INSTRUCTIONS TO AUTHORS

SCOPE

The Journal of Clinical Microbiology (JCM) is devoted to the dissemination of new knowledge concerning the laboratory diagnosis of human and animal infections. In addition, JCM is an appropriate forum for the publication of information related to the role of the laboratory in both the management of infectious diseases and the elucidation of the epidemiology of infections. Manuscripts which present the results of original scientific investigations are encouraged. The three principal attributes that we require of papers published in JCM are timeliness, relevance to the practice of clinical microbiology, and quality science. Manuscripts that present information that is largely only of relevance to a restricted geographic area are discouraged.

JCM welcomes submission of manuscripts that present the results of investigations pertaining to new technologies in clinical microbiology when they address new applications, substantially extend our understanding of the role of the technology in the clinical microbiology laboratory, or provide clinical or laboratory outcome data.

JCM will consider manuscripts which describe truly novel molecular methods for use in the diagnosis or elucidation of infection. However, we discourage submission of manuscripts predicated on the application of previously well-described methods (e.g., RT-PCR, RAPD analysis, PFGE, and real-time PCR, etc.), even though the application may be new. Papers employing established molecular methods will be considered only when the application is examined in comparison to some other existing diagnostic method(s). Such comparative studies should include information regarding assay sensitivity, specificity, and diagnostic accuracy.

Studies with matrix-assisted laser desorption ionization—time of flight mass spectrometry (MALDI-TOF MS) as a primary focus must offer something that is truly novel in order to merit consideration for publication in JCM, e.g., application of MALDI-TOF MS to previously unstudied organisms or organism groups, applications that extend beyond organism identification, clinical outcome studies, comparisons of different MALDI-TOF instruments, broad comparisons with conventional methods, or descriptions of modifications of existing MALDI-TOF MS methods. JCM will not consider manuscripts that describe routine applications of MALDI-TOF MS.

Papers submitted to JCM with whole-genome sequencing or the microbiome as a focus will be considered only when the studies performed are scientifically sound, the observations timely and novel, and the information presented of relevance to the practice of clinical microbiology. Similarly, papers that convey the results of meta-analysis studies will be considered when the data presented are extensive and when the observations made in the study are broadly applicable to the practice of clinical microbiology.

Case Reports are no longer being accepted for consideration in JCM.

To ensure the completeness of investigations in which the performance of various diagnostic assays or methods is presented, authors are encouraged to refer to the Standards for the Reporting of Diagnostic Accuracy (STARD) for guidance. The entire set of guidelines, including checklists, may be found at http://stard-statement.org/.

ASM publishes a number of different journals covering various aspects of the field of microbiology. Each journal has a prescribed scope which must be considered in determining the most appropriate journal for each manuscript.

(i) With respect to antimicrobial agents, JCM will consider clinically relevant manuscripts (a) that pertain to in vitro susceptibility test methods; (b) that are concerned with quality control procedures related to antimicrobial susceptibility tests; (c) that deal with investigations of test methods aimed at measuring levels of antimicrobial agents in clinical specimens; or (d) that describe the use of antimicrobial agents as tools in the isolation, identification, or epidemiologic assessment of microorganisms associated with disease. Manuscripts pertaining to other aspects of antimicrobial agents, such as their basic mechanisms of action, the elucidation of resistance determinants, pharmacokinetics and pharmacodynamics, and the development of new agents, will be considered for publication in Antimicrobial Agents and Chemotherapy.

(ii) Manuscripts that present the results of investigations with a primary focus on the basic mechanisms of pathogenesis of microorganisms or the pathophysiology of infections should be directed to Infection and Immunity (for bacteria, parasites, and fungi) or the Journal of Virology (for viruses).

(iii) Reports of clinical microbiology investigations or studies of the hospital population and the environment as they relate to nosocomial infections should be submitted to JCM. Manuscripts dealing with ecology or environmental studies or with the application of microorganisms to agricultural or industrial processes are more appropriate for Applied and Environmental Microbiology.

(iv) JCM considers papers involving immunologic assays for use in the diagnosis of infection. Manuscripts that pertain to studies that evaluate immune responses and elucidate immune mechanisms associated with infection, all studies that pertain to vaccines, and papers that address the assessment and laboratory diagnosis of immunologic diseases (e.g., autoimmune diseases and primary immunodeficiencies) are considered outside the purview of JCM and should be submitted to Clinical and Vaccine Immunology (formerly Clinical and Diagnostic Laboratory Immunology).

Questions about these guidelines may be directed to the editor in chief of the journal being considered.

If transfer to another ASM journal is recommended by an editor, the corresponding author will be contacted.

Copyright © 2015, American Society for Microbiology. All Rights Reserved. Instructions to Authors are updated throughout the year. The current version is available at http://journalats.asm.org/49544.
Note that a manuscript rejected by one ASM journal on scientific grounds or on the basis of its general suitability for publication is considered rejected by all other ASM journals.

EDITORIAL POLICY

Use of Microbiological Information

The Council Policy Committee (CPC) of the American Society for Microbiology affirms the long-standing position of the Society that microbiologists will work for the proper and beneficent application of science and will call to the attention of the public or the appropriate authorities misuses of microbiology or of information derived from microbiology. ASM members are obligated to discourage any use of microbiology contrary to the welfare of humankind, including the use of microbes as biological weapons. Bioterrorism violates the fundamental principles expressed in the Code of Ethics of the Society and is abhorrent to ASM and its members.

ASM recognizes that there are valid concerns regarding the publication of information in scientific journals that could be put to inappropriate use as described in the CPC resolution mentioned above. Members of the ASM Journals Board will evaluate the rare manuscript that might raise such issues during the review process. However, as indicated elsewhere in these Instructions, research articles must contain sufficient detail, and material/information must be made available, to permit the work to be repeated by others. Supply of materials should be in accordance with laws and regulations governing the shipment, transfer, possession, and use of biological materials and must be for legitimate, bona fide research needs. We ask that authors pay particular attention to the NSAR Select Agents and Toxins list on the CDC website http://www.selectagents.gov/index.html and the U.S. Government Policy for Oversight of Life Sciences Dual Use Research of Concern (March 2012; http://www.phe.gov/s3/dualuse/Documents/us-policy-durc-032812.pdf). 

Ethical Guidelines

As a member of the Committee on Publication Ethics (COPE), ASM adheres to COPE’s Best Practice Guidelines and expects authors to observe the high standards of publication ethics set out by COPE.

ASM requirements for submitted manuscripts are consistent with the Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals, as last updated by the International Committee of Medical Journal Editors in August 2013 (http://www.icmje.org/).

Authors are expected to adhere to the highest ethical standards. The following sections of these Instructions include detailed information about ASM’s ethical standards. Failure to comply with the policies described in these Instructions may result in a letter of reprimand, a suspension of publishing privileges in ASM journals, and/or notification of the authors’ institutions. Authors employed by companies whose policies do not permit them to comply with ASM policies may be sanctioned as individuals and/or ASM may refuse to consider manuscripts having authors from such companies. The ASM Journals Board wishes to clarify the following in particular.

Plagiarism. Misappropriating another person’s intellectual property constitutes plagiarism. This includes copying sentences or paragraphs verbatim (or almost verbatim) from someone else’s work, even if the original work is cited in the references. The NIH ORI publication “Avoiding Plagiarism, Self-Plagiarism, and Other Questionable Writing Practices: a Guide to Ethical Writing” (http://ori.hhs.gov /avoiding-plagiarism-self-plagiarism-and-other-questionable -writing-practices-guide-ethical-writing) can help authors identify questionable writing practices.

Plagiarism is not limited to the text; it can involve any part of the manuscript, including figures and tables, in which material is copied from another publication without permission and attribution. An author may not reuse his or her own previously published work without attribution; this is considered text recycling (also known as self-plagiarism).

ASM has incorporated plagiarism detection software into its online submission and peer review system in order to help editors verify the originality of submitted manuscripts. Selected manuscripts are scanned and compared with databases. If plagiarism is detected, COPE guidelines on plagiarism will be followed.

Image manipulation. Submitted figures must reflect original data. Please refer to the “Image manipulation” section in Illustrations and Tables for an overview of permissible manipulations, unacceptable adjustments, and required information to be disclosed in the figure legends of images.

ASM applies forensic imaging tools to screen selected manuscripts for inappropriate manipulation of figures. If unacknowledged and/or inappropriate image manipulations are detected, the matter will be referred to the journal’s ethics panel for consideration.

Preprint policy. ASM Journals will consider for publication manuscripts that have been posted in a recognized not-for-profit preprint archive provided that upon acceptance of the manuscript for publication, the author is still able to grant ASM copyright or agree to the terms of an Open Access license and pay the associated fee. It is the responsibility of authors to inform the journal at the time of submission if and where their article has been previously posted, and if the manuscript is accepted for publication in an ASM journal, authors are required to update the preprint with a citation to the final published article that includes the DOI along with a link.

Primary publication. Manuscripts submitted to the journal must represent reports of original research, and the original data must be available for review by the editor if necessary.

By submitting a manuscript to the journal, the authors guarantee that they have the authority to publish the work and that the manuscript, or one with substantially the same content, was not published previously, is not being considered or published elsewhere, and was not rejected on scientific grounds by another ASM journal. It is incumbent upon the author to acknowledge any prior publication, including his/her own articles, of the data contained in a manuscript submitted to an ASM journal. A copy of the relevant work should be submitted with the paper as supplemental material not for publication. Whether the material constitutes the sub-
stance of a paper and therefore renders the manuscript unacceptable for publication is an editorial decision.

In the event that the authors’ previously published figures and/or data are included in a submitted manuscript, it is incumbent upon the corresponding author to (i) identify the duplicated material and acknowledge the source on the submission form, (ii) obtain permission from the original publisher (i.e., copyright owner), (iii) acknowledge the duplication in the figure legend, and (iv) cite the original article.

A paper is not acceptable for submission to an ASM journal if it, or its substance, has been made publicly available in the following:

- A serial, periodical, or book
- A conference report or symposium proceedings
- A technical bulletin or company white paper
- A public website (see “Preprint policy”)
- Any other retrievable source

The following do not preclude submission to, or publication by, an ASM journal:

- Posting of a method/protocol on a public website
- Posting of a limited amount of original data on a personal/university/corporate website or websites of small collaborative groups working on a problem
- Deposit of unpublished sequence data in a public database
- Preliminary disclosures of research findings as meeting posters, webcast as meeting presentations, or published in abstract form as adjuncts to a meeting, e.g., part of a program
- Posting of theses and dissertations on a personal/university-hosted website

Availability of materials. By publishing in the journal, the authors agree that, subject to requirements or limitations imposed by laws or governmental regulations of the United States, any materials and data that are reasonably requested by others will be made available. Such materials may include, but are not limited to, DNAs, viruses, microbial strains, mutant animal strains, cell lines, and antibodies that are described in the article. These must be available from a national collection or be made available in a timely fashion, at reasonable cost, and in limited quantities to members of the scientific community for noncommercial purposes. The authors guarantee that they have the authority to comply with this policy either directly or by means of material transfer agreements through the owner.

Permissions. The corresponding author is responsible for obtaining permission from both the original author and the original publisher (i.e., the copyright owner) to reproduce or modify figures (including maps) and tables and to reproduce text (in whole or in part) from previous publications.

Permission(s) must be obtained no later than the modification stage. The original signed permission(s) must be identified as to the relevant item in the ASM manuscript (e.g., “permissions for Fig. 1 in JCM00123-15”) and submitted to the ASM production editor on request. In addition, a statement indicating that the material is being reprinted with permission must be included in the relevant figure legend or table footnote of the manuscript. Reprinted text must be enclosed in quotation marks, and the permission statement must be included as running text or indicated parenthetically.

It is expected that the authors will provide written assurance that permission to cite unpublished data or personal communications has been granted. For supplemental material intended for posting by ASM (see “Supplemental Material”), if the authors of the JCM manuscript are not also the owners of the supplemental material, the corresponding author must send to ASM signed permission from the copyright owner that allows posting of the material, as a supplement to the article, by ASM. The corresponding author is also responsible for incorporating in the supplemental material any copyright notices required by the owner.

Authorship. (i) Authorship criteria. ASM journals follow the criteria for authorship as outlined in the International Committee of Medical Journal Editors (ICMJE) Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals (www.icmje.org). Briefly, an author is one who makes a substantial contribution to the design, execution, and/or analysis and interpretation of experiments in addition to drafting, revising, and/or approving the initial submission and any subsequent versions of the article. All authors of a manuscript must have agreed to its submission and are responsible for appropriate portions of its content. Submission of a paper before all coauthors have read and approved it is considered an ethical violation.

(ii) Author contribution statements. As explained in the ICMJE recommendations, all persons designated as authors should qualify for authorship, and all those who qualify should be listed. ASM encourages transparency in authorship by publishing author contribution statements. Authors are strongly encouraged to include such statements in the Acknowledgments section.

(iii) Corresponding author. The corresponding author takes primary responsibility for communicating with the journal and coauthors throughout the submission, peer review, and publication processes. The corresponding author is responsible for ensuring that all coauthors have read and approved submissions, including appropriate citations, acknowledgments, and byline order. Additionally, the corresponding author and the study’s primary investigator(s), if different, are
required to have examined the raw data represented in the manuscript, affirm that such representations accurately reflect the original data, and ensure that the original data are preserved and retrievable.

(iv) Consortium authorship. A study group, surveillance team, working group, consortium, or the like (e.g., the Active Bacterial Core Surveillance Team) may be listed as a coauthor in the byline if its contributing members satisfy the requirements for authorship and accountability as described in these Instructions. The names (and institutional affiliations, if desired) of the contributing members only may be given as a separate paragraph in the Acknowledgments section. If the contributing members of the group associated with the work do not fulfill the criteria of substantial contribution to and responsibility for the paper, the group may not be listed in the author byline. Instead, it and the names of its contributing members may be listed in the Acknowledgments section.

(v) Professional writers. “Ghost authorship” is not permitted by ASM. Professional writers should be mentioned in the Acknowledgments section rather than be included in the byline. To avoid perceived conflicts of interest, writer affiliations and specific contributions (for example, writing assistance, technical editing, language editing, or proofreading) must be disclosed.

(vi) Nonauthor contributions. Contributions from individuals who do not meet the ICMJE criteria for authorship should be acknowledged in the Acknowledgments section. Those that provided assistance, e.g., supplied strains or reagents or critiqued the paper, should not be listed as authors. Acquisition of funding, data collection, or general supervision of the research group does not qualify a person or persons for authorship. As mentioned above, professional writers do not meet authorship criteria and should be mentioned in the Acknowledgments section. Specific contributions for each nonauthor contributor should be included.

(vii) Byline order and changes. All authors must agree to the order in which their names are listed in the byline. Statements regarding equal contributions by two or more authors (e.g., “C.J. and Y.S. contributed equally to . . .”) are permitted as footnotes to bylines and must be agreed to by all of the authors. A change in authorship (order of listing, addition or deletion of a name, or corresponding author designation) after submission of the manuscript will be implemented only after the matter is investigated and resolved by the authors’ institution(s) and an official report provided to ASM. ASM does not investigate or attempt to resolve authorship disputes but will follow institutional recommendations, as appropriate.

(viii) Authorship disputes. Disputes about authorship may delay or prevent review and/or publication of the manuscript. Should the individuals involved be unable to reach an accord, review and/or publication of the manuscript can proceed only after the matter is investigated and resolved by the authors’ institution(s) and an official report provided to ASM. ASM does not itself investigate or attempt to resolve authorship disputes but will follow institutional recommendations, as appropriate.

ORCID. ASM Journals is a member of Open Researcher and Contributor ID (ORCID) and publishes author ORCID numbers in articles. ORCID is an open, nonprofit, community-driven effort to create and maintain a registry of unique researcher identifiers; it is a transparent method of linking research activities and output to these identifiers. In the eJournal Press (eJP) submission system, authors are encouraged to use or create an ORCID number, which can be linked to manuscripts and publications for which a researcher serves as an author. This can be helpful in distinguishing authors with common names. Additional information about ORCID is available on ORCID’s website.

Conflict of interest. All authors are expected to disclose, in the manuscript submittal letter, any commercial affiliations as well as consultancies, stock or equity interests, and patent-licensing arrangements that could be considered to pose a conflict of interest regarding the submitted manuscript. (Inclusion of a company name in the author address lines of the manuscript does not constitute disclosure.) Details of the disclosure to the editor will remain confidential. However, it is the responsibility of authors to provide, in the Acknowledgments section, a general statement disclosing conflicting interests relevant to the study. Examples of potentially conflicting interests include relationships, financial or otherwise, that might detract from an author’s objectivity in presentation of study results and interests whose value would be enhanced by the results presented. All funding sources for the project, institutional and corporate, should be credited in the Funding Information section, as described below. In addition, if a manuscript concerns a commercial product, the manufacturer’s name must be indicated in the Materials and Methods section or elsewhere in the text, as appropriate, in an obvious manner.

Copyright

For authors who do not opt to publish their papers as open access, ASM requires the corresponding author to sign a copyright transfer agreement on behalf of all the authors.

In the copyright transfer agreement signed by an author, ASM grants to that author (and coauthors) the right to republish discrete portions of his/her (their) article in any other publication (print, CD-ROM, and other electronic forms) of which he/she is (they are) the author(s) or editor(s), on the condition that appropriate credit is given to the original ASM publication. This republication right also extends to posting on a host computer to which there is access via the Internet. Except as indicated below, significant portions of the article may not be reprinted/posted without ASM’s prior written permission, however, as this would constitute duplicate publication.

Authors may post their own published articles on their personal or university-hosted (but not corporate, government, or similar) websites without ASM’s prior written permission provided that appropriate credit is given (i.e., the copyright lines shown at the bottom of the first page).

Works authored solely by U.S. government employees are not subject to copyright protection, so there is no copyright to be transferred. However, the other provisions of the copyright transfer agreement, such as author representations of original-
ity and authority to enter into the agreement, apply to U.S. government employee-authors as well as to other authors.

When funds from the Wellcome Trust or Research Councils UK are used to pay an article open access fee, the article will be published under the Creative Commons Attribution license (CC-BY) in accordance with the funding organization’s open access policies. Authors will be required to notify ASM and complete the Author Warranty and Provisional License to Publish at the time of submission.

Copyright for supplemental material (see “Supplemental Material”) remains with the author, but a license permitting the posting by ASM is included in the article copyright transfer agreement. If the author of the article is not also the copyright owner of the supplemental material, the corresponding author must send to ASM signed permission from the owner that allows posting of the material, as a supplement to the article, by ASM. The corresponding author is also responsible for incorporating into the supplemental material any copyright notices required by the owner.

**Funding Agency Repositories**

The National Institutes of Health (NIH) requests that its grantees and intramural authors provide copies of their accepted manuscripts to PubMed Central (PMC) for posting in the PMC Public Access Repository. However, JCM authors are automatically in compliance with this policy and need take no action themselves. For the past several years, ASM has deposited in PubMed Central all publications from all ASM journals. Further, ASM policy is that all primary research articles are made available to everyone, free, 6 months after publication through PubMed Central, HighWire, and international PubMed Central-like repositories. By having initiated these policies, ASM is in full compliance with NIH policy. For more information, see [http://publicaccess.nih.gov/](http://publicaccess.nih.gov/). ASM also allows JCM authors whose work was supported by funding agencies that have public access requirements like those of the NIH (e.g., the Wellcome Trust) to post their accepted manuscripts in publicly accessible electronic repositories maintained by those funding agencies. If a funding agency does not itself maintain such a site, then ASM allows the author to fulfill that requirement by depositing the manuscript (not the typeset article) in an appropriate institutional or subject-based open repository established by a government or noncommercial entity.

Since ASM makes the final, typeset articles from its primary-research journals available free of charge on the ASM Journals and PMC websites 6 months after final publication, ASM requests that when submitting the accepted manuscript to PMC or a similar public access site, the author specify that the posting release date for the manuscript be no earlier than 6 months after publication of the typeset article by ASM and that a link to the published manuscript on the journal website be provided.

**Use of Human Subjects or Animals in Research**

Authors of manuscripts describing research involving human subjects or animal experimentation must obtain review and approval (or review and waiver) from their Institutional Review Board (IRB) or Institutional Animal Care and Use Committee (IACUC), as appropriate, prior to manuscript submission. Authors of manuscripts that describe multisite research must obtain approval from each institution’s IRB or IACUC, as appropriate. Documentation of IRB or IACUC status must be made available upon request. In the event that institutional review boards or committees do not exist, the authors must ensure that their research is carried out in accordance with the Declaration of Helsinki, as revised in 2013 ([http://www.wma.net/en/30publications/10policies/b3/](http://www.wma.net/en/30publications/10policies/b3/)). A statement of IRB or IACUC approval or waiver (and reason for waiver) or a statement of adherence to the Declaration of Helsinki must be included in the Materials and Methods section.

**Patient Identification**

Informed consent is not needed if the patient cannot be identified from any material in a manuscript. In the absence of informed consent, identifying details, such as patient initials, specific dates, specific geographic exposures, or other identifying features (including body features in figures), should be omitted, but this must not alter the scientific meaning. Important information that is relevant to the scientific meaning should be stated so that the patient cannot be identified, e.g., by stating a season instead of a date or a region instead of a city. If a patient can be identified from the material in a manuscript, all efforts should be made to obtain informed consent to publish from patients or parents/legal guardians of minors. Informed consent requires that the patient have the opportunity to see the manuscript prior to submission. The written consent must state either that the patient has seen the complete manuscript or that the patient declines to do so. Patient consent should be archived with the authors and be available upon request. A statement attesting the receipt and archiving of written patient consent should be included in the published article.

**Provision of Requisite Information for Molecular Applications**

Authors of manuscripts which contain quantitative real-time PCR applications are encouraged to consult the article concerning minimum information for publication of quantitative real-time PCR experiments (the MIQE guidelines) by Bustin et al. (Clin. Chem. 55:611–622, 2009) for guidance as to what information should be considered for inclusion in their submission.

Newly determined nucleotide and/or amino acid sequence data must be deposited and GenBank/ENA/DDBJ accession numbers must be included in the manuscript no later than the modification stage of the review process. It is expected that the sequence data will be released to the public no later than the publication (online posting) date of the accepted manuscript. The accession numbers should be included in a separate paragraph at the end of the Materials and Methods section for full-length papers or at the end of the text for Short-Form papers. If conclusions in a manuscript are based on the analysis of sequences and a GenBank/ENA/DDBJ accession number is not provided at the time of the review, authors should provide the annotated sequence data as supplemental material not for publication.
It is expected that when previously published sequence accession numbers are cited in a manuscript, the original citations (e.g., journal articles) will be included in the References section when possible or reasonable.

Authors are also expected to do elementary searches and comparisons of nucleotide and amino acid sequences against the sequences in standard databases (e.g., GenBank) immediately before manuscripts are submitted and again at the proof stage.

Analyses should specify the database, and the date of each analysis should be indicated as, e.g., January 2015. If relevant, the version of the software used should be specified.

See “Presentation of Nucleic Acid Sequences” for nucleic acid sequence formatting instructions.


Proper Use of Locus Tags as Systematic Identifiers for Genes

To comply with recommendations from the International Nucleotide Sequence Database (INSD) Collaborators and to avoid conflicts in gene identification, researchers should implement the following two fundamental guidelines as standards for utilization of locus tags in genome analysis, annotation, submission, reporting, and publication. (i) Locus tag prefixes are systematic gene identifiers for all of the replicons of a genome and as such should be associated with a single genome project submission. (ii) New genome projects must be registered with the INSD, and new locus tag prefixes must be assigned in cooperation with the INSD to ensure that they conform to the agreed-upon criteria.

Structural Determinations

Coordinates for new structures of macromolecules must be deposited in the Protein Data Bank and assigned identification codes must be included in the manuscript no later than the modification stage of the review process. It is expected that the coordinates will be released to the public no later than the publication (online posting) date of the accepted manuscript. Authors are encouraged to send coordinates with their original submission, however, so that reviewers can examine them along with the manuscript. The accession number(s) should be listed in a separate paragraph at the end of the Materials and Methods section for full-length papers or at the end of the text for Short-Form papers.

The URLs for coordinate deposition are http://rcsb-deposit.rutgers.edu/ and http://pdbdep.protein.osaka-u.ac.jp/en/.

Microarray, Next-Generation Sequencing, or Other High-Throughput Functional Genomics Data

The entire set of supporting microarray, next-generation sequencing, or other high-throughput functional genomics data must be deposited in the appropriate public database (e.g., GEO, ArrayExpress, or CIBEX) and the assigned accession number(s) must be included in the manuscript no later than the modification stage of the review process. It is expected that the data will be released to the public no later than the publication (online posting) date of the accepted manuscript. Authors are encouraged to send the relevant data with their original submission, however, so that reviewers can examine them along with the manuscript. The accession number(s) should be listed in a separate paragraph at the end of the Materials and Methods section for full-length papers or at the end of the text for Short-Form papers.


Culture Deposition

JCM expects authors to deposit important strains in publicly accessible culture collections and to refer to the collections and strain numbers in the text. Since the authenticity of subcultures of culture collection specimens that are distributed by individuals cannot be ensured, authors should indicate laboratory strain designations and donor sources as well as original culture collection identification numbers.

MycoBank

New scientific names of fungi along with key nomenclatural and descriptive material must be deposited in MycoBank (http://www.mycobank.org) and the assigned accession number(s) must be included in the manuscript no later than the modification stage of the review process. It is expected that the data will be released to the public no later than the publication (online posting) date of the accepted manuscript. Authors are encouraged to send the relevant data with their original submission, however, so that reviewers can examine them along with the manuscript. The accession number(s) should be listed in a separate paragraph at the end of the Materials and Methods section for full-length papers or at the end of the text for Short-Form papers.

Supplemental Material

Supplemental material will be peer reviewed along with the manuscript and must be uploaded to the eJournalPress (eJP) peer review system at initial manuscript submission. The decision to publish the material online with the accepted article is made by the editor. It is possible that a manuscript will be accepted but that the supplemental material will not be.

The number of supplemental material files is limited to 10. Supplemental files should be submitted in the following standard formats.

- **Text, figures, tables, and legends** should be included in a single PDF file. All figures and tables should be numbered independently and cited at the relevant point in the manuscript text, e.g. “Fig. S1,” “Fig. S2,” “Table S3,” etc. Do not duplicate data by presenting them in both the text of the manuscript and a supplemental figure. Each legend should appear below its cor-
responding figure or table. The maximum file size is 8 MB. Please review this sample file for guidance.

- **Data set** (Excel [.xls]) files should include a brief description of how the data are used in the paper. The maximum file size is 20 MB. Please review this sample file for guidance.

- **Movies** (Audio Video Interleave [.avi], QuickTime [.mov], or MPEG files) should be submitted at the desired reproduction size and length and should be accompanied by a legend. The maximum file size is 20 MB.

Unlike the manuscript, supplemental material will not be edited by the ASM Journals staff and proofs will not be made available. References related to supplemental material only should not be listed in the References section of an article; instead, include them with the supplemental material. Supplemental material will always remain associated with its article and is not subject to any modifications after publication.

Material that has been published previously (print or online) is not acceptable for posting as supplemental material. Instead, the appropriate reference(s) to the original publication should be made in the manuscript.

Copyright for the supplemental material remains with the author, but a license permitting posting by ASM must be signed by the corresponding author. If you are not the copyright owner, you must provide to ASM signed permission from the owner that allows posting of the material, as a supplement to your article, by ASM. You are responsible for including in the supplemental material any copyright notices required by the owner.

See also “Publication Fees.”

**Warranties and Exclusions**

Articles published in this journal represent the opinions of the authors and do not necessarily represent the opinions of ASM. ASM does not warrant the fitness or suitability, for any purpose, of any methodology, kit, product, or device described or identified in an article. The use of trade names is for identification purposes only and does not constitute endorsement by ASM.

**SUBMISSION, REVIEW, AND PUBLICATION PROCESSES**

**Submission Process**

All submissions to JCM must be made electronically via the eJournalPress (eJP) online submission and peer review system at the following URL: [http://jcm.msubmit.net/cgi-bin/main.pl](http://jcm.msubmit.net/cgi-bin/main.pl). (E-mailed submissions will not be accepted.) First-time users must create an Author account, which may be used for submitting to all ASM journals. Instructions for creating an Author account are available at the above URL via the “help for authors” link, and step-by-step instructions for submitting a manuscript via eJP are also available through the same link on the log-in screen or on the account holder’s Home page. Information on file types acceptable for electronic submission can be found under the Files heading in the help for authors screen.

**Review Process**

All manuscripts are considered to be confidential and are reviewed by the editors, members of the editorial board, or qualified ad hoc reviewers.

To expedite the review process, authors must recommend at least three editorial board members who have expertise in the field, who are not members of their institution(s), who have not recently been associated with their laboratory(ies), and who could not otherwise be considered to pose a conflict of interest regarding the submitted manuscript. Impersonation of another individual during the review process is considered serious misconduct.

To facilitate the review, copies of in-press and submitted manuscripts that are important for judgment of the present manuscript should be included as supplemental material not for publication.

When a manuscript is submitted to the journal, it is given a control number (e.g., JCM00123-15) and assigned to one of the editors. (Always refer to this control number in communications with the editor and the Journals Department.) It is the responsibility of the corresponding author to inform the coauthors of the manuscript’s status throughout the submission, review, and publication processes. The reviewers operate under strict guidelines set forth in “Guidelines for Reviewers” ([http://www.journals.asm.org/site/misc/reviewguide.xhtml](http://www.journals.asm.org/site/misc/reviewguide.xhtml)) and are expected to complete their reviews expeditiously.

The corresponding author is notified, generally within 4 to 6 weeks after submission, of the editor’s decision to accept, reject, or require modification. When modification is requested, the corresponding author must either submit the modified version within 2 months or withdraw the manuscript. A point-by-point response to the reviews must be uploaded as a separate file (identified as such), and a compare copy of the manuscript (without figures) should be included as a Marked Up Manuscript if the editor requested one.

Manuscripts that have been rejected, or withdrawn after being returned for modification, may be resubmitted to the same ASM journal if the major criticisms have been addressed. A manuscript rejected by one ASM journal on scientific grounds or on the basis of its general suitability for publication is considered rejected by all other ASM journals; however, a manuscript rejected solely on the basis of scope may be resubmitted to a more appropriate ASM journal.

For all resubmissions (to the same or a different journal, irrespective of the extent of the revisions and irrespective of the amount of time between rejection and resubmission), the cover letter must state that the manuscript is a resubmission, and the former manuscript control number must be provided. A point-by-point response to the review(s) must be uploaded as a separate file (identified as such), and a copy of the revised manuscript tracking the changes must be included as a Marked Up Manuscript. Manuscripts resubmitted to the same journal are normally handled by the original editor. Rejected manuscripts may be resubmitted only once unless permission has been obtained from the original editor or from the editor in chief.
Notification of Acceptance

When an editor has decided that a manuscript is acceptable for publication on the basis of scientific merit, the author and the Journals Department are notified. A PDF version of the accepted manuscript is posted online as soon as possible (see “JCM Accepts”).

The text files undergo an automated preediting, cleanup, and tagging process specific to the particular article type, and the illustrations are examined. If all files have been prepared according to the criteria set forth in these Instructions and those in the eJP online manuscript submission system, the acceptance procedure will be completed successfully. If there are problems that would cause extensive corrections to be made at the copyediting stage or if the files are not acceptable for production, ASM Journals staff will contact the corresponding author. Once all the material intended for publication has been determined to be adequate, the manuscript is scheduled for the next available issue. The editorial staff of the ASM Journals Department completes the editing of the manuscript to bring it into conformity with prescribed standards.

JCM Accepts

For its primary-research journals, ASM posts online PDF versions of manuscripts that have been peer reviewed and accepted but not yet copyedited. This feature is called “[journal acronym] Accepts” (e.g., JCM Accepts) and is accessible from the Journals website. The manuscripts are published online as soon as possible after acceptance, on a weekly basis, before the copyedited, typeset articles are published. They are posted “as is” (i.e., as submitted by the authors at the modification stage) and do not reflect ASM editorial changes. No corrections/changes to the PDF manuscripts are accepted. Accordingly, there likely will be differences between the JCM Accepts manuscripts and the final, typeset articles. The manuscripts remain listed on the JCM Accepts page until the final, typeset articles are posted. At that point, the manuscripts are removed from the JCM Accepts page. The manuscripts are under subscription access control until 6 months after the typeset articles are posted, when free access is provided to everyone (subject to the applicable ASM license terms and conditions). Supplemental material intended, and accepted, for publication is not posted until publication of the final, typeset article.

The ASM embargo policy allows a press release to be issued as soon as the accepted manuscript is posted on the JCM Accepts page. To be notified as soon as your manuscript is posted, please sign up for e-Alerts at https://jcm.asm.org/cgi/alerts.

Instructions on how to cite such manuscripts may be found in “References.”

Page Proofs

Page proofs, together with a query sheet and instructions for handling proofs, will be made available to the corresponding author electronically. Queries must be answered on the query page, and any changes related to the queries, as well as any additional changes, must be indicated on the proofs. Note that the copy editor does not query at every instance where a change has been made. Queries are written only to request necessary information or clarification of an unclear passage or to draw attention to edits that may have altered the sense. It is the author’s responsibility to read the entire text, tables, and figure legends, not just items queried. Corrected proofs must be returned within two business days after notification of availability.

The proof stage is not the time to make extensive corrections, additions, or deletions. Figures as they appear in the proofs are for validation of content and placement, not quality of reproduction or color accuracy. Print output of figures in the PDF page proofs will be of lower quality than the same figures viewed on a monitor. Please avoid making changes to figures based on quality of color or reproduction in proof.

Important new information that has become available between acceptance of the manuscript and receipt of the proofs may be inserted as an addendum in proof with the permission of the editor. If references to unpublished data or personal communications are added, it is expected that written assurance granting permission for the citation will be included. Limit changes to correction of spelling errors, incorrect data, and grammatical errors and updated information for references to articles that have been submitted or are in press. If URLs have been provided in the article, recheck the sites to ensure that the addresses are still accurate and the material that you expect the reader to find is indeed there.

Questions about late proofs and problems with the proofs should be directed to the ASM Journals Department (e-mail, cbrown@asmusa.org; telephone, 202-942-9384).

PDF Files

A corresponding author who has included an e-mail address in his/her “corresponding author” footnote will have limited access (10 downloads, total) to the PDF file of his/her published article. An e-mail alert will automatically be sent to him/her on the day the issue is posted. It will provide a URL, which will be required to obtain access, and instructions. An article may be viewed, printed, or stored, provided that it is for the author’s own use.

Should coauthors or colleagues be interested in viewing the paper for their own use, the corresponding author may provide them with the URL; a copy of the article may not be forwarded electronically. However, they must be made aware of the terms and conditions of the ASM copyright. (For details, go to http://www.journals.asm.org/site/misc/terms.xhtml.) Note that each such download will count toward the corresponding author’s total of 10. After 10 downloads, access will be denied and can be obtained only through a subscription to the journal (either individual or institutional) or after the standard access control has been lifted (i.e., 6 months after publication).

Publication Fees

APCs. Authors who choose open access will be assessed an article processing charge (APC). For a corresponding author who is an active member of ASM at the Contributing or Premium level, the APC is $2,250 (subject to change without notice). For a nonmember or Supporting member correspond-
ing author, the APC is $3,000 (subject to change without notice). Nonmember corresponding authors or Supporting members may join ASM and renew or upgrade membership online to obtain discounts on APCs. These fees are in addition to any supplemental material charges and permit immediate public access to both the preliminary “Accepts” version and the copyedited, typeset version published in the online journal under the Creative Commons Attribution license (CC-BY-NC 3.0). This option includes immediate open access provided through NIH’s PubMed Central repository.

When funds from the Wellcome Trust or Research Councils UK are used to pay an APC, the article will be published under the Creative Commons Attribution license (CC-BY) in accordance with the funding organization’s open access policies. Authors will be required to notify ASM and complete the Author Warranty and Provisional License to Publish/CC BY 3.0 at the time of submission.

Page charges. Authors who do not choose open access and whose research was supported by grants, special funds (including departmental and institutional), or contracts (including governmental) or whose research was done as part of their official duties (government or corporate, etc.) are required to pay page charges (based on the number of typeset pages, including illustrations, in the article) and to sign the ASM copyright transfer agreement. Corresponding authors of articles accepted for publication will receive an e-mail notifying them how to pay page and any other applicable publication charges (see below).

For a corresponding author who is an active member of ASM at the Contributing or Premium level, page charges are $67 per page (subject to change without notice). For a nonmember or Supporting member corresponding author, page charges are $135 per page (subject to change without notice). Nonmember corresponding authors or Supporting members may join ASM and renew or upgrade membership online to obtain discounts on publication fees.

If the research was not supported by any of the means described above, a request to waive the charges may be sent to the Journals Department, ASM (fax, 202-942-9355; e-mail, cbrown@asmusa.org [after acceptance of the manuscript]). The request must include the manuscript control number assigned by ASM and indicate how the work was supported. Waivers apply only to page charges; responsibility for supplemental material fees remains with the author.

Minireviews, Commentaries, Photo Quizzes, and Comment Letters to the Editor are not subject to page charges. New-Data Letters to the Editor are subject to page charges.

Color charges. There are no fees for color figures.

Author reprints and eprints. Reprints (in multiples of 100) and eprints (downloadable PDFs) may be purchased by all coauthors. In addition to the 10 free published PDF files mentioned above, the corresponding authors of Minireviews may receive 100 free eprints of their contribution and the corresponding authors of Commentaries may receive 50 free eprints. Instructions for ordering gratis or additional reprints and eprints can be found in the billing notification e-mail sent to all corresponding authors. To order reprints postpublication, please follow the instructions on the Author Reprint Order Form. Please contact cjsreprints@cadmus.com with any questions.

Supplemental material fee. Authors are charged a flat fee for posting supplemental material as an adjunct to their published article. (Exception: no fee is charged for supplemental material associated with Minireviews or Commentaries.) For a corresponding author who is an active member of ASM at the Contributing or Premium level, the supplemental material fee is $190 (subject to change without notice). For a nonmember or Supporting member corresponding author, the supplemental material fee is $285 (subject to change without notice). Nonmember corresponding authors or Supporting members may join ASM and renew or upgrade membership online to obtain discounts on publication fees.

ORGANIZATION AND FORMAT

Editorial Style

The editorial style of ASM journals conforms to the ASM Style Manual for Journals (American Society for Microbiology, 2015, in-house document) and How To Write and Publish a Scientific Paper, 7th ed. (Greenwood, Santa Barbara, CA, 2011), as interpreted and modified by the editors and the ASM Journals Department.

The editors and the Journals Department reserve the privilege of editing manuscripts to conform with the stylistic conventions set forth in the aforesaid publications and in these Instructions. Please note that ASM uses the serial comma.

On receipt at ASM, an accepted manuscript undergoes an automated preediting, cleanup, and tagging process specific to the particular article type. To optimize this process, manuscripts must be supplied in the correct format and with the appropriate sections and headings.

Type every portion of the manuscript double-spaced (a minimum of 6 mm between lines), including figure legends, table footnotes, and References, and number all pages in sequence, including the abstract, figure legends, and tables. Place the last two items after the References section. Manuscript pages must have continuous line numbers and page numbers. Manuscripts without line and page numbers will be returned to authors for provision of this information prior to processing. The font size should be no smaller than 12 points. It is recommended that the following sets of characters be easily distinguishable in the manuscript: the numeral zero (0) and the letter “oh” (O); the numeral one (1), the letter “el” (l), and the letter “eye” (I); and a multiplication sign (×) and the letter “ex” (x). Do not create symbols as graphics or use special fonts that are external to your word processing program; use the “insert symbol” function. Set the page size to 8.5 by 11 inches (ca. 21.6 by 28 cm). Italicize any words that should appear in italics, and indicate paragraph lead-ins in boldface type.

Manuscripts may be editorially rejected, without review, on the basis of poor English or lack of conformity to the standards set forth in these Instructions. Authors who are unsure of proper English usage should
have their manuscripts checked by someone proficient in the English language or engage a professional language editing service for help.

**Manuscript Submission Checklist**
- Double-space all text, including references and figure legends.
- Number pages.
- Number lines continuously.
- Present statistical treatment of data where appropriate.
- Format references in ASM style.
- Provide accession numbers for all newly published sequences in a dedicated paragraph, and if a sequence or sequence alignment important for evaluation of the manuscript is not yet available, provide the information as supplemental material not for publication or make the material available on a website for access by the editor and reviewers.
- Confirm that genetic and chemical nomenclature conforms to instructions.
- Include as supplemental material not for publication in-press and submitted manuscripts that are important for judgment of the present manuscript.

**Full-Length Papers**
Full-length papers include the elements described in this section.

**Title, running title, byline, affiliation line, and corresponding author.** Each manuscript should present the results of an independent, cohesive study; thus, numbered series titles are not permitted. Exercise care in composing a title. Avoid the main title/subtitle arrangement, complete sentences, and unnecessary articles. On the title page include the title, the running title (not to exceed 54 characters and spaces), the name of each author, all authors’ affiliations at the time the work was performed, the name(s) and e-mail address(es) of the corresponding author(s), and a footnote indicating the present address(es) of any author(s) no longer at the institution where the work was performed. Place a number sign (#) in the byline after the name of the author to whom inquiries regarding the paper should be directed (see “Correspondent footnote,” below). Please review this sample title page for guidance.

**Study group in byline.** A study group, surveillance team, working group, consortium, or the like (e.g., the Active Bacterial Core Surveillance Team) may be listed as a coauthor in the byline if its contributing members satisfy the requirements for authorship and accountability as described in these Instructions. The names (and institutional affiliations if desired) of the contributing members may be given as a separate paragraph in Acknowledgments.

If the contributing members of the group associated with the work do not fulfill the criteria of substantial contribution to and responsibility for the paper, the group may not be listed in the author byline. Instead, it and the names of its contributing members may be listed in the Acknowledgments section.

**Correspondent footnote.** The e-mail address for the corresponding author should be included on the title page of the manuscript. This information will be published in the article as a footnote to facilitate communication and will be used to notify the corresponding author of the availability of proofs and, later, of the PDF file of the published article. No more than two authors may be designated corresponding authors.

**Abstract.** Limit the abstract to 250 words or fewer and concisely summarize the basic content of the paper without presenting extensive experimental details. Avoid abbreviations and references, and do not include diagrams. When it is essential to include a reference, use the format shown under “References” below (see the “Citations in abstracts” section). Conclude the abstract with a summary statement. Because the abstract will be published separately by abstracting services, it must be complete and understandable without reference to the text.

**Introduction.** The introduction should supply sufficient background information to allow the reader to understand and evaluate the results of the present study without referring to previous publications on the topic. The introduction should also provide the hypothesis that was addressed or the rationale for the present study. Choose references carefully to provide the most salient background rather than an exhaustive review of the topic.

**Materials and Methods.** The Materials and Methods section must include sufficient technical information to allow the experiments to be repeated. The sources of all media (i.e., name and location of manufacturer) or components of a new formulation must be provided. When centrifugation conditions are critical, give enough information to enable another investigator to repeat the procedure: make of centrifuge, model of rotor, temperature, time at maximum speed, and centrifugal force ($ \times g$ rather than revolutions per minute). For commonly used materials and methods (e.g., media and protein concentration determinations), a simple reference or specifically recommended product or procedure is sufficient. If several alternative methods are commonly used, it is helpful to identify the method briefly as well as to cite the reference. For example, it is preferable to state “cells were broken by ultrasonic treatment as previously described (9)” rather than to state “cells were broken as previously described (9).” This allows the reader to assess the method without constant reference to previous publications. Describe new methods completely, and give sources of unusual chemicals, reagents, equipment, or microbial strains. When large numbers of microbial strains or mutants are used in a study, include tables identifying the immediate sources (i.e., sources from whom the strains were obtained) and properties of the strains, mutants, bacteriophages, and plasmids, etc.

A method or strain, etc., used in only one of several experiments reported in the paper may be described in the Results section or very briefly (one or two sentences) in a table footnote or figure legend. It is expected that the sources from whom the strains were obtained will be identified.

**Results.** In the Results section, include the rationale or design of the experiments as well as the results; reserve extensive interpretation of the results for the Discussion section. Present
the results as concisely as possible in one of the following: text, table(s), or figure(s). Avoid extensive use of graphs to present data which might be more concisely presented in the text or tables. For example, except in unusual cases, double-reciprocal plots used to determine apparent \( K_m \) values should not be presented as graphs; instead, the values should be stated in the text. Similarly, graphs illustrating other methods commonly used to derive kinetic or physical constants (e.g., reduced-viscosity plots and plots used to determine sedimentation velocity) need not be shown except in unusual circumstances. All tabular data must be accompanied by either standard deviation values or standard errors of the means. The number of replicate determinations (or animals) used for making such calculations must also be included. All statements concerning the significance of the differences observed should be accompanied by probability values given in parentheses. The statistical procedure used should be stated in Materials and Methods. Limit illustrations (particularly photomicrographs and electron micrographs) to those that are absolutely necessary to show the experimental findings. Number figures and tables in the order in which they are cited in the text, and be sure to cite all figures and tables.

Discussion. The Discussion section should provide an interpretation of the results in relation to previously published work and to the experimental system at hand. It must not contain extensive repetition of the Results section or reiteration of the introduction. In short papers, the Results and Discussion sections may be combined.

Funding information. In a separate paragraph (with the heading “Funding Information”) preceding Acknowledgments, authors should list any sources of funding, providing relevant grant numbers where possible, and the authors associated with the specific funding sources [e.g., NIH (grant AI082877 to John B. Smith)]. Authors must also provide a funding statement. In general, an appropriate funding statement will indicate whether the funding agency had any role in study design, data collection and interpretation, or the decision to submit the work for publication. For example, the statement might say, “The funders had no role in study design, data collection and interpretation, or the decision to submit the work for publication.” Funding agencies may have specific wording requirements, and compliance with such requirements is the responsibility of the author.

In cases in which research is not funded by any specific project grant, funders need not be listed, and the following statement may be used: “This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.”

Acknowledgments. Please do not include information about direct funding in the Acknowledgments. (See “Funding information” above.) Statements regarding indirect financial support (e.g., commercial affiliations, consultancies, stock or equity interests, and patent-licensing arrangements) may, however, be included. It is the responsibility of authors to provide a general statement disclosing financial or other relationships that are relevant to the study. (See the “Conflict of interest” section above.) Recognition of personal assistance should be given in the Acknowledgments section, as should any statements disclaiming endorsement or approval of the views reflected in the paper or of a product mentioned therein.

Appendixes. Appendixes that contain additional material to aid the reader are permitted. Titles, authors, and reference sections that are distinct from those of the primary article are not allowed. If it is not feasible to list the author(s) of the appendix in the byline or the Acknowledgments section of the primary article, rewrite the appendix so that it can be considered for publication as an independent article, either full-length paper or Short-Form style. Equations, tables, and figures should be labeled with the letter “A” preceding the numeral to distinguish them from those cited in the main body of the text.

References. In the reference list, references are numbered in the order in which they are cited in the article (citation-sequence reference system); ASM no longer uses the citation-name system with an alphabetized reference list. In the text, references are cited parenthetically by number in sequential order. Data that are not published or not peer reviewed are simply cited parenthetically in the text (see section ii below).

(i) References listed in the References section. The following types of references must be listed in the References section:

- Journal articles (both print and online)
- Books (both print and online)
- Book chapters (book title is required)
- Patents
- Theses and dissertations
- Published conference proceedings
- Meeting abstracts (from published abstract books or journal supplements)
- Letters (to the editor)
- Company publications
- In-press journal articles, books, and book chapters (publication title is required)

Provide the names of all the authors and/or editors for each reference; names should not be abbreviated with “et al.” Since title and byline information that is downloaded from PubMed does not always show accents, italics, or special characters, authors should refer to the PDF files or hard-copy versions of the articles and incorporate the necessary corrections in the submitted manuscript. Abbreviate journal names according to the PubMed Journals Database (National Library of Medicine, National Institutes of Health; available at http://www.ncbi.nlm.nih.gov/nlmcatalog/journals), the primary source for ASM style (do not use periods with abbreviated words). The EndNote output style for ASM Journals’ current reference style can be found here; click “Open” and then “Download and Install” to save it to your EndNote Styles folder (it should replace any earlier output styles for ASM journals [all ASM journals use the same reference style]).
Follow the styles shown in the examples below for print references.


2. Falagas ME, Kasiakou SK. 2006. Use of international units when dosing colistin will help decrease confusion related to various formulations of the drug around the world. Antimicrob Agents Chemother 50:2274–2275. (Letter.) \{"Letter" or "Letter to the editor" is allowed but not required at the end of such an entry.\}

3. Cox CS, Brown BR, Smith JC. J Gen Genet, in press.* [Article title is optional; journal title is mandatory.]


5. Stratagene. 2006. Yeast DNA isolation system: instruction manual. Stratagene, La Jolla, CA. \{Use the company name as the author if none is provided for a company publication.\}


7. Fitzgerald G, Shaw D. In Waters AE (ed), Clinical microbiology, in press. EFH Publishing Co, Boston, MA.* [Chapter title is optional.]


13. Odell JC. April 1970. Process for batch culturing. US patent 484,363,770. \{Include the name of the patented item/process if possible; the patent number is mandatory.\}


* A reference to an in-press ASM publication should state the control number (e.g., JCM00123-15) if it is a journal article or the name of the publication if it is a book.

Online-only references must provide essentially the same information that print references do. For online journal articles, posting or revision dates may replace the year of publication; a DOI (preferred) or URL is required for articles with nontraditional page numbers or electronic article identifiers.


Note: a posting or accession date is required for any online reference that is periodically updated or changed.

Citations of ASM Accepts manuscripts should look like the following example.


Other journals may use different styles for their publish-ahead-of-print manuscripts, but citation entries must include the following information: author name(s), posting date, title, journal title, and volume and page numbers and/or DOI. The following is an example:


(ii) References cited in the text. References that should be cited in the text include:

• Unpublished data
• Manuscripts submitted for publication
• Unpublished conference presentations (e.g., a report or poster that has not appeared in published conference proceedings)
• Personal communications
• Patent applications and patents pending
• Computer software, databases, and websites

These references should be made parenthetically in the text as follows:

...
... similar results (R. B. Layton and C. C. Weathers, unpublished data).

... system was used (J. L. McInerney, A. F. Holden, and P. N. Brighton, submitted for publication).

... as described previously (M. G. Gordon and F. L. Rattner, presented at the Fourth Symposium on Food Microbiology, Overton, IL, 13 to 15 June 1989). [For non-published abstracts and posters, etc.]

... this new process (V. R. Smoll, 20 June 1999, Australian Patent Office). [For non-U.S. patent applications, give the date of publication of the application.]


... using ABC software (version 2.2; Department of Microbiology, State University [http://www.state.micro.edu]).

URLs for companies that produce any of the products mentioned in your study or for products being sold may not be included in the article. However, company URLs that permit access to scientific data related to the study or to shareware used in the study are permitted.

(iii) Citations in abstracts. Because the abstract must be able to stand apart from the article, references cited in it should be clear without recourse to the References section. Use an abbreviated form of citation, omitting the article title, as follows.


This style should also be used for Addenda in Proof.

(iv) References related to supplemental material. If references must be cited in the supplemental material, list them in a separate References section within the supplemental material and cite them by those numbers; do not simply include citations of numbers from the reference list of the associated article. If the same reference(s) is to be cited in both the article itself and the supplemental material, then that reference would be listed in both References sections.

Short-Form Papers

The Short-Form format is intended for the presentation of brief observations that do not warrant full-length papers. However, Short-Form papers should contain firm data; observations alone are not acceptable. Submit Short-Form papers in the same way as full-length papers. They receive the same review, they are not published more rapidly than full-length papers, and they are not considered preliminary communications.

The title, running title (not to exceed 54 characters and spaces), byline, and correspondent footnote should be prepared as for a full-length paper. Each Short-Form paper must have an abstract of no more than 50 words. Do not use section headings in the body of the Short Form; combine methods, results, and discussion in a single section. Paragraph lead-ins are permissible. The text should be kept to a minimum and if possible should not exceed 1,000 words; the number of figures and tables should also be kept to a minimum. Materials and methods should be described in the text, not in figure legends or table footnotes. Present acknowledgments as in full-length papers. The References section is identical to that of full-length papers.

Minireviews

Minireviews are expected to be focused discussions of defined topics relevant to clinical microbiologists. In general, they are to be submitted only following invitation by the editor in chief of JCM. Unsolicited Minireviews are discouraged. A topical outline should be provided to the editor in chief for approval prior to submission of the completed Minireview manuscript in the eJP online manuscript submission and peer review system.

Minireviews are not expected to be comprehensive reviews of the literature but rather focused discussions of specific topics. A standard title page should be provided. This is followed by an abstract of 100 words or less and then the text of the Minireview, which should not exceed 12 double-spaced manuscript pages in length, exclusive of tables, figures, photographs, and references. Up to three tables, figures, or photographs, total, may be included. References should be limited to no more than 30. Minireviews will be reviewed by two JCM editors, with the aim of expedited processing. In general, it is hoped that, barring the necessity of major revisions, accepted Minireviews will appear in print within 3 months of their submission and online ahead of print 6 to 8 weeks earlier.

Author bio. A short biographical sketch and photograph of the one author most responsible for the minireview should be submitted along with the initial version of the manuscript. These will be published at the end of the article.

• The text limit is 150 words and should include WHO you are (your name), WHERE you received your education, WHAT positions you have held, and at WHICH institutions, WHERE you are now (your current institution), WHY you have this interest, and HOW LONG you have been in this area, as well as a brief review of your scholarly interests and record of publication. In addition, please list pertinent significant awards you have received.

• The photo should be a recent black-and-white head shot of passport size. It will be reduced to approximately 1.125 inches wide by 1.375 inches high. The photo must meet the production criteria for regular figures and should be checked for production quality by using Rapid Inspector, provided at the following URL: http://rapidinspector.cadmus.com/RapidInspector/zmw/index.jsp.

• To submit, upload the text and photo with your manuscript in the submission and review system. Include the biographical text immediately after the References.
section of your manuscript, in the same file. It should be labeled with the heading “Biosketch.” Upload the head shot photograph in the submission system as a “Minireview Bio Photo”; include the author’s name or enough of it for identification in the photo’s file name.

Contact the scientific editor if you have questions about what to write. Contact the production editor if you have questions about submitting your files.

Commentaries

Commentaries are invited communications concerning topics relevant to the readership of JCM and are intended to engender discussion. Reviews of the literature, methods and other how-to papers, and responses targeted at a specific published paper are not appropriate. Commentaries are subject to review.

The length may not exceed four printed pages, and the format is like that of a Minireview (see above) except that the abstract is limited to 75 words.

Point-Counterpoint

Point-Counterpoint is a feature of JCM in which two experts present opposing views on a contemporary issue in the laboratory diagnosis of infectious diseases. This feature will be the lead article in the issue of JCM in which it appears. Participation as an author of a Point-Counterpoint feature is by invitation only.

A JCM editor will write a brief introductory piece of approximately 200 words outlining why a specific issue is important and then present the issue in the form of a question. The two experts will then each write a commentary, no more than 1,000 words in length, in which they present evidence in support of either the pro or con view. One table or one figure may be included. Since these discussions will be evidence based, authors may also cite up to 10 references. Unpublished or in-press data which reflect the current practice in their laboratory may be used but should not be the sole basis for their position.

Authors should send commentaries directly back to the JCM editor within 30 days of receipt of the introductory statement. Following receipt of both the pro and con commentaries, the editor will review the submissions and may return them to the author(s) with comments and/or suggested revisions. If revisions are required, the author(s) will have 14 days to craft a revised commentary, which will be sent directly back to the editor. Upon receipt of final commentaries, the JCM editor will write a brief summary consisting of no more than six one-sentence bullet points, outlining where the experts agree (no more than three points) and disagree (no more than three points). The JCM editor will then upload the introduction, both commentaries, and the summary in eJP.

Photo Quiz

A Photo Quiz submission should present the findings of some relevant, interesting, and new observation pertinent to the practice of clinical microbiology in which a photograph is particularly useful in conveying important information and where the observation can serve as the basis for both a question and an answer. The photograph may be of a micrograph, some other laboratory material, a clinical lesion, or the results of an imaging study.

A Photo Quiz consists of two parts: (i) a case presentation featuring a photograph depicting some unusual and/or informative finding in clinical microbiology and (ii) an answer to the quiz. The case presentation and the answer must be submitted as two separate articles. Note that authors and affiliations are listed below the title.

Photo Quiz case presentation. The text in the Photo Quiz case presentation should be limited to 200 to 300 words. The header for the case presentation should read “Photo Quiz.” Please include a photograph about 39 picas (6.5 inches) wide and 28 picas (4.625 inches) high. Since photos appearing with published Photo Quizzes appear on the cover of the journal, a high-resolution TIFF or EPS file is preferred. A short legend for the photo must be provided, and the photo must be cited in the case presentation. Refer to a recently published Photo Quiz for correct formatting.

Answer to Photo Quiz. The text of the answer to the Photo Quiz should also be limited to 200 to 300 words. The header to the answer should read “Answer to Photo Quiz.” Four to six references may be cited at the end of the Photo Quiz answer.

Submission. The Photo Quiz case presentation should be submitted in the “Photo Quiz” manuscript category. The Photo Quiz answer should be submitted in the “Photo Quiz Answer” manuscript category.

Letters to the Editor

Two types of Letters to the Editor may be submitted. The first type (Comment Letter) is intended for comments on final, typeset articles published in the journal (not on accepted manuscripts posted online) and must cite published references to support the writer’s argument. The second type (New-Data Letter) may report new, concise findings that are not appropriate for publication as full-length papers or Short-Form papers.

Letters may be no more than 500 words long and must be typed double spaced. Refer to a recently published Letter for correct formatting. Note that authors and affiliations are listed below the title.

All Letters to the Editor must be submitted electronically, and the type of Letter (New Data or Comment) must be selected from the drop-down list in the submission form. For Letters commenting on published articles, the cover letter should state the volume and issue in which the article was published, the title of the article, and the last name of the first author. In the Abstract section of the submission form, put “Not Applicable.” Letters to the Editor do not have abstracts. Both types of Letter must have a title, which must appear on the manuscript and on the submission form. Figures and tables should be kept to a minimum.

If the Letter is related to a published article, it will be sent to the editor who handled the article in question. If the editor believes that publication is warranted, he/she will solicit a reply from the corresponding author of the article and give approval for publication.
New-Data Letters will be assigned to an editor according to subject matter and will be reviewed by that editor and/or a reviewer. Please note that some indexing/abstracting services do not include Letters to the Editor in their databases.

Errata
The Erratum section provides a means of correcting errors that occurred during the writing, typing, editing, or publication (e.g., a misspelling, a dropped word or line, or mislabeling in a figure) of a published article. Submit Errata via the eJP online manuscript submission and peer review system (see “Submission, Review, and Publication Processes”). In the Abstract section of the submission form (a required field), put “Not Applicable.” Upload the text of your Erratum as a Microsoft Word file. Please see a recent issue for correct formatting.

Author Corrections
The Author Correction section provides a means of correcting errors of omission (e.g., author names or citations) and errors of a scientific nature that do not alter the overall basic results or conclusions of a published article (e.g., an incorrect unit of measurement or order of magnitude used throughout, contamination of one of numerous cultures, or misidentification of a mutant strain, causing erroneous data for only a [noncritical] portion of the study). Note that the addition of new data is not permitted.

For corrections of a scientific nature or issues involving authorship, including contributions and use or ownership of data and/or materials, all disputing parties must agree, in writing, to publication of the Correction. For omission of an author’s name, letters must be signed by the authors of the article and the author whose name was omitted. The editor who handled the article will be consulted if necessary.

Submit an Author Correction via the eJP online manuscript submission and peer review system (see “Submission, Review, and Publication Processes”). Select Author Correction as the manuscript type. In the Abstract section of the submission form (a required field), put “Not Applicable.” Upload the text of your Author Correction as a Microsoft Word file. Please see a recent issue for correct formatting. Signed letters of agreement must be supplied as supplemental material not for publication (scanned PDF files).

Retractions
Retractions are reserved for major errors or breaches of ethics that, for example, may call into question the source of the data or the validity of the results and conclusions of an article. Submit Retractions via the eJP online manuscript submission and peer review system (see “Submission, Review, and Publication Processes”). In the Abstract section of the submission form (a required field), put “Not Applicable.” Upload the text of your Retraction as a Microsoft Word file. Letters of agreement signed by all of the authors must be supplied as supplemental material not for publication (scanned PDF files). The Retraction will be assigned to the editor in chief of the journal, and the editor who handled the paper and the chairperson of the ASM Journals Board will be consulted. If all parties agree to the publication and content of the Retraction, it will be sent to the Journals Department for publication.

ILLUSTRATIONS AND TABLES
Illustrations
Image manipulation. Digital images submitted for publication may be inspected by ASM production specialists for any manipulations or electronic enhancements that may be considered to be the result of scientific misconduct based on the guidelines provided below. Any images/data found to contain manipulations of concern will be referred to the editor in chief, and authors may then be requested to provide their primary data for comparison with the submitted image file. Investigation of the concerns may delay publication and may result in revocation of acceptance and/or additional action by ASM.

Linear adjustments to contrast, brightness, and/or color are generally acceptable, as long as the measures taken are necessary to view elements that are already present in the data and the adjustments are applied to the entire image and not just specific areas. Unacceptable adjustments to images include, but are not limited to, the removal or deletion, concealment, duplication (copying and pasting), addition, selective enhancement, or repositioning of elements within the image.

Nonlinear adjustments made to images, such as changes to gamma settings, should be fully disclosed in the figure legends at the time of submission. In addition, images created by compiling multiple files, including noncontiguous portions of the same image, should clearly distinguish that these multiple files are not a single image. This can be done by “tooling,” or inserting thin lines, between the individual images.

File types and formats. Illustrations may be continuous-tone images, line drawings, or composites. Color graphics may be submitted. Suggestions about how to ensure accurate color reproduction are given below.

On initial submission, figures may be uploaded as individual PDF files or combined and uploaded as a single PDF file. Place each legend in the text file, as well as on the same page with the figure to assist review. At the modification stage, production-quality digital files must be provided. The legends will be copy-edited and typeset for final publication and should not be included as part of the figure itself at this stage. All graphics submitted with modified manuscripts must be bitmap, grayscale, or in the RGB (preferred) or CMYK color mode. See “Color illustrations.” Halftone images (those with various densities or shades) must be grayscale, not bitmap. JCM accepts TIFF or EPS files but discourages PowerPoint for either black-and-white or color images.

For instructions on creating acceptable EPS and TIFF files, refer to the Cadmus digital art website, http://art.cadmus.com/da/index.jsp. PowerPoint requires users to pay close attention to the fonts used in their images (see the section on fonts below). If instructions for fonts are not followed exactly, images prepared for publication are subject to missing characters, improperly converted characters, or shifting/obscuring of elements or text in the figure. For proper font use in PowerPoint...
images, refer to the Cadmus digital art website, http://art.cadmus.com/da/instructions/ppt_disclaimer.jsp. Note that, due to page composition system requirements, you must verify that your PowerPoint files can be converted to PDF without any errors.

We strongly recommend that before returning their modified manuscripts, authors check the acceptability of their digital images for production by running their files through Rapid Inspector, a tool provided at the following URL: http://rapidinspector.cadmus.com/RapidInspector/zmw/index.jsp. Rapid Inspector is an easy-to-use, Web-based application that identifies file characteristics that may render the image unusable for production. Please note when using Rapid Inspector to check PowerPoint files that there is a known bug in the application that can occasionally fail PowerPoint Presentation (.ppt) files, even though the files meet all required production criteria. If you experience this bug, the issue can be corrected by saving the PowerPoint files as an older version, PowerPoint 97-2004 Presentation (.ppt), during the Save As process (use the drop-down format menu and select this format). Once you save your files as .ppt, they will pass Rapid Inspector if all required production criteria have been met.

If you have additional questions about using the Rapid Inspector preflighting tool, please send an e-mail inquiry to helpdesk.digitalartsupport@cenveo.com.

Minimum resolution. It is extremely important that a high enough resolution is used. All separate images that you import into a figure file must be at the correct resolution before they are placed. (For instance, placing a 72-dpi image in a 300-dpi EPS file will not result in the placed image meeting the minimum requirements for file resolution.) Note, however, that the higher the resolution, the larger the file and the longer the upload time. Publication quality will not be improved by using a resolution higher than the minimum. Minimum resolutions are as follows:

- 300 dpi for grayscale and color
- 600 dpi for combination art (lettering and images)
- 1,200 dpi for line art

Size. All graphics should be submitted at their intended publication size; that is, the image uploaded should be 100% of its print dimensions so that no reduction or enlargement is necessary. Resolution must be at the required level at the submitted size. Include only the significant portion of an illustration. White space must be cropped from the image, and excess space between panel labels and the image must be eliminated.

- Maximum width for a 1-column figure: 20.6 picas (ca. 8.7 cm)
- Maximum width for a 2-column figure: 42 picas (ca. 17.8 cm)
- Minimum width for a 2-column figure: 26 picas (11.1 cm)
- Maximum height for a standard figure: 54.7 picas (ca. 23.2 cm)
- Maximum height for an oversized figure (no running title): 57.4 picas (ca. 24.3 cm)

Contrast. Illustrations must contain sufficient contrast to be viewed easily on a monitor or on the printed page.

Labeling and assembly. All final lettering and labeling must be incorporated into the figures. On initial submission, illustrations should be provided as PDF files, with the legends in the text file and with a legend beneath each image to assist review. At the modification stage, production-quality digital figure files (without legends) must be provided. Put the figure number well outside the boundaries of the image itself. (Numbering may need to be changed at the copyediting stage.) Each figure must be uploaded as a separate file, and any multipanel figures must be assembled into one file; i.e., rather than uploading a separate file for each panel in a figure, assemble all panels in one piece and supply them as one file.

Fonts. To avoid font problems, set all type in one of the following fonts: Arial, Helvetica, Times Roman, European PI, Mathematical PI, or Symbol. Courier may be used but should be limited to nucleotide or amino acid sequences, where a non-proportional (monospace) font is required. All fonts other than these must be converted to paths (or outlines) in the application with which they were created. For proper font use in PowerPoint images, refer to the Cadmus digital art website, http://art.cadmus.com/da/instructions/ppt_disclaimer.jsp.

Color illustrations. All figures submitted in color will be processed as color. Adherence to the following guidelines will help to ensure color reproduction that is as accurate as possible.

The final online version is considered the version of record for JCM and all other ASM journals. To maximize online reproduction, color illustrations should be supplied in the RGB color mode as either (i) RGB TIFF images with a resolution of at least 300 pixels per inch (raster files, consisting of pixels) or (ii) Illustrator-compatible EPS files with RGB color elements (vector files, consisting of lines, fonts, fills, and images). CMYK files are also accepted. Other than in color space, CMYK files must meet the same production criteria as RGB files. The RGB color space is the native color space of computer monitors and of most of the equipment and software used to capture scientific data, and it can display a wider range of colors (especially bright fluorescent hues) than the CMYK (cyan, magenta, yellow, black) color space used by print devices that put ink (or toner) on paper. For the print version (and reprints), ASM’s print provider will automatically create CMYK versions of color illustrations from the supplied RGB versions. Color in the print journal may not match that in the online journal of record because of the smaller range of colors capable of being reproduced by CMYK inks on a printing press. For additional information on RGB versus CMYK color, refer to the Cadmus digital art site, http://art.cadmus.com/da/guidelines_rgb.jsp.

Drawings

Submit graphs, charts, complicated chemical or mathematical formulas, diagrams, and other drawings as finished products not requiring additional artwork or typesetting. All elements, including letters, numbers, and symbols, must be easily readable, and both axes of a graph must be labeled. Keep in mind that the journal is published both in print and online and that...
the same electronic files submitted by the authors are used to produce both.

When creating line art, please use the following guidelines:

(i) **All art must be submitted at its intended publication size.** For acceptable dimensions, see “Size,” above.

(ii) **Avoid using screens (i.e., shading) in line art.** It can be difficult and time-consuming to reproduce these images without moiré patterns. Various pattern backgrounds are preferable to screens as long as the patterns are not imported from another application. If you must use images containing screens,

   a. Generate the image at line screens of 85 lines per inch or less.

   b. When applying multiple shades of gray, differentiate the gray levels by at least 20%.

   c. Never use levels of gray below 5% or above 95%, as they are likely to fade out or become totally black when output.

(iii) **Use thick, solid lines that are no finer than 1 point in thickness.**

(iv) **No type should be smaller than 6 points at the final publication size.**

(v) **Avoid layering type directly over shaded or textured areas.**

(vi) **Avoid the use of reversed type (white lettering on a black background).**

(vii) **Avoid heavy letters, which tend to close up, and unusual symbols, which the printer may not be able to reproduce in the legend.**

(viii) **If colors are used, avoid using similar shades of the same color and avoid very light colors.**

In figure ordinate and abscissa scales (as well as table column headings), avoid the ambiguous use of numbers with exponents. Usually, it is preferable to use the appropriate Système International d’Unités (SI) symbols (µ for 10⁻⁶, m for 10⁻³, k for 10³, and M for 10⁶, etc.). Thus, a representation of 20,000 cpm on a figure ordinate should be made by the number 20 accompanied by the label kcpm. A complete listing of SI symbols can be found in the International Union of Pure and Applied Chemistry (IUPAC) publication *Quantities, Units and Symbols in Physical Chemistry*, 3rd ed. (RSC Publishing, Cambridge, United Kingdom, 2011); an abbreviated list is available at [http://old.iupac.org/reports/1993/homann/index.html](http://old.iupac.org/reports/1993/homann/index.html).

When powers of 10 must be used, the journal requires that the exponent power be associated with the number shown. In representing 20,000 cells per ml, the numeral of the ordinate should be “2” and the label should be “10⁴ cells per ml” (not “cells per ml × 10⁻⁴”). Likewise, an enzyme activity of 0.06 U/ml might be shown as 6 accompanied by the label 10⁻² U/ml. The preferred designation is 60 mU/ml (milliunits per milliliter).

### Presentation of Nucleic Acid Sequences

Long nucleic acid sequences must be presented as figures in the following format to conserve space. Print the sequence in lines of approximately 100 to 120 nucleotides in a non-proportional (monospace) font that is easily legible when published with a line length of 6 inches (ca. 15.2 cm). If possible, lines of nucleic acid sequence should be further subdivided into blocks of 10 or 20 nucleotides by spaces within the sequence or by marks above it. Uppercase and lowercase letters may be used to designate the exon-intron structure or transcribed regions, etc., if the lowercase letters remain legible at a 6-inch (ca. 15.2-cm) line length. Number the sequence line by line; place numerals representing the first base of each line to the left of the lines. Minimize spacing between lines of sequence, leaving room only for annotation of the sequence. Annotation may include boldface, underlining, brackets, and boxes, etc. Encoded amino acid sequences may be presented, if necessary, immediately above or below the first nucleotide of each codon, by using the single-letter amino acid symbols. Comparisons of multiple nucleic acid sequences should conform as nearly as possible to the same format.

### Figure Legends

On initial submission, each legend should be placed in the text file and be incorporated into the image file beneath the figure to assist review.

Legends should provide enough information so that the figure is understandable without frequent reference to the text. However, detailed experimental methods must be described in the Materials and Methods section, not in a figure legend. A method that is unique to one of several experiments may be reported in a legend only if the discussion is very brief (one or two sentences). Define all symbols used in the figure and define all abbreviations that are not used in the text.

### Tables

Tables that contain artwork, chemical structures, or shading must be submitted as illustrations in an acceptable format at the modification stage. The preferred format for regular tables is Microsoft Word; however, WordPerfect and Acrobat PDF are also acceptable. Note that a straight Excel file is not currently an acceptable format. Excel files must be either embedded in a Word or WordPerfect document or converted to PDF before being uploaded.

Tables should be formatted as follows. Arrange the data so that columns of like material read down, not across. The headings should be sufficiently clear so that the meaning of the data is understandable without reference to the text. See the “Abbreviations” section of these Instructions for those that should be used in tables. Explanatory footnotes are acceptable, but more-extensive table “legends” are not. Footnotes should...
TABLE 1 Distribution of protein and ATPase in fractions of dialyzed membranes

<table>
<thead>
<tr>
<th>Membrane</th>
<th>Fraction</th>
<th>ATPase U/mg of protein</th>
<th>Total U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>Depleted membrane</td>
<td>0.036</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td>Concentrated supernatant</td>
<td>0.134</td>
<td>4.82</td>
</tr>
<tr>
<td>E1 treated</td>
<td>Depleted membrane</td>
<td>0.034</td>
<td>1.98</td>
</tr>
<tr>
<td></td>
<td>Concentrated supernatant</td>
<td>0.11</td>
<td>4.6</td>
</tr>
</tbody>
</table>

*Specific activities of ATPase of nondepleted membranes from control and treated bacteria were 0.21 and 0.20, respectively.

Nomenclature of Microorganisms

Binary names, consisting of a generic name and a specific epithet (e.g., *Escherichia coli*), must be used for all microorganisms. Names of categories at or above the genus level may be used alone, but specific and subspecific epithets may not. A specific epithet must be preceded by a generic name, written out in full the first time it is used in a paper. Thereafter, the generic name should be abbreviated to the initial capital letter (e.g., *E. coli*), provided there can be no confusion with other genera used in the paper. Names of all taxa (kingdoms, phyla, classes, orders, families, genera, species, and subspecies) are printed in italics and should be italicized in the manuscript; strain designations and numbers are not. Vernacular (common) names should be in lowercase roman type (e.g., streptococcus, brucella). For *Salmonella*, genus, species, and subspecies names should be rendered in standard form: *Salmonella enterica* at first use, *S. enterica* thereafter; *Salmonella enterica* subsp. *arizonae* at first use, *S. enterica* subsp. *arizonae* thereafter. Names of serovars should be in roman type with the first letter capitalized: *Salmonella enterica* serovar Typhimurium. After the first use, the serovar may also be given without a species name: *Salmonella* Typhimurium, *S. Typhimurium*, or *Salmonella* serovar Typhimurium. For other information regarding serovar designations, see Antigenic Formulae of the *Salmonella* Serovars, 9th ed. (P. A. D. Grimont and F.-X. Weill, WHO Collaborating Centre for Reference and Research on Salmonella, Institut Pasteur, Paris, France, 2007; see http://www.pasteur.fr/ip/portal/action/WebdriveActionEvent/oid/01s-000036-089). For a summary of the current standards for *Salmonella* nomenclature and the Kaufmann-White criteria, see the article by Brenner et al. (*J Clin Microbiol* 38:2465–2467, 2000), the opinion of the Judicial Commission of the International Committee on Systematics of Prokaryotes (Int J Syst Evol Microbiol 55:519–520, 2005), and the article by Tindall et al. (Int J Syst Evol Microbiol 55:521–524, 2005).

The spelling of bacterial names should follow the Approved Lists of Bacterial Names (Amended) & Index of the Bacterial and Yeast Nomenclatural Changes (V. B. D. Skerman et al., ed., American Society for Microbiology, Washington, DC, 1989) and the validation lists and notification lists published in the International Journal of Systematic and Evolutionary Microbiology (formerly the International Journal of Systematic Bacteriology) since January 1989. In addition, two sites on the World Wide Web list current approved bacterial names: Prokaryotic Nomenclature Up-to-Date (http://www.dsmz.de/bacterial-diversity/prokaryotic-nomenclature-up-to-date.html) and List of Prokaryotic Names with Standing in Nomenclature (http://www.bacterio.net/). If there is reason to use a name that does not have standing in nomenclature, the name should be enclosed in quotation marks in the title and at its first use in the abstract and the text and an appropriate statement concerning the nomenclatural status of the name should be made in the text. “Candidatus” species should always be set in quotation marks.

For guidelines regarding new names and descriptions of new genera and species, see the articles by Tindall (Int J Syst Bacteriol 49:1309–1312, 1999) and Stackebrandt et al. (Int J Syst Evol Microbiol 52:1043–1047, 2002). To validate new names not include detailed descriptions of the experiment. Tables must include enough information to warrant table format; those with fewer than six pieces of data will be incorporated into the text by the copy editor. Table 1 is an example of a well-constructed table.

**NOMENCLATURE**

**Chemical and Biochemical Nomenclature**

The recognized authority for the names of chemical compounds is *Chemical Abstracts* (CAS; [http://www.cas.org/](http://www.cas.org/)) and its indexes. *The Merck Index*, 15th ed. (RSC Books, Cambridge, UK, 2013), is also an excellent source. For biochemical terminology, including abbreviations and symbols, consult *Biochemical Nomenclature and Related Documents* (Portland Press, London, United Kingdom, 1992) available at [http://www.chem.qmul.ac.uk/iupac/biblog/white.html](http://www.chem.qmul.ac.uk/iupac/biblog/white.html), and the instructions to authors of the *Journal of Biological Chemistry* and the *Archives of Biochemistry and Biophysics*.

Do not express molecular weight in daltons; molecular weight is a unitless ratio. Molecular mass is expressed in daltons.

For enzymes, use the recommended (trivial) name assigned by the Nomenclature Committee of the International Union of Biochemistry (IUB) as described in *Enzyme Nomenclature* (Academic Press, Inc., New York, NY, 1992) and its supplements and at [http://www.chem.qmul.ac.uk/iubmb/enzyme/](http://www.chem.qmul.ac.uk/iubmb/enzyme/). If a nonrecommended name is used, place the proper (trivial) name in parentheses at first use in the abstract and text. Use the EC number when one has been assigned. Authors of papers describing enzymological studies should review the standards of the STREND Commission for information required for adequate description of experimental conditions and for reporting enzyme activity data ([http://www.beilstein-institut.de/en/projects/strenda/guidelines](http://www.beilstein-institut.de/en/projects/strenda/guidelines)).


**Drugs**

Whenever possible, use generic names of drugs; the use of trade names is not permitted.
and/or combinations, authors must submit three copies of their published article to the International Journal of Systematic and Evolutionary Microbiology.

It is recommended that a strain be deposited in at least two recognized culture collections in different countries when that strain is necessary for the description of a new taxon (Int J Syst Evol Microbiol 50:2239–2244, 2000).

Since the classification of fungi is not complete, it is the responsibility of the author to determine the accepted binomial for a given organism. Sources for these names include The Yeasts: a Taxonomic Study, 5th ed. (C. P. Kurtzman, J. W. Fell, and T. Boekhout, ed., Elsevier Science, Amsterdam, Netherlands, 2011), and Dictionary of the Fungi, 10th ed. (P. M. Kirk, P. F. Cannon, D. W. Minter, and J. A. Stalpers, ed., CABI International, Wallingford, Oxfordshire, United Kingdom, 2008); see also http://www.speciesfungorum.org/Nomes/Fundic.asp.

Names used for viruses should be those approved by the International Committee on Taxonomy of Viruses (ICTV) and reported on the ICTV Virus Taxonomy website (http://www ICTVonline.org/index.asp). In addition, the recommendations of the ICTV regarding the use of species names should generally be followed: when the entire species is discussed as a taxonomic entity, the species name, as with other taxa, is italic and has the first letter and any proper nouns capitalized (e.g., Tobacco mosaic virus, Murray Valley encephalitis virus). When the behavior or manipulation of individual viruses is discussed, the vernacular (e.g., tobacco mosaic virus, Murray Valley encephalitis virus) should be used. If desired, synonyms may be added parenthetically when the name is first mentioned. Approved generic (or group) and family names may also be used.

Microorganisms, viruses, and plasmids should be given designations consisting of letters and serial numbers. It is generally advisable to include a worker’s initials or a descriptive symbol of locale or laboratory, etc., in the designation. Each new strain, mutant, isolate, or derivative should be given a new (serial) designation. This designation should be distinct from those of the genotype and phenotype, and italicized genotypic and phenotypic symbols should not be included. Plasmids are named with a lowercase “p” followed by the designation in uppercase letters and numbers. To avoid the use of the same designation as that of a widely used strain or plasmid, check the designation against a publication database such as Medline.

**Genetic Nomenclature**

To facilitate accurate communication, it is important that standard genetic nomenclature be used whenever possible and that deviations or proposals for new naming systems be endorsed by an appropriate authoritative body. Review and/or publication of submitted manuscripts that contain new or nonstandard nomenclature may be delayed by the editor or the Journals Department so that they may be reviewed.

**Bacteria.** The genetic properties of bacteria are described in terms of phenotypes and genotypes. The phenotype describes the observable properties of an organism. The genotype refers to the genetic constitution of an organism, usually in reference to some standard wild type. Use the recommendations of Demerec et al. (Genetics 54:61–64, 1966) as a guide to the use of these terms. If your manuscript contains information including genetic nomenclature, please refer to the Instructions to Authors of the Journal of Bacteriology.

“**Mutant**” versus “**mutation.**” Keep in mind the distinction between a mutation (an alteration of the primary sequence of the genetic material) and a mutant (a strain carrying one or more mutations). One may speak about the mapping of a mutation, but one cannot map a mutant. Likewise, a mutant has no genetic locus, only a phenotype.

“**Homology**” versus “**similarity.**” For use of terms that describe relationships between genes, consult the articles by Theissen (Nature 415:741, 2002) and Fitch (Trends Genet 16: 227–231, 2000). “Homology” implies a relationship between genes that have a common evolutionary origin; partial homology is not recognized. When sequence comparisons are discussed, it is more appropriate to use the term “percent sequence similarity” or “percent sequence identity,” as appropriate.

**Tetracycline resistance determinants.** The nomenclature for tetracycline resistance determinants is based on the proposal of Levy et al. (Antimicrob Agents Chemother 43:1523–1524, 1999). The style for such determinants is, e.g., Tet B; the space helps distinguish the determinant designation from that for phenotypes and proteins (TetB). The above-referenced article also gives the correct format for genes, proteins, and determinants in this family.

**Locus tags.** Locus tags are systematic, unique identifiers that are assigned to each gene in GenBank. All genes mentioned in a manuscript should be traceable to their sequences by the reader, and locus tags may be used for this purpose in manuscripts to identify uncharacterized genes. In addition, authors should check GenBank to make sure that they are using the correct, up-to-date format for locus tags (e.g., upper-case versus lower-case letters and the presence or absence of an underscore, etc.). Locus tag formats vary between different organisms and also may be updated for a given organism, so it is important to check GenBank at the time of manuscript preparation.

**Viruses.** The genetic nomenclature for viruses differs from that for bacteria. In most instances, viruses have no phenotype, since they have no metabolism outside host cells. Therefore, distinctions between phenotype and genotype cannot be made. Superscripts are used to indicate hybrid genomes. Genetic symbols may be one, two, or three letters.

**Eukaryotes.** FlyBase (http://flybase.org/) is the genetic nomenclature authority for Drosophila melanogaster. WormBase (http://www.wormbase.org/#01-23-6) is the genetic nomenclature authority for Caenorhabditis elegans. When naming genes for Aspergillus species, the nomenclature guidelines...
posted at http://www.aspergillusgenome.org/Nomenclature.shtml should be followed, and the Aspergillus Genome Database (http://www.aspgd.org/) should be searched to ensure that any new name is not already in use. The Saccharomyces Genome Database (http://www.yeastgenome.org/) and the Candida Genome Database http://www.candidagenome.org/) are authorities for Saccharomyces cerevisiae and Candida albicans genetic nomenclature, respectively. For more information about the genetic nomenclature of eukaryotes, see the Instructions to Authors for Eukaryotic Cell and Molecular and Cellular Biology.

ABBREVIATIONS AND CONVENTIONS

Verb Tense

ASM strongly recommends that for clarity you use the past tense to narrate particular events in the past, including the procedures, observations, and data of the study that you are reporting. Use the present tense for your own general conclusions, the conclusions of previous researchers, and generally accepted facts. Thus, most of the abstract, Materials and Methods, and Results will be in the past tense, and most of the introduction and some of the Discussion will be in the present tense.

Be aware that it may be necessary to vary the tense in a single sentence. For example, it is correct to say "White (30) demonstrated that XYZ cells grow at pH 6.8, "Figure 2 shows that ABC cells failed to grow at room temperature, and "Air was removed from the chamber and the mice died, which proves that mice require air." In reporting statistics and calculations, it is correct to say "The values for the ABC cells are statistically significant, indicating that the drug inhibited . . . ."

For an in-depth discussion of tense in scientific writing, see How To Write and Publish a Scientific Paper, 7th ed.

Abbreviations

General. Abbreviations should be used as an aid to the reader, rather than as a convenience for the author, and therefore their use should be limited. Abbreviations other than those recommended by the IUPAC-IUB (Biochemical Nomenclature and Related Documents, 1992) should be used only when a case can be made for necessity, such as in tables and figures.

It is often possible to use pronouns or to paraphrase a long word after its first use (e.g., "the drug" or "the substrate"). Standard chemical symbols and trivial names or their symbols (folate, Ala, and Leu, etc.) may also be used.

Define each abbreviation and introduce it in parentheses the first time it is used; e.g., "Cultures were grown in Eagle minimal essential medium (MEM)." Generally, eliminate abbreviations that are not used at least three times in the text (including tables and figure legends).

Not requiring introduction. In addition to abbreviations for Système International d’Unités (SI) units of measurement, other common units (e.g., bp, kb, and Da), and chemical symbols for the elements, the following should be used without definition in the title, abstract, text, figure legends, and tables:

- DNA (deoxyribonucleic acid)
- cDNA (complementary DNA)
- RNA (ribonucleic acid)
- cRNA (complementary RNA)
- RNase (ribonuclease)
- DNase (deoxyribonuclease)
- rRNA (ribosomal RNA)
- miRNA (messenger RNA)
- tRNA (transfer RNA)
- AMP, ADP, ATP, dAMP, ddATP, and GTP, etc. (for the respective 5’ phosphates of adenosine and other nucleosides) (add 2’, 3’, or 5’- when needed for contrast)
- ATPase and dGTPase, etc. (adenosine triphosphatase and deoxyguanosine triphosphatase, etc.)
- NAD (nicotinamide adenine dinucleotide)
- NAD+ (nicotinamide adenine dinucleotide oxidized)
- NADH (nicotinamide adenine dinucleotide reduced)
- NADP (nicotinamide adenine dinucleotide phosphate)
- NADPH (nicotinamide adenine dinucleotide phosphate, reduced)
- NADP+ (nicotinamide adenine dinucleotide phosphate, oxidized)
- poly(A) and poly(dT), etc. (polyadenylic acid and polycytidylyllic acid, etc.)
- oligo(dT), etc. (oligoodeoxy- thymidylic acid, etc.)
- UV (ultraviolet)
- PFU (plaque-forming units)
- CFU (colony-forming units)
- MIC (minimal inhibitory concentration)
- Tris (tris(hydroxymethyl) aminomethane)
- DEAE (diethylaminoethyl)
- EDTA (ethylenediamine-tetraacetic acid)
- EGTA (ethylene glycol-bis[β-aminoethyl ether]-N,N,N’,N”- tetraacetic acid)
- HEPES (N-2-hydroxyethylpiperezine-N’-2- ethanesulfonic acid)
- PCR (polymerase chain reaction)
- AIDS (acquired immuno-deficiency syndrome)

Abbreviations for cell lines (e.g., HeLa) also need not be defined.

The following abbreviations should be used without definition in tables:

- amt (amount)
- approx (approximately)
- avg (average)
- concn (concentration)
- diam (diameter)
- exp (experiment)
- expl (experimental)
- ht (height)
- mo (month)
- mol wt (molecular weight)
- no. (number)
- prepn (preparation)
- SD (standard deviation)
- SE (standard error)
- SEM (standard error of the mean)
- sp act (specific activity)
- sp gr (specific gravity)
- temp (temperature)
- tr (trace)
- vol (volume)
- vs (versus)
- wk (week)
- wt (weight)
- yr (year)

Drugs. Should an author decide to abbreviate the names of antimicrobial agents in a manuscript, the following standard abbreviations are strongly recommended.

Antibacterial agents. Use the indicated abbreviations for the following antibacterial agents.

- amikacin (AMK)
- azlocillin (AZL)
- aztreonam (ATM)
- amoxicillin (AMX)
- amoxicillin-clavulanic acid (AMC)
- carbencillin (CAR)
- ampicillin (AMP)
- cefaclor (CEC)
- ampicillin-sulbactam (SAM)
- cefadroxil (CGR)
- azithromycin (AZM)
- cefamandole (FAM)
The following antifungal agents.

- amphotericin B (AMB)
- ketoconazole (KTC)
- clotrimazole (CLT)
- nystatin (NYT)
- fluconazole (FLC)
- terbinafine (TRB)
- iraconazole (ITC)

Antiviral agents. Use the indicated abbreviations for the following antiviral agents.

- acyclovir (ACV)
- penciclovir (PCV)
- famciclovir (FCV)
- valacyclovir (VCV)
- foscarin (FOS)
- zidovudine (AZT)

β-Lactamase inhibitors. Use the indicated abbreviations for the following β-lactamase inhibitors.

- clavulanic acid (CLA)
- tazobactam (TZB)

Antifungal agents. Use the indicated abbreviations for the following antifungal agents.

- amphotericin B (AMB)
- ketoconazole (KTC)
- clotrimazole (CLT)
- nystatin (NYT)

Antiviral agents. Use the indicated abbreviations for the following antiviral agents.

- acyclovir (ACV)
- penciclovir (PCV)
- famciclovir (FCV)
- valacyclovir (VCV)
- foscarin (FOS)
- zidovudine (AZT)
appropriately anticipated before the experiment. For example, data generated by individually testing two unrelated factors for their effects on a target with only a single, untreated target as a control could be appropriately analyzed by t tests instead of ANOVA.

(v) For all appropriate multigroup comparisons, two P values must be generated and provided in the manuscript. The main P value applies to the overall data set and indicates that within that data set at least two groups differ from each other. The overall P value does not indicate which two groups are different. The main P value and the overall P value should be computed by using a post hoc test. For ANOVA, these post hoc tests are usually Dunnett’s test (used to compare multiple experimental groups to a single control), the Fisher protected least significant difference (PLSD) test, the Tukey-Kramer test, and the Games-Howell test. Others may be used. Note that each post hoc test has certain underlying assumptions that may not be applicable to the data under analysis. For a Kruskal-Wallis nonparametric ANOVA, the Dunn procedure is appropriate to generate P values for two-group comparisons.

(vi) Data presented as endpoints (i.e., LD_{50} and ID_{50}, etc.) contain both the calculated value and a confidence interval with a statistical significance associated with it (95%, 99%, or similar confidence interval), calculated by logit or probit analysis. Simple LD_{50} values, such as Reed-Muench calculations, may not be used alone.

(vii) When samples are taken multiple times from one experimental entity (i.e., multiple serum samples from one animal, gross pathology scores measured for the same animal over time or growth curves, etc.), one cannot use analyses such as t tests, ANOVA, or the Mann-Whitney test, etc., because these tests assume that each measure is independent. An entity with a high score on day 1 is more likely to have a high score on day 2 than is an entity with a low score. It is likely that some expert statistical help will be needed for these situations, usually involving regression analysis or survival analysis, etc.

(viii) Statistical significance and biological significance are not the same. There is nothing magical about a P value of 0.05. When results from large sample sizes are compared, a P value of <0.05 will often be obtained, as P value is a function of both sample size and effect size. If sample sizes are large, then more-rigorous (i.e., smaller) P values may be desirable. If sample sizes are small, P values of >0.05 may still be important. There should be both statistical and biological significance to the results and conclusions in the manuscript.


For a review of basic statistical considerations for virology experiments, see the article by Richardson and Overbaugh (J Virol 79:669–676, 2005).

**Isotopically Labeled Compounds**

For simple molecules, labeling is indicated in the chemical formula (e.g., _14CO_2, _3H_2O, and _H_3^{35}SO_4). Brackets are not used when the isotopic symbol is attached to the name of a compound that in its natural state does not contain the element (e.g., _32S-ATP) or to a word that is not a specific chemical name (e.g., _131I-labeled protein, _14C-amino acids, and _3H-ligands).

For specific chemicals, the symbol for the isotope introduced is placed in square brackets directly preceding the part of the name that describes the labeled entity. Note that configuration symbols and modifiers precede the isotopic symbol. The following examples illustrate correct usage:

- \([^{14}C]\)urea
- \(l-[^{14}C]\)methionine
- \([2,3-^{3}H]\)serine
- \([\alpha-^{15}C]\)lysine
- UDP-[U-^{14}C]glucose
- E. coli [^{32}P]DNA
- fructose 1,6-[1-^{32}P]bisphosphate
- \([\gamma-^{32}P]ATP\)