The Biophysicist
Guidelines for Authors

MISSION STATEMENT

The Biophysicist aims to highlight and nurture biophysics education, its scholarship, and its development. The journal serves a worldwide, broad audience to make fundamental concepts and techniques in biophysics (and related disciplines), as well as evidence-based pedagogical practice accessible to individuals at all levels: K-12 and public outreach, undergraduate, graduate and postgraduate students/trainees, active researchers, and scholars of biophysics teaching and learning. This goal will be achieved by both academic articles and informal reports that reflect the interdisciplinary nature of biophysics education and the activities of biophysicists in a variety of scientific fields.

ARTICLE TYPES

RESEARCH ARTICLES

Novel Learning and Teaching Approaches

Biophysics includes both experimental and theoretical studies at the molecular, cellular, and systems levels. Articles and tutorials describing novel approaches to the teaching of specific subject matter, active learning methods, assessment techniques or curricular design will provide insights into the intellectual infrastructure in the field. This helps ensure that biophysics-related biology, chemistry, engineering, or physics topics can be taught effectively. Scholarly articles on the intellectual history of biophysics or on the scientific impact of key biophysics papers are also welcomed.

Laboratory and Computational Teaching Tools

Articles that outline new research technologies, approaches and internet-based resource collections, including in-vivo, chemical, physical, and computational studies, with an emphasis on assessments of student learning needs and/or the impact of such teaching tools on biophysics learning. These can include videos, computer simulations, programs or interactive online resources.

Research-based Studies of Student Learning

Studies of innovative problem-solving approaches, exploratory or “flipped” instruction, as well as curricular units that have been reformulated to improve their effectiveness in facilitating learning or addressing student misconceptions.

Biophysics Learning Perspectives

Mini-reviews and tutorials that pedagogically survey a subfield of contemporary biophysics (e.g., single-molecule spectroscopy, mechanobiology, protein folding dynamics and structure, macromolecular interactions). The Perspectives will be geared towards students, educators, and researchers learning new fields.
Adapted Research Articles

APL (Adaptations of Primary Literature) that allow beginners in a field to comprehend fundamental research papers of important impact using condensation, definition of terms, and inclusion of extended “boxes” depicting the chemical, biological, mathematical, experimental, or physical background needed to properly understand key concepts. The papers can be written by the original authors or by others (with appropriate permissions obtained for quoting text, figures etc.).

REPORTS

Biophysics and Related Disciplines

Reports on the role of biophysics in related areas (e.g., chemistry, physics, biology, engineering, technology, and health) with a focus on recent advances that impact biophysics from the scientific literature of those fields.

Biophysics in Society

Profiles of the scientific findings of biophysics and biophysicists in the news. Reports of activities in the biophysics community in both academia and industry that focus on careers, graduate student mentoring, postdoc searches and mentoring of faculty in teaching institutions. Accounts of activities aimed at outreach (K-12, general community), diversity and inclusion, and best educational practices. Editorial opinion pieces and book reviews on texts or other educational publications.

Student Forum

Contributions from students and postdoctoral trainees on issues important to them to provide their unique perspective on biophysics and the current state of scientific training. Examples include: lessons from TA experiences, suggestions for alternative approaches to the teaching of biophysics and related disciplines, suggestions for new mentoring and career development topics, scientific activities of student chapters. These can range from a few paragraphs to half a journal page. More extensive treatments can be submitted as a Report (1-2 journal pages and assessed by an Editorial Board member) or a peer-reviewed Article as defined above.

Book Reviews and Comments

Short notes on articles that have previously been published in The Biophysicist.

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June 5, 2019

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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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<th>Description</th>
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<td>Research articles submitted on or after Jan 1, 2020</td>
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<tr>
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