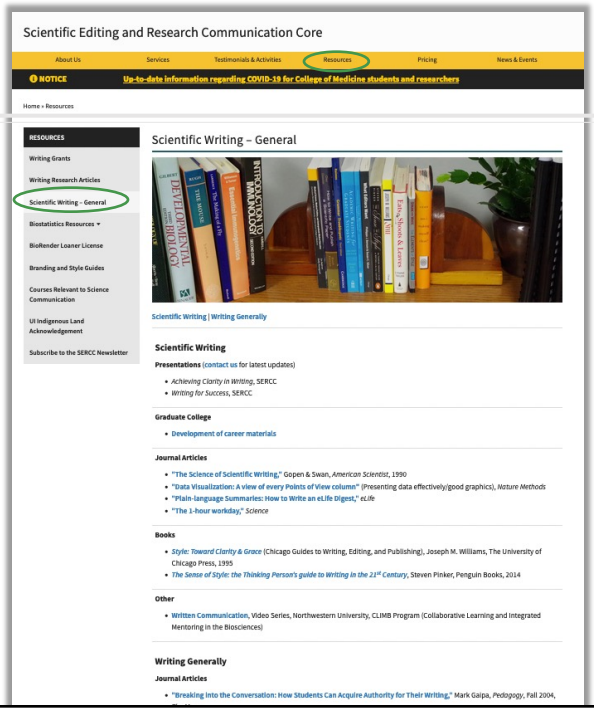

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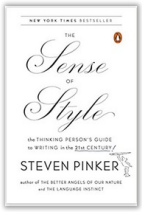
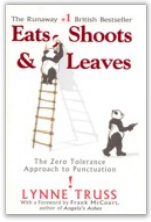
Resources on clear writing

Joseph M. Williams
Style: Toward Clarity & Grace
The University of Chicago Press
1995



Steven Pinker
The Sense of Style: The Thinking Person's Guide to Writing in the 21st Century
Penguin Books, 2015

William Strunk Jr. & E.B. White
The Elements of Style
(Fourth Edition)
Allyn and Bacon, 1999



Lynne Truss
Eats, Shoots & Leaves: the Zero Tolerance Approach to Punctuation
Gotham Books, 2004

*** Gopen & Swan: The Science of Scientific Writing, American Scientist 78, 550-558. 1990.

Writing tips by Westbrook & Cooper: Society for Neuroscience and The Journal of Neuroscience websites.

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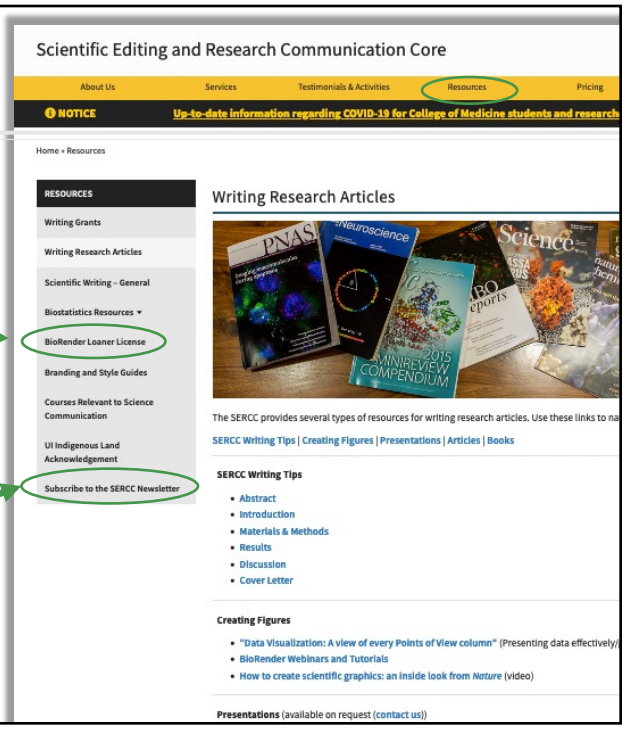
Resources – More

- Biostatistics Resources
- BioRender Loaner License
- Courses Relevant to Science Communication
- Subscribe to the SERCC Newsletter



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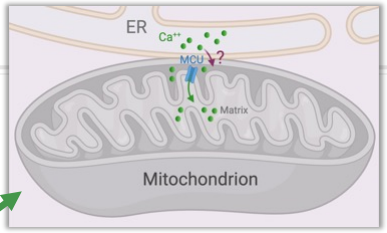

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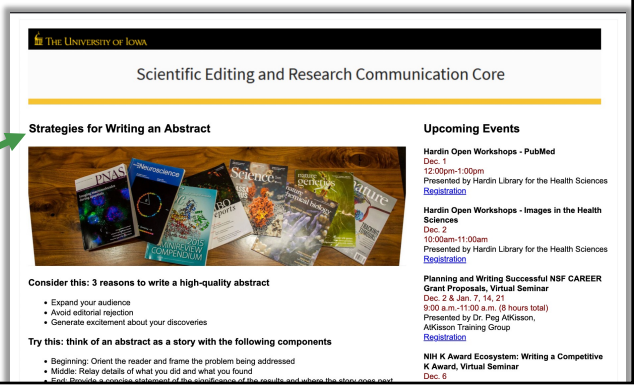

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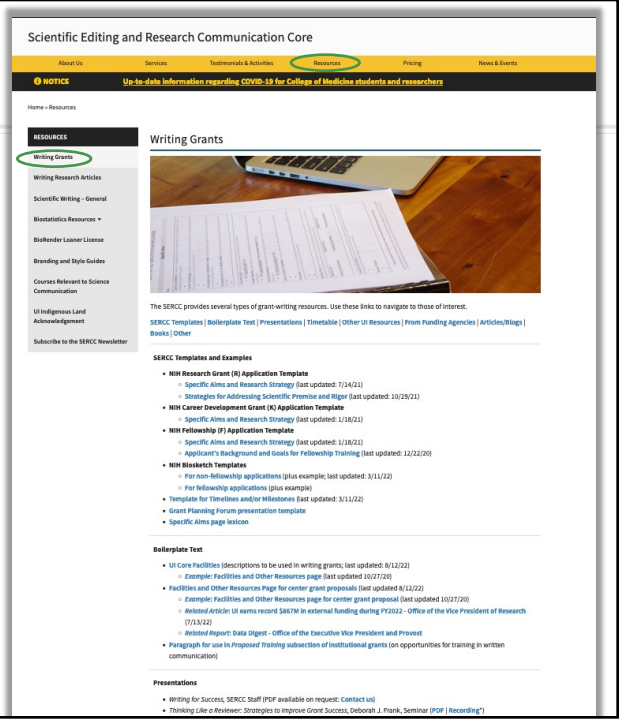
Resources – Grants

- Our templates and boilerplate text
- Our lectures and tips for writing grants
- Other UI offices and their resources
- From funding agencies
- Articles, blogs, books



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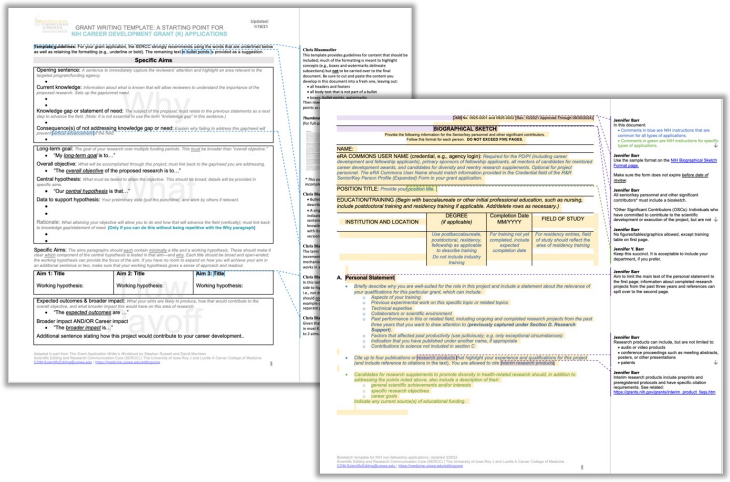
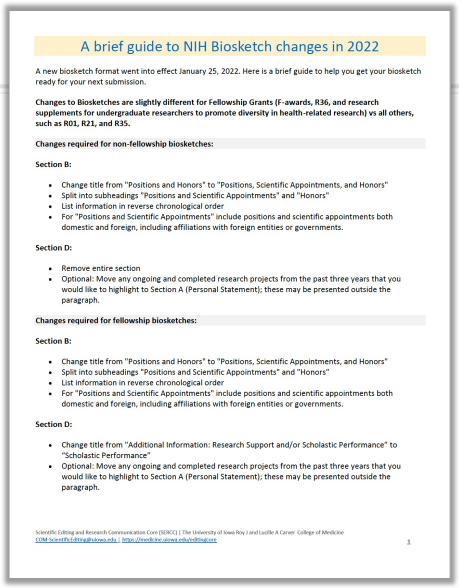
Resources – Grants


GRANT WRITING TEMPLATE: A STARTING POINT FOR NIH CAREER DEVELOPMENT GRANT (K) APPLICATIONS

Specific Aims

BIOGRAPHICAL SKETCH


A brief guide to NIH Biosketch changes in 2022

A new biosketch format went into effect January 25, 2022. Here is a brief guide to help you get your biosketch ready for your next submission.

Changes to Biosketches are slightly different for Fellowship Grants (F-awards, R36, and research supplements for undergraduate researchers to promote diversity in health-related research) vs all others, such as R01, R21, and R35.

Changes required for non-fellowship biosketches:

Section B:

- Change title from "Positions and Honors" to "Positions, Scientific Appointments, and Honors"
- Split into subheadings "Positions and Scientific Appointments" and "Honors"
- List information in reverse chronological order
- For "Positions and Scientific Appointments" include positions and scientific appointments both domestic and foreign, including affiliations with foreign entities or governments.

Section D:

- Remove entire section
- Optional: Move any ongoing and completed research projects from the past three years that you would like to highlight to Section A (Personal Statement); these may be presented outside the paragraph.

Changes required for fellowship biosketches:

Section B:

- Change title from "Positions and Honors" to "Positions, Scientific Appointments, and Honors"
- Split into subheadings "Positions and Scientific Appointments" and "Honors"
- List information in reverse chronological order
- For "Positions and Scientific Appointments" include positions and scientific appointments both domestic and foreign, including affiliations with foreign entities or governments.

Section D:

- Change title from "Additional Information: Research Support and/or Scholastic Performance" to "Scholastic Performance"
- Optional: Move any ongoing and completed research projects from the past three years that you would like to highlight to Section A (Personal Statement); these may be presented outside the paragraph.

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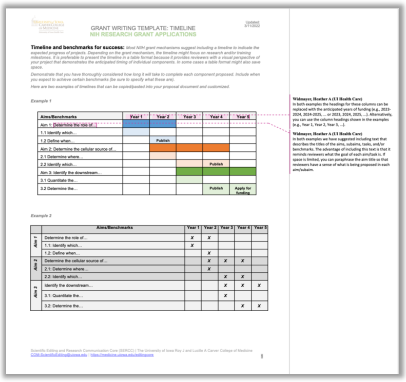
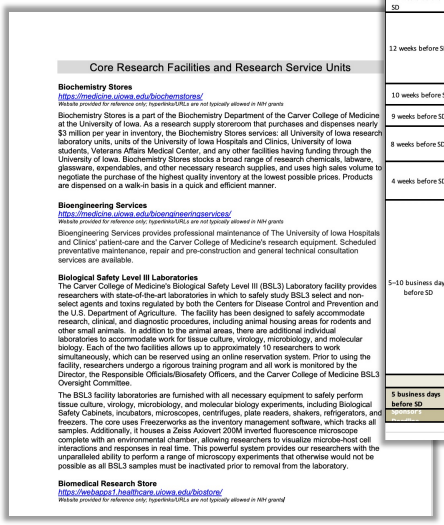
https://medicine.uiowa.edu/sercc/

Resources – Grants


GRANT WRITING TEMPLATE: TIMELINE NIH RESEARCH GRANT APPLICATIONS


Core Research Facilities and Research Service Units

Biochemistry Stores
https://medicine.uiowa.edu/biochemstores/
Website provided for reference only; hyperlinks/URLs are not typically allowed in NIH grants

Biochemistry Stores is a part of the Biochemistry Department of the Carver College of Medicine at the University of Iowa. As a research supply storeroom that purchases and dispenses nearly $3 million per year in inventory, the Biochemistry Stores services: all University of Iowa research laboratory units, units of the University of Iowa Hospitals and Clinics, University of Iowa students, Veterans Affairs Medical Center, and any other facilities having funding through the University of Iowa. Biochemistry Stores stocks a broad range of research chemicals, labware, glassware, expendables, and other necessary research supplies, and uses high sales volume to negotiate the purchase of the highest quality inventory at the lowest possible prices. Products are dispensed on a walk-in basis in a quick and efficient manner.

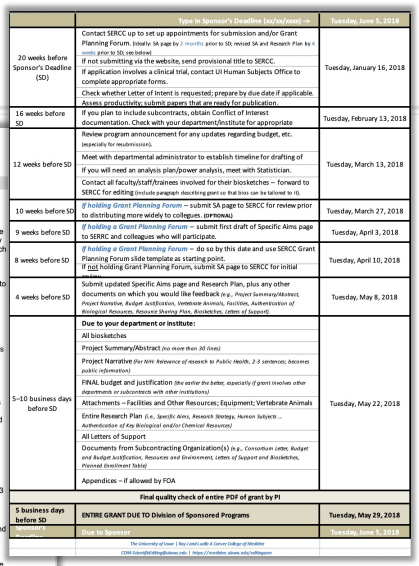
Bioengineering Services
https://medicine.uiowa.edu/bioengineeringservices/
Website provided for reference only; hyperlinks/URLs are not typically allowed in NIH grants

Bioengineering Services provides professional maintenance of The University of Iowa Hospitals and Clinics' patient-care and the Carver College of Medicine's research equipment. Scheduled preventative maintenance, repair and pre-construction and general technical consultation services are available.

Biological Safety Level III Laboratories
The Carver College of Medicine's Biological Safety Level III (BSL3) Laboratory facility provides researchers with state-of-the-art laboratories in which to safely study BSL3 select and non-select agents and toxins regulated by both the Centers for Disease Control and Prevention and the U.S. Department of Agriculture. The facility has been designed to safely accommodate research, clinical, and diagnostic procedures, including animal housing areas for rodents and other small animals. In addition to the animal areas, there are additional individual laboratories to accommodate work for tissue culture, virology, microbiology, and molecular biology. Each of the two facilities allows up to approximately 10 researchers to work simultaneously, which can be reserved using an online reservation system. Prior to using the facility, researchers undergo a rigorous training program and all work is monitored by the Director, the Responsible Officials/Biosafety Officers, and the Carver College of Medicine BSL3 Oversight Committee.

The BSL3 facility laboratories are furnished with all necessary equipment to safely perform tissue culture, virology, microbiology, and molecular biology experiments, including Biological Safety Cabinets, incubators, microscopes, centrifuges, plate readers, shakers, refrigerators, and freezers. The core uses Freezerworks as the inventory management software, which tracks all samples. Additionally, it houses a Zeiss Axiovert 200M inverted fluorescence microscope complete with an environmental chamber, allowing researchers to visualize microbe-host cell interactions and responses in real time. This powerful system provides our researchers with the unparalleled ability to perform a range of microscopy experiments that otherwise would not be possible as all BSL3 samples must be inactivated prior to removal from the laboratory.

Biomedical Research Store
https://webapps1.healthcare.uiowa.edu/biostore/
Website provided for reference only; hyperlinks/URLs are not typically allowed in NIH grants


	Type in Sponsor's Deadline (xx/xx/xxxx) -->	Tuesday, June 5, 2018
20 weeks before Sponsor's Deadline (SD)	Contact SERCC up to set up appointments for submission and/or Grant Planning Forum. Ideally: SA page by 2 months prior to SD, revised SA and Research Plan by 4 weeks prior to SD, see below)	Tuesday, January 16, 2018
	If not submitting via the website, send provisional title to SERCC.	
	If application involves a clinical trial, contact UI Human Subjects Office to complete appropriate forms.	
	Check whether Letter of Intent is requested; prepare by due date if applicable.	
	Assess productivity; submit papers that are ready for publication.	
16 weeks before SD	If you plan to include subcontracts, obtain Conflict of Interest documentation. Check with your department/institute for appropriate	Tuesday, February 13, 2018
12 weeks before SD	Review program announcement for any updates regarding budget, etc. (especially for resubmission).	Tuesday, March 13, 2018
	Meet with departmental administrator to establish timeline for drafting of	
	If you will need an analysis plan/power analysis, meet with Statistician.	
	Contact all faculty/staff/trainees involved for their biosketches – forward to SERCC for editing (include paragraph describing grant so that bios can be tailored to it).	
10 weeks before SD	*If holding Grant Planning Forum* – submit SA page to SERCC for review prior to distributing more widely to colleges. (OPTIONAL)	Tuesday, March 27, 2018
9 weeks before SD	*If holding a Grant Planning Forum* – submit first draft of Specific Aims page to SERCC and colleagues who will participate.	Tuesday, April 3, 2018
8 weeks before SD	*If holding a Grant Planning Forum* – do so by this date and use SERCC Grant Planning Forum slide template as starting point. If not holding Grant Planning Forum, submit SA page to SERCC for initial	Tuesday, April 10, 2018
4 weeks before SD	Submit updated Specific Aims page and Research Plan, plus any other documents on which you would like feedback (e.g., *Project Summary/Abstract, Project Narrative, Budget Justification, Vertebrate Animals, Facilities, Authentication of Biological Resources, Resource Sharing Plan, Biosketches, Letters of Support*).	Tuesday, May 8, 2018
5–10 business days before SD	Due to your department or institute:	Tuesday, May 22, 2018
	All biosketches	
	Project Summary/Abstract (*no more than 30 lines*)	
	Project Narrative (*for NIH: Relevance of research to Public Health, 2-3 sentences; becomes public information*)	
	FINAL budget and justification (*the earlier the better, especially if grant involves other departments or subcontracts with other institutions*)	
	Attachments – Facilities and Other Resources; Equipment; Vertebrate Animals	
	Entire Research Plan (*i.e., Specific Aims, Research Strategy, Human Subjects … Authentication of Key Biological and/or Chemical Resources*)	
	All Letters of Support	
	Documents from Subcontracting Organization(s) (*e.g., Consortium Letter, Budget and Budget Justification, Resources and Environment, Letters of Support and Biosketches, Planned Enrollment Table*)	
	Appendices – if allowed by FOA	
	Final quality check of entire PDF of grant by PI	
5 business days before SD	ENTIRE GRANT DUE TO Division of Sponsored Programs	Tuesday, May 29, 2018
Submitted	Due to Sponsor	Tuesday, June 5, 2018

https://medicine.uiowa.edu/sercc/

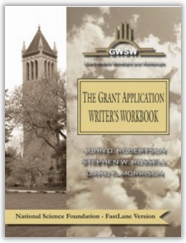
Resources on writing strategy – Grantsmanship

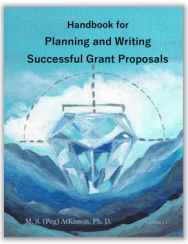
John Robertson, Stephen Russell, And David Morrison

Writing Winning Grants (NIH, NSF…)

Grant Writers' Seminars and Workshops, LLC

http://www.grantcentral.com





AtKisson Training Group

https://www.atkissontraininggroup.com/resources

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