

MISSION STATEMENT

The mission of *Biophysical Journal* (BJ) is to publish the highest quality biophysical research that elucidates important biological, chemical, or physical mechanisms and provides quantitative insight into fundamental problems at the molecular, cellular, systems, and whole-organism levels. Articles published in BJ should be of general interest to quantitative biologists, regardless of their research specialty.

SCOPE

BJ publishes original articles, letters, and perspectives on important problems in modern biophysics. The articles should be written so as to be of interest to a broad community of biophysicists. BJ welcomes experimental studies that employ quantitative physical approaches for the study of biological systems, including or spanning scales from molecule to whole organism. Experimental studies of a purely descriptive or phenomenological nature, with no theoretical or mechanistic underpinning, are not appropriate for publication in BJ. Theoretical studies should offer new insights into the understanding of experimental results or suggest new experimentally testable hypotheses. Articles reporting significant methodological or technological advances, which have potential to open new areas of biophysical investigation, are also suitable for publication in BJ. Manuscripts describing improvements in accuracy or speed of existing methods or extra detail within methods described previously are not suitable for BJ.

Manuscripts are handled by an Editorial Board of more than 110 scientists who solicit reviewers with the requisite expertise. The Editorial Board is led by nine Associate Editors, whose expertise serve to detail the scope of science published by BJ:

Meyer Jackson: *Reviews and Perspectives — Invited Only.* Perspectives are invited and are solicited by the Editor-in-Chief and the Associate Editors. Perspectives are brief, cover topics of current interest in biophysics, and are intended to provide a unique perspective on the current state and future of a field, rather than a comprehensive review. These articles are typically written by authorities in the field and are directed to a broad range of scientists who wish to keep abreast of the best current research. BJ Classics are also invited features.

Vasanthi Jayaraman: *Channels, Transporters, and Receptors.* Mechanistic studies of the structure, function, and regulation of membrane transport proteins and signaling receptors. The emphasis is on studies employing experimental and/or computational methods. Papers that focus on the interaction of these proteins with the membrane should be submitted to Claudia Steinem.

Jason Kahn: *Nucleic Acids.* Investigations of the structure, dynamics, and function of DNA, RNA, and their complexes with other molecules using experimental and computational techniques.

Anne Kenworthy: *Cell Biophysics.* Biophysical studies that further our understanding of molecular function and interactions within and between cells, and elucidate how these mechanisms are regulated within the cellular milieu. Papers with a significant component of in vitro studies of cellular components are often better suited for editors in the

areas above. Papers that focus on complex signaling or metabolic networks, whole organisms, tissues, or organ physiology are often better suited for Stanislav Shvartsman.

Elizabeth Rhoades: *Proteins*. Biophysics of protein structure, function, and interactions. The emphasis is on molecular biophysics encompassing experimental, computational, and theoretical approaches. Papers that focus on membrane transport proteins or receptors or molecular motors and cytoskeletal proteins are more appropriate for Vasanthi Jayaraman and David Sept, respectively.

Tamar Schlick: *Genome Biophysics*. Biophysical aspects of genome organization and related cellular functions such as transcription, translation, development, and gene regulation. Of particular interest are the structural states, folding, and function of chromatin and chromosomes, as well as the dynamic organization of the nucleus.

David Sept: *Molecular Machines, Motors, and Nanoscale Biophysics*. Biophysical studies of molecular motors (cytoskeletal and non-cytoskeletal), cytoskeletal assemblies, muscle contraction, and studies utilizing single-molecule tracking, force spectroscopy, and other nanoscale techniques. Papers focused on general biophysical properties of nucleic acids, proteins, and membranes are better suited for Jason Kahn, Elizabeth Rhoades, and Claudia Steinem respectively.

Stanislav Shvartsman: *Systems Biophysics*. The analysis of collective properties in systems of interacting components, including biomolecular networks, organelles, tissues, organs and whole organisms. Special emphasis is placed on studies that link multiple levels of biological organization, from gene sequence to nonlinear and network-level phenomena, such as pattern formation, metabolism, and signal transduction. Papers that focus on a cell biological mechanism are better directed to Anne Kenworthy.

Claudia Steinem: *Membranes*. Analysis of the structure, organization, and function of artificial and biological membranes via state-of-the art experimental and theoretical biophysics approaches. Please send papers that focus on the entire cellular response to Anne Kenworthy. Papers that mainly tackle the molecular structure and function of membrane channels and transporters should be sent to Vasanthi Jayaraman.

GENERAL POLICIES

RESEARCH TRANSPARENCY AND MATERIALS AND DATA AVAILABILITY

The Biophysical Society, publisher of BJ, agrees fully with the intent of the National Institutes of Health Principles and Guidelines for Reporting Preclinical Research <https://www.nih.gov/research-training/rigor-reproducibility/principles-guidelines-reporting-preclinical-research> to encourage reproducible, robust, and transparent research.

The Journal's Guidelines for the Reproducibility of Biophysics Research be found at <http://www.cell.com/pb/assets/raw/journals/society/biophysj/PDFs/reproducibility-guidelines.pdf>

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Manuscripts submitted to BJ must be original; except for the specific exception noted below, manuscripts and Supplemental Information that have already been published or are concurrently submitted elsewhere for publication are not acceptable for submission.

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Article Type	Page Limit
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Wager, E., and S. Kleinert. 2011. Responsible research publication: International standards for authors. A position statement developed at the 2nd World Conference on Research Integrity, Singapore, July 22–24, 2010. In *Promoting Research Integrity in a Global Environment*. T. Mayer and N. Steneck, editors. Imperial College Press/World Scientific Publishing, Singapore, pp. 309–316.

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REGULAR ARTICLES

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3. Statement of Significance
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5. Author Contributions
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8. Supplemental Information (movies, database files, etc. may be uploaded as separate files). Instructions for Supplemental Information are available at the following link: [Supplemental Information.pdf](#)

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Manuscripts are to follow the conventions of *Scientific Style and Format*, the Council of Science Editors Style Manual (except for references).

TITLE

The title of each manuscript should identify the content of the article; clarity and conciseness are essential for indexing, abstracting, and retrieval. No more than 100 characters and spaces should be used. A condensed running title of no more than 40 characters (including spaces) must be provided on the title page.

KEYWORDS

Up to three keywords or phrases and up to three techniques must be provided from a predetermined list.

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Biophysical Journal requires authors to supply a Statement of Significance along with their manuscript. Authors must submit a 120-word-maximum statement about the significance of their research paper written at a level understandable to a scientist outside their field of specialty. The primary goal of the Significance Statement is to

explain the relevance of the work to a broad readership. The Significance Statement is required for all Regular (research) Articles, Letters, and Computational Tools. It should be placed just below the Abstract.

ABSTRACTS

Each manuscript must be accompanied by an informative abstract of no more than 300 words. Abstracts should describe the substance of the manuscript in language non-specialists can understand, and must make clear the biological significance of the research. Reference citations are not allowed in the Abstract of a manuscript.

FOOTNOTES

The only footnotes should be on the title page (used within the author list to denote affiliations for resubmissions and final files) or in tables (defined within the table legend).

Author list footnotes should be numbered (1, 2, 3, etc.), and table footnotes should be lettered (a, b, c, etc.). Please do not use the range format to indicate multiple footnotes; instead, list each footnote individually (e.g., 1,2,3,4, not 1–4; and a,b,c,d, not a–d).

ABBREVIATIONS

Abbreviations should be defined in the text at first mention.

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Capitalize trade names and give manufacturers' full names and addresses (city and state).

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Equations are to be typewritten. Clearly indicate capital and lowercase letters. Label Greek and unusual symbols the first time they appear. Use fractional exponents instead of root signs. The solidus (/) for fractions will save vertical space. Equation numbers should be cited in the text without parentheses (e.g., Eq. 9, Eq. 10). Do not cite equations numerically only, but be sure to add the "Eq." Do not cite equations in the Abstract.

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PC, Word 2007 or later: far right end of the Insert tab on the ribbon MAC,

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MAC, Word 2008: toolbar/Insert/Object/Microsoft Equation

REFERENCES

References are cited in numerical order in the text and are designated by that reference number in parentheses. The numbers, in parentheses, can be repeated at each citation of the referenced material. References appearing solely in figure legends and tables follow those in the text. Reference citations are not allowed in the Abstract. The following is an example of numbered citations:

Membrane channels with large aqueous pores are traditionally regarded as “molecular sieves” that discriminate between different molecules based on their size (1,2). This simplified view, however, contradicts emerging experimental evidence that permeation through these structures involves intimate molecular interactions (3–5). Metabolite-specific channels exhibit affinity to their metabolites; permeating molecules do not just slip through the pore, but feel strong attraction to the pore-lining residues. The now classical example is bacterial porin LamB (6), where the existence of an extended binding zone for oligosaccharides is firmly established. More recent examples include ATP interactions with VDAC (3) and penicillin antibiotic interactions with the general bacterial porin OmpF (4,6–8).

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Citations such as “unpublished data” and “personal communication” should be included parenthetically in the text, with all authors’ initials and last names, and must not appear in the reference section. For personal communications, include cited author’s institutional affiliation and date of communication. Provide written permission to use the material cited when submitting the manuscript.

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All unique supporting references must be included at the end of the main-text reference list. Please see Supplemental Information Instructions for more information.

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If references are added in the proof stage, they and their corresponding citations must be inserted per their proper numerical order and the rest of the citations/references renumbered accordingly. References deleted in the proof stage will read, for example, “3. Reference deleted in proof.” Their corresponding numbers will remain in the text.

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For the reference list, follow the style of the examples listed here, noting that each reference is numbered according to the number in which it appears in the text.

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For references to journal articles, include all authors' names (invert only the first author’s last name and initials; do not use “et al.”), year, complete article titles, volume number, journal name, and inclusive page numbers. Abbreviate the names of journals as in the Serial Sources for the Biosis Data Base; spell out the names of unlisted journals.

See the examples below:

1. Cole, K. S., and J. W. Moore. 1960. Potassium ion current in the squid giant axon: Dynamic characteristics. *Biophys. J.* 1:1-14.
2. Loboda, A., and C. M. Armstrong, 2001. Resolving the gating charge movement associated with late transitions in K channel activation. *Biophys. J.* 81:905-916.
3. Reference deleted in proof.
4. Johnston I. G., B. C. Rickett, and N. S. Jones. 2014. Explicit tracking of uncertainty increases the power of quantitative rule-of-thumb reasoning in cell biology. *Biophys. J.* 107:2612-2617.

5. Álvarez-González, B., R. Melli, E. Bastounis, R. A. Firtel, J. C., Lasheras, J. C. del Álamo. 2015. Three-dimensional balance of cortical tension and axial contractility enables fast amoeboid migration. *Biophys. J.* In press.

PREPRINTS

Kappen, B., and V. Gome. 2009. Optimal control as a graphical model interface problem, arXiv, arXiv:0901.0633v2, <http://arxiv.org/abs/0901.0633v2> (preprint posted March 10, 2009).

Zhang, D., and M. Glotzer. 2014. Efficient site-specific editing of the *C. elegans* genome. bioRxiv, doi: 10.1101/007344 (preprint posted April 17, 2014).

INFORMATION IN PUBLIC REPOSITORIES

Manuscripts that refer to information in a public database (such as structures in the RCSB Data Bank) must cite the publication, if available, in which the original information was reported as well as the database serial number.

ABSTRACTS

Hohendanner, F., F. Heinzl, L. Blatter. 2016. Dyssynchronous CA Removal in Atrial Cardiac Myocytes. 2016 Biophysical Society Meeting Abstracts. *Biophys. J.* 110(3), Suppl 1, Abstract 515-Pos.

COMPLETE BOOKS

Phillips, R., J. Kondev, and J. Theriot. 2009. *Physical Biology of the Cell*. Garland Science, New York.

ARTICLES IN BOOKS

Seddon, J. M., and R. H. Templer. 1995. Polymorphism of lipid-water systems. In *Handbook of Biological Physics*, vol. 1. Structure and Dynamics of Membranes, From Cells to Vesicles. R. Lipowsky and E. Sackmann, editors. Elsevier/North Holland, Amsterdam, pp. 97-160.

COMMERCIAL SOFTWARE

All commercial software and products should provide the name and location of the manufacturer. MATLAB (The MathWorks, Natick, MA).

WEBSITES

Web references should be treated no differently than other references, and should appear as shown below. Biophysical Society. 2010. 08 July 2010. <http://www.biophysics.org>.

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All tables should be double-spaced and carry a title. Do not use vertical rules. Tables must be in black and white.

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Biophysical Letters are short articles in diverse areas that report exceptionally important results in an accelerated manner. A Letter should be of interest to a wide variety of readers, and should potentially change the way the reader thinks about an important topic or address a critical question. A letter should tell a complete story without needing extensive data analysis, and it is not meant to serve as a means of publishing preliminary results. The criteria for acceptance of a Letter are more stringent than for Regular Articles, and particular attention will be paid to the significance of the results.

Letters must not exceed five published pages (including figures and references). There will be no exceptions to this length limit. Letters are required to have an Abstract, a Statement of Significance, and an Author Contributions Section. They are not required to follow traditional manuscript organization (Introduction, Materials and Methods, Results, Discussion, Conclusion).

Only one revision cycle is allowed for Letters and revisions will be due within 30 days (rather than 90 days allowed for Regular Articles). The author of a Letter requiring major revision will be invited to resubmit the work as a Regular Article. Letters are published online ahead of print as soon as corrected proof has been generated.

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These invited manuscripts celebrate seminal articles originally published in BJ. The invited manuscripts are written by the original authors, their colleagues, and/or their students and explain how the original article has influenced the field and is still relevant today. The manuscript should be accessible to scientists outside the field and to students. BJ Classics should be limited to five published pages in length (including figures and references) and the number of references should be limited to no more than 60 recent publications. There are no page charges associated with an accepted BJ Classic article. Color figures will be online only color unless the author specifies otherwise and incurs the cost of print color.

COMMENTS TO THE EDITOR

These are short commentaries on an article published earlier in BJ. These are NOT short original articles. In order for a submission to qualify as a Comment, it must not contain unpublished data and must be entirely free of polemic. Comments to the Editor may be rebutted by the authors of the previously published article. Comments and any rebuttals are subject to review. Abstracts, Significance Statements, and Author Contributions are not required for Comments.

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NEW AND NOTABLES

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PERSPECTIVES IN BIOPHYSICS

Perspectives in Biophysics are short reviews covering topics of current interest in biophysics; they are intended to provide a unique perspective on the current state and future of a field, rather than a comprehensive review. They generally do not present new data, but can offer fresh syntheses of the results in a field. These articles are typically written by authorities in the field and are directed to a broad range of scientists who wish to keep abreast of the best current research. All Perspectives in Biophysics are invited and are solicited by the Editor-in-Chief and the Associate Editors, but nominations from outside the Editorial Board are welcomed. These suggestions will then be considered by the Associate Editor for Perspectives in Biophysics in consultation with the Editor-in-Chief, and if accepted, an invitation will be sent to the proposed author to submit a review. Perspectives should be approximately five published pages, including figures and references, and the number of references should be limited to roughly 60 recent publications. There are no page charges associated with an accepted Perspective. Color figures will be online only color unless the author specifies otherwise and incurs the cost of print color.

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