

Preparing a Tips & Tools Section Manuscript

GENERAL GUIDELINES

Manuscripts in this section describe practical, technical, and feasible advice for improving teaching and learning in the science classroom or laboratory. Brief, novel, ready-to-use best practices for teaching scientific concepts are welcome. Articles in this section present quick ideas and practices that have not been rigorously tested. Assessment of the topic is encouraged but NOT required.

Topics for Tips & Tools may include but are not limited to:

- Novel classroom, laboratory, or field activities
- Independent project ideas
- Service learning ideas
- Class management approaches
- Assessment tools
- Career education
- Outreach activities

Manuscript length: 800 to 1,100 words in length, not including the abstract or references, with the goal of the text and figures fitting on two printed pages. The abstract must be submitted as part of the original manuscript, but will be published in the article metadata only. Supplemental materials (e.g., student instruction handouts, directions for preparation, and the like) may be submitted and are not included in the word limit.

Manuscript Review Criteria. Reviewers are provided a rubric to guide their assessment of a manuscript (see below). Authors are highly encouraged to review the rubric prior to submission.

Editorial Style. For examples of ASM journals style conventions, review manuscripts in your intended section before submitting your manuscript. ASM copyeditors and the *JMBE* production staff reserve the privilege of editing manuscripts to conform to ASM stylistic conventions and these Author Guidelines. Authors who are unsure of proper English usage should have their manuscripts checked by someone proficient in the English language. Manuscripts may be editorially rejected, without review, on the basis of poor English or lack of conformity to the standards set forth in these Author Guidelines.

Copyediting. After final acceptance, a manuscript will be copyedited to conform to the editorial style of the ASM Style Manual for Journals (American Society for Microbiology, 2011, in-house document) and *How to Write and Publish a Scientific Paper*, 6th ed. (Greenwood Press, Westport, CT, 2006), as interpreted and modified by the editors and the *JMBE* production staff. It is the responsibility of the corresponding author to read the copyedited manuscript he or she will receive, and to answer all queries fully.

MANUSCRIPT COMPOSITION AND FORMATTING

File Format. The submission file should be in Microsoft Word.

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Document Format. The text should be double-spaced; using a 10-point Times New Roman font or equivalent; employ italics, rather than underlining (except for URL addresses); include line numbers; and have figures and tables placed at the end of the text, rather than embedded within.

Website Linking. All URL addresses in the text should be activated and ready to click.

Figures and Tables. Figures and tables are numbered and include a heading followed by a period. **Permissions are required to reproduce or modify figures and tables within the submitted manuscript and any associated supplemental materials.**

Images. All images are uploaded as Supplemental Files in JPG or GIF format with 300 dpi (color or grayscale). Monochrome images have been saved in grayscale mode; color images are in RGB. No BMP, RTF, or TIF images are permitted. Images should be at least 3 inches and no greater than 5 inches in the greatest dimension. **Permissions are required to reproduce or modify images within the submitted manuscript and any associated supplemental materials.**

Cover Pages. The following information should be included as part of the manuscript submission:

Title Page. Includes: information in the title that [increases discoverability](#) (see below); authors' names, highest academic/professional degree(s), and institutional affiliation(s); contact information for the corresponding author; source(s) of support for the work presented in the article; running head or foot line of approximately 40 characters; and number of figures, tables, and supplemental materials.

Conflict of Interest Notification Page. As outlined in the "General Guidelines" section, a Conflict of Interest Notification Page must immediately follow the manuscript's title page. To prevent ambiguity, authors must state explicitly whether potential conflicts do or do not exist.

Abstract and Keyword Page. Limit the abstract to 250 words or less and concisely summarize the basic content of the paper without presenting extensive details. Avoid abbreviations and references and do not include diagrams. When it is essential to include a reference, use the same format as for the References section but omit the article title. The abstract must be complete and understandable without reference to the text. In addition to the abstract, include 3 to 10 key words or short phrases that describe the manuscript contents.

MANUSCRIPT TITLE GUIDELINES

Creating a title that conveys the purpose of your work can be one of the most difficult parts of scientific writing. Before digital archiving, "eye-catching" titles were preferred because they could draw a reader to the abstract. In today's research environment, keywords in titles and abstracts are the most important indicator that a paper will be read. Remember: if it can't be found (and quickly!), it won't be utilized. Below are some guidelines and an activity to help you craft a title.

The *JMBE* Editorial Board recommends that you consider these questions as you develop a title for your submission:

- **What organism/research method/activity style/key concept is central to your paper?** Make sure this appears in your title.

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- **What action is your manuscript calling for?** What do you want the reader to do after reading your manuscript (i.e. revise policy, use it in their classroom, etc.)? Make sure that similar action verbs are reflected in your title or abstract.

- **What keywords would you use to search for your article?** Make a list of the top five keywords and then use them in a search. Are the papers that you find in a similar vein to yours? If yes, make sure to incorporate these keywords appropriately in your title.

- **Is your title ambiguous or misleading?** Ask someone who is not familiar with your paper to read just the title of your manuscript and have them tell you what they think it is about. If they misinterpret your title, have them clarify which words were confusing. Remember: someone searching for your paper may not have your expertise.

- **Don't get too carried away.** While you want your title to describe your paper accurately, it might not be attractive to today's reader if it is more than one line long. Remember that there is an abundance of resources available to today's reader, and if they don't find your title and understand the content quickly, they will not read it!

Now take the test!

Consider the following fictitious titles, which are based upon published submissions. Which one do you think would attract the most search hits? What makes the other titles ineffective?

Giving the Undergraduate Laboratory Meaning and Purpose

Exploding Cells and Dynamic Colors: Creating Engaging Laboratories in the Science Classroom

Laboratory Exercises that Promote Student Engagement and Learning about Osmosis

Answer:

While not particularly "original," the third title is the best in terms of keywords that will guide a reader to the manuscript. It states the topic of the laboratory, and indicates what the reader can gain from reading the manuscript (ways to engage and promote student learning).

Giving the Undergraduate Laboratory Meaning and Purpose

> Is this a discussion of HOW to give a lab meaning and purpose or WHY it is important? Both? What is covered in this laboratory? This is the vaguest title, and is likely to be passed over because it is not specific or clear enough to draw in a reader.

Exploding Cells and Dynamic Colors: Creating Engaging Laboratories in the Science Classroom

> While "eye-catching," it isn't clear whether this is a "how to" article or an overview of the author's experience. It also remains vague on what students actually learn in the laboratories.

MANUSCRIPT HEADINGS AND SUBHEADINGS

INTRODUCTION — Introductory material should include the audience for which the tip is intended, and whether the it is specific to the classroom or laboratory (or both). A brief description is appropriate. A literature review of similar projects or activities is recommended.

PROCEDURE — The body of the article should describe materials and methods, and information on how to make the advice work in the classroom or laboratory. Helpful hints or caveats for the instructor and students are desirable.

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Safety issues. Address all safety issues faculty and students need to know when attempting this activity, using the [ASM Guidelines for Biosafety in Teaching Laboratories](#) as a reference. Safety concerns may include (but are not limited to): biosafety level of strains used; chemical considerations; UV; environmental unknowns; etc. If there are no safety issues, state why this is so.

CONCLUSION — Preliminary results of field testing of the activity should be included in the conclusion. Examples of assessment may include pre/posttests or surveys, exam questions, concept inventory results, or student comments.

ACKNOWLEDGMENTS — The source of any financial support received for the work being published must be indicated in the Acknowledgments section. It will be assumed that the absence of such an acknowledgment is a statement by the authors that no support was received. Note: When an activity or tip has been presented elsewhere, even in preliminary form (for example a poster at a conference such as the [American Society for Microbiology Conference for Undergraduate Educators](#)), it is imperative to note such prior publication in an acknowledgement or reference, as appropriate. Thus search results for *JMBE* may produce two results, one as a conference proceeding, and another as a manuscript.

REFERENCES —References should be listed in the order in which they appear in the manuscript (citation-sequence reference system). Arabic numerals in parentheses serve to identify references in text, tables, and legends. Please review the [ASM Style Guide for References](#), and refer to journal articles published in 2012 and beyond. *JMBE* strongly encourages authors to use professional literature citations from recognized genres of scholarly publications such as peer-reviewed journal articles and authored or edited books. The appeal to electronic encyclopedias and/or online knowledge-sharing tools should be made only in those circumstances where more generally recognized scholarly sources are unavailable and/or incompatible with the author's intent. When such is the case, these citations must be embedded parenthetically in the manuscript's narrative as opposed to being included as entries in the References section.

SUPPLEMENTAL MATERIALS (If applicable) — Include any necessary information that does not fit easily into the categories above as appendices. Supplemental materials should be uploaded as one Word doc file. Designate all materials as Appendix 1, Appendix 2, etc., within the manuscript text and list the appendices at the end of the manuscript as well. **Permissions are required to reproduce or modify images, figures (including maps), and tables within the supplemental materials.** A formatted and linked Table of Contents will be provided for supplemental materials once the manuscript and associated supplemental materials have been accepted for publication in *JMBE*.

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Tips & Tools Section Review Criteria

Criteria	Acceptable as submitted; no change or simple corrections (1)	Needs modifications or improvements (2)	Fundamental revisions or additions required (3)
Relevance	Tips pertain to topics of general interest in microbiology, biology, and science education. Tips present innovative and engaging ways to improve best practices.	Manuscript largely reviews old information; relationship of tips & tools to teaching and learning needs to be clarified.	No new information is presented. Article is not appropriate for Tips & Tools section of JMBE.
Practicality	Tips are practical and useful; tips can be implemented in a science classroom or laboratory.	Tips are generally good, but need modification before they can be readily used in a classroom.	Tips fall outside the scope of microbiology/biology/science education.
Materials & Methods	Materials and methods are clearly presented and easy to follow.	Materials and methods need modifications or improvements.	Materials and methods are insufficient or lacking.
Clarity & Organization	Article is clear, well organized, and concise.	Article is clear and well organized, but requires modification, including but not limited to clarification of minor points. Article is too long to fit on two journal pages.	Article is unclear, disorganized, and wordy.
Credibility	Tips are credible and verifiable.	Tips have gaps in information but are mostly credible; information is difficult to verify.	Information in manuscript cannot be verified.
Safety	Activities adhere to laboratory safety guidelines.	Activities are generally safe, but safety guidelines are not consistently followed.	Activities may be risky; safety guidelines are ignored.
Guidelines	Article follows all submission guidelines.	Article follows three or more of the submission guidelines.	Submission guidelines are ignored.

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