



TABLE OF CONTENTS

●	Description	p.1
●	Audience	p.4
●	Impact Factor	p.4
●	Abstracting and Indexing	p.4
●	Editorial Board	p.4
●	Guide for Authors	p.6



ISSN: 1532-0464

DESCRIPTION

The *Journal of Biomedical Informatics* (formerly *Computers and Biomedical Research*) has been designed to reflect a commitment to high-quality original research papers, reviews, and commentaries in the area of biomedical informatics. Although we publish articles motivated by applications in the biomedical sciences (for example, clinical medicine, health care, population health, imaging, and translational bioinformatics), the journal emphasizes reports of new methodologies and techniques that have general applicability and that form the basis for the evolving science of biomedical informatics. Articles on medical devices; evaluations of implemented systems (including clinical trials of information technologies); or papers that provide insight into a biological process, a specific disease, or treatment options would generally be more suitable for publication in other venues. Papers on applications of signal processing and image analysis are often more suitable for biomedical engineering journals, although we do publish papers that emphasize the information management and knowledge representation/modeling issues that arise in the storage and use of biological signals and images. System descriptions are welcome if they illustrate and substantiate the underlying methodology that is the principal focus of the report and an effort is made to address the generalizability and/or range of application of that methodology.

The methods that are the focus of JBI papers may be drawn from any of a number of component sciences in the field of biomedical informatics. Although the methods are often related to the field of computer science, many JBI papers will emphasize innovative techniques from other fields, such as decision science, statistics, cognitive science, psychology, information science, or management science.

Papers are generally of three types: **Regular research papers:** Presentation and discussion of a biomedically or clinically motivated system or approach that has required the creation of innovative methods rather than the application of established techniques. **Methodological review papers:** Reviews of a methodological approach that summarize its introduction, use, successes, and limitations. Such reviews will also often propose future research directions or critique a method and discuss the range of problems for which it may not be an appropriate solution. **Commentaries:** These are shorter articles that tend to discuss previously published articles or a theme that is an important area of focus for the methodological basis of biomedical informatics research and applications. Commentaries are often invited, but may be submitted by anyone after a discussion with the editors. If submission of a commentary is being considered, please submit a brief proposal to jbi@elsevier.com beforehand.

When an author is submitting a manuscript in response to a call for papers for a special thematic issue, the submission category should be the special issue title but the cover letter should indicate whether the article is a methodological review, a regular paper, or a commentary. JBI also publishes editorials and invited book reviews.

CONSIDERING SUBMITTING TO JBI? READ THIS SUMMARY TO LEARN WHAT IS APPROPRIATE FOR THE JOURNAL.

The *Journal of Biomedical Informatics* (JBI), first published by Academic Press in 1968 under the title *Computers and Biomedical Research* (CBR), was redesigned and renamed beginning with Volume 34 in 2001. Building on a strong 33-year history since CBR premiered in 1968, we made a number of changes to update and reorient the journal in light of the evolution of the field, while simultaneously seeking to fill a niche not clearly identified as a central focus by the other journals that publish papers in biomedical informatics research. We stated that goal as follows in our inaugural editorial:

"It is increasingly difficult to publish articles that will have broad appeal to a diverse readership. We have accordingly decided that it is important to introduce a tighter focus to the journal in the years ahead, and it is with this in mind that we have renamed the journal to reflect a more modern and narrow emphasis. The Journal of Biomedical Informatics (JBI) is intended to complement rather than to compete with the other major journals in biomedical informatics. In particular, we wish to emphasize papers that elucidate methodologies that generalize across biomedical domains and that help to form the scientific basis for the field. Papers will tend to be concerned with information technology rather than medical devices, and on underlying methods rather than system descriptions or summative evaluations. You should expect this journal to be an excellent source of new ideas about how to tackle difficult problems that arise in the development of computational solutions to problems in the biomedical sciences and clinical practice."

With more than 10 years of publication under the JBI title, we are pleased by the subsequent success of the journal. It has a reputation for excellence and rigor and we hope that our readers and published authors are similarly impressed by the quality of both the work and the writing that we have attracted to these pages. That quality has come at some cost. Some papers that once would have been suitable for CBR are turned away without review because they do not conform to the JBI editorial policy.

JBI seeks to publish papers that make a conceptual contribution to the field, typically by describing an innovation in methodology or technique or by discussing substantive generalizable lessons that have been learned in the context of an interesting informatics project. When a contribution has a theoretical basis, that theory is an appropriate emphasis for the exposition as well. In the figure below we illustrate our view of the relationship between the scientific base in the field and the areas of application that characterize work in biomedical informatics. In our experience, many research projects that start as applications efforts result in methodologic innovation that, properly described, contributes to the scientific base of our discipline. Thus we are not discouraging submissions that discuss interesting applications but, rather, encouraging a perspective on how best to write about and share generalizable methodologic insights that derive from the applied work and from which others can benefit. We believe that such papers form the core of biomedical informatics as a science.

jbi_aimsscope.gif

Legend: The relationship between biomedical informatics methods, techniques, and theories and the domains of application that characterize the discipline. The Journal of Biomedical Informatics seeks papers on basic research methods and conceptual insights that are biomedically motivated but that could potentially be applied broadly in diverse domains, both within and outside biomedicine. Methods may be drawn from a large number of fields, including, but not limited to, computer science, decision science, cognitive science, information science, psychology, management science, and statistics.

There have been three principal reasons for returning papers without review. Perhaps the most common occurs when a paper is primarily a description of an informatics application or its evaluation. For example, a new expert system that addresses an important clinical problem, but that does not advance the methodologies underlying expert systems, would be more appropriate for another journal, either in applied informatics or in the clinical domain of application. Similarly, survey studies or analyses of user needs are likely to be suitable for JBI only if they contribute new methods for

performing such studies or analyses, or new insights into user behavior, cognitive science, or human-computer interaction.

A second reason for returning papers without review occurs when a paper does not deal with the core informatics notions of information and knowledge management. Most commonly this occurs when a paper presents an approach to biomedical signal or image processing, especially when the emphasis is on numerical methods rather than information processing and management or knowledge-based approaches. We generally refer such papers to biomedical engineering journals or to clinical journals in the domain of application (e.g., a cardiology journal for new approaches to electrocardiogram analysis, or an imaging journal for a new mathematical approach to segmentation or other aspects of image analysis).

If you are considering your bioinformatics article for submission to JBI, please be aware of this methodological focus. In addition, please note that JBI now publishes bioinformatics papers only if they deal with issues in translational (human) science. See the [Translational Bioinformatics](#) editorial that deals with this topic before submitting your paper.

Finally, although JBI is an international journal and we understand the challenges that authors face when English is not their native language, some papers have such severe problems with their English exposition that we return them for revision, suggesting the involvement of an editor or coauthor who is expert in English before the paper can be judged suitable for entry into the scientific review process. Minor problems with language can be corrected in the editorial process, but more severe problems prevent an adequate assessment of the scientific contribution.

Of those papers that have gone to review, our eventual acceptance rate is now about 35-40%. Every published paper has been accepted only after significant revisions, so authors should not be surprised when revisions are required before a paper is ready for publication. We believe, however, that the rigor we have introduced in the reviewing and revision process has resulted in a better, more scientifically useful product. For example, anecdotal feedback, as well as citation and downloading data, suggest that the methodological reviews included in almost every issue have been widely used for educational and study purposes.

We have received an increasing number of submitted papers in each year since the transition from CBR to JBI. For example, there was a 20% increase in submissions in a single year (2007 when compared with 2006). As a result, the journal has grown in size, with more papers per issue. We also devote two or three issues per year to special topics overseen by guest editors who propose such special issues to us. Accepted papers are immediately made available online and are indexed in Medline, so papers become accessible via web-based literature search tools well before they actually appear in printed form. Papers are available only to subscribers for the first 12 months after publication, but then are opened up to free access in our ScienceDirect archive. Several papers make use of color images or figures, and all are made available online, even if cost constraints prevent us from making some of them available in color in the print journal.

We encourage you to submit your best methodological work to JBI. Bear in mind that we provide opportunities for in-depth discussion of an innovative approach, as judged by our reviewers as well as the editors, and have avoided any arbitrary limit on the length of individual articles. We also encourage papers describing doctoral dissertation work, and emphasize that the extensive topic reviews undertaken in a thesis document often can be adapted to develop an ideal methodology review article for the JBI. JBI also has no page charges and can include multi-media components for articles in the online environment.

Biomedical informatics is a burgeoning field, with important applications and implications throughout the biomedical and clinical worlds. We are eager to have the research community consistently identify JBI as the journal that best defines the scientific base for the field. We accordingly invite both your contributions and your readership.

Edward H. Shortliffe
Editor-in-Chief

AUDIENCE

Biomedical informaticists, Health informaticists

IMPACT FACTOR

2013: 2.482 © Thomson Reuters Journal Citation Reports 2014

ABSTRACTING AND INDEXING

BIOSIS
Bioengineering Abstracts
Cancerlit
Current Contents / Clinical Medicine
MEDLINE®
EMBASE
Energy Science and Technology
INSPEC
Pascal
Physical Education Index
PubMed
Science Citation Index
Social SciSearch
Biological Abstracts
TOXFILE
BIOSIS Previews
Ei Compendex
Inside Conferences
Gale Database of Publications & Broadcast Media
Scopus
Science Citation Index Expanded
Journal Citation Reports - Science Edition
CSA Life Sciences Abstracts
EMBASE Alert
EMCARE

EDITORIAL BOARD

Editor-in-Chief:

E.H. Shortliffe, MD, Arizona State University, Phoenix, Arizona, USA

Associate Editors

R. Bellazzi, Università degli Studi di Pavia, Pavia, Italy
J.J. Cimino, University of Alabama, Birmingham, Alabama, USA
R.A. Greenes, Arizona State University, Scottsdale, Arizona, USA
V.L. Patel, The New York Academy of Medicine, New York, New York, USA
M. Peleg, University of Haifa, Haifa, Israel
P. Tarczy-Hornoch, University of Washington, Seattle, Washington, USA
J.D. Tenenbaum, Duke University, Durham, North Carolina, USA
W.A. Yasnoff, NHII Advisors, Arlington, Virginia, USA

Former Editors:

T.A. Pryor
1994-2000
H.R. Warner
1968-1993

Editorial Board:

A. Abu-Hanna, Amsterdam, Netherlands
R. Altman, Stanford, California, USA

E. Ammenwerth, Hall in Tirol, Austria
D. Aronsky, Zurich, Switzerland
S. Bakken, New York, New York, USA
E. Bernstam, Houston, Texas, USA
D. Buckeridge, Montreal, Quebec, Canada
K. Cheung, New Haven, Connecticut, USA
C. Chute, Rochester, Minnesota, USA
J.D. Denny, Nashville, Tennessee, USA
J. Fox, Oxford, England, UK
K Goodman, Miami, Florida, USA
L. Hunter, Aurora, Colorado, USA
K Kahol, New Delhi, India
M. Kann, Baltimore, Maryland, USA
D. Kaufman, Scottsdale, Arizona, USA
M. Kimura, Hamamatsu, Shizuoka, Japan
L. Lenert, Charleston, South Carolina, USA
H. Liu, Rochester, Minnesota, USA
V. Maojo, Madrid, Spain
H. Marin, Sao Paulo, Brazil
F. Martin-Sanchez, Melbourne, Victoria, Australia
S. Miksch, Vienna, Austria
O. Ogunyemi, Los Angeles, California, USA
P. Payne, Columbus, Ohio, USA
N. Peek, Manchester, England, UK
Y. Perl, Newark, New Jersey, USA
G. Purcell Jackson, Nashville, Tennessee, USA
A. Rector, Manchester, England, UK
H. R. Rolka, Atlanta, Georgia, USA
A. Rzhetsky, Chicago, Illinois, USA
N. Shah, Stanford, California, USA
A. Tucker, London, England, UK
O. Uzuner, Albany, New York, USA
C. Weng, New York, New York, USA
H. Xu, Houston, Texas, USA
M. Yetisgen, Seattle, Washington, USA
K. Yip, Hong Kong, Hong Kong
H. Yu, Amherst, Massachusetts, USA
Q. Zeng, Salt Lake City, Utah, USA
P. Zweigenbaum, Orsay, France

GUIDE FOR AUTHORS

Your Paper Your Way

We now differentiate between the requirements for new and revised submissions. You may choose to submit your manuscript as a single Word or PDF file to be used in the refereeing process. Only when your paper is at the revision stage, will you be requested to put your paper in to a 'correct format' for acceptance and provide the items required for the publication of your article.

To find out more, please visit the Preparation section below.

INTRODUCTION

Please read the *Aims and Scope* in its entirety prior to submission.

The *Journal of Biomedical Informatics* has been redesigned to reflect a commitment to high-quality original research papers and reviews in the area of biomedical informatics. Although published articles are motivated by applications in the biomedical sciences (for example, clinical medicine, health care, population health, imaging, and bioinformatics), the journal emphasizes reports of new methodologies and techniques that have general applicability and that form the basis for the evolving science of biomedical informatics. Articles on medical devices and formal evaluations of completed systems, including clinical trials of information technologies, would generally be more suitable for publication in other venues. Papers on applications of signal processing and image analysis are often more suitable for biomedical engineering journals, although we do publish papers that emphasize the information management and knowledge representation/modeling issues that arise in the storage and use of biological signals. System descriptions are welcome if they illustrate and substantiate the underlying methodology that is the principal focus of the report.

All manuscripts submitted to *Journal of Biomedical Informatics*:

- should contain original work; the original source of any previously published figures or text must be fully cited and all necessary permission to use previously published material must be obtained
- must not be currently under consideration by any other journal
- require the approval of all co-authors that the manuscript be submitted in its present form to JBI.

Please see the *Scientific Conduct editorial* published in the *Journal of Biomedical Informatics*.

In addition, if you are considering a submission in the field of bioinformatics, please note that JBI now publishes bioinformatics papers only if they deal with issues in translational (human) science. See the *Translational Bioinformatics* editorial that deals with this topic before submitting your paper.

Authors are encouraged to submit video material or animation sequences to support and enhance your scientific research. For more information please see the paragraph on video data below.

Qualifying articles in *Journal of Biomedical Informatics* are also automatically posted in PubMed Central 12 months after publication. The procedure is described in http://publicaccess.nih.gov/submit_process.htm, Method D.

Authors considering submission of a Commentary should first consult with the Editor-in-Chief, Edward H. Shortliffe (ted@shortliffe.net), so that guidelines and suitability can be discussed in advance of the submission.

BEFORE YOU BEGIN

Ethics in publishing

For information on Ethics in publishing and Ethical guidelines for journal publication see <http://www.elsevier.com/publishingethics> and <http://www.elsevier.com/journal-authors/ethics>.

Conflict of interest

All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately influence, or be perceived to influence, their work. See also <http://www.elsevier.com/conflictsofinterest>. Further information and an example of a Conflict of Interest form can be found at: http://help.elsevier.com/app/answers/detail/a_id/286/p/7923.

Submission declaration

Submission of an article implies that the work described has not been published previously (except in the form of an abstract or as part of a published lecture or academic thesis or as an electronic preprint, see <http://www.elsevier.com/postingpolicy>), that it is not under consideration for publication elsewhere, that its publication is approved by all authors and tacitly or explicitly by the responsible authorities where the work was carried out, and that, if accepted, it will not be published elsewhere including electronically in the same form, in English or in any other language, without the written consent of the copyright-holder.

Changes to authorship

This policy concerns the addition, deletion, or rearrangement of author names in the authorship of accepted manuscripts:

Before the accepted manuscript is published in an online issue: Requests to add or remove an author, or to rearrange the author names, must be sent to the Journal Manager from the corresponding author of the accepted manuscript and must include: (a) the reason the name should be added or removed, or the author names rearranged and (b) written confirmation (e-mail, fax, letter) from all authors that they agree with the addition, removal or rearrangement. In the case of addition or removal of authors, this includes confirmation from the author being added or removed. Requests that are not sent by the corresponding author will be forwarded by the Journal Manager to the corresponding author, who must follow the procedure as described above. Note that: (1) Journal Managers will inform the Journal Editors of any such requests and (2) publication of the accepted manuscript in an online issue is suspended until authorship has been agreed.

After the accepted manuscript is published in an online issue: Any requests to add, delete, or rearrange author names in an article published in an online issue will follow the same policies as noted above and result in a corrigendum.

Copyright

This journal offers authors a choice in publishing their research: Open access and Subscription.

For subscription articles

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (for more information on this and copyright, see <http://www.elsevier.com/copyright>). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement.

Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations (please consult <http://www.elsevier.com/permissions>). If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: please consult <http://www.elsevier.com/permissions>.

For open access articles

Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (for more information see <http://www.elsevier.com/OAauthoragreement>). Permitted reuse of open access articles is determined by the author's choice of user license (see <http://www.elsevier.com/openaccesslicenses>).

Retained author rights

As an author you (or your employer or institution) retain certain rights. For more information on author rights for:

Subscription articles please see <http://www.elsevier.com/journal-authors/author-rights-and-responsibilities>.

Open access articles please see <http://www.elsevier.com/OAauthoragreement>.

Role of the funding source

You are requested to identify who provided financial support for the conduct of the research and/or preparation of the article and to briefly describe the role of the sponsor(s), if any, in study design; in the collection, analysis and interpretation of data; in the writing of the report; and in the decision to submit the article for publication. If the funding source(s) had no such involvement then this should be stated.

Funding body agreements and policies

Elsevier has established agreements and developed policies to allow authors whose articles appear in journals published by Elsevier, to comply with potential manuscript archiving requirements as specified as conditions of their grant awards. To learn more about existing agreements and policies please visit <http://www.elsevier.com/fundingbodies>.

Open access

This journal offers authors a choice in publishing their research:

Open access

- Articles are freely available to both subscribers and the wider public with permitted reuse
- An open access publication fee is payable by authors or their research funder

Subscription

- Articles are made available to subscribers as well as developing countries and patient groups through our access programs (<http://www.elsevier.com/access>)
- No open access publication fee

All articles published open access will be immediately and permanently free for everyone to read and download. Permitted reuse is defined by your choice of one of the following Creative Commons user licenses:

Creative Commons Attribution (CC BY): lets others distribute and copy the article, to create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), to include in a collective work (such as an anthology), to text or data mine the article, even for commercial purposes, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, and do not modify the article in such a way as to damage the author's honor or reputation.

Creative Commons Attribution-NonCommercial-ShareAlike (CC BY-NC-SA): for non-commercial purposes, lets others distribute and copy the article, to create extracts, abstracts and other revised versions, adaptations or derivative works of or from an article (such as a translation), to include in a collective work (such as an anthology), to text and data mine the article, as long as they credit the author(s), do not represent the author as endorsing their adaptation of the article, do not modify the article in such a way as to damage the author's honor or reputation, and license their new adaptations or creations under identical terms (CC BY-NC-SA).

Creative Commons Attribution-NonCommercial-NoDerivs (CC BY-NC-ND): for non-commercial purposes, lets others distribute and copy the article, and to include in a collective work (such as an anthology), as long as they credit the author(s) and provided they do not alter or modify the article.

To provide open access, this journal has a publication fee which needs to be met by the authors or their research funders for each article published open access.

Your publication choice will have no effect on the peer review process or acceptance of submitted articles.

The open access publication fee for this journal is **\$2,200**, excluding taxes. Learn more about Elsevier's pricing policy: <http://www.elsevier.com/openaccesspricing>.

Language (usage and editing services)

Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop (<http://webshop.elsevier.com/languageediting/>) or visit our customer support site (<http://support.elsevier.com>) for more information.

Submission

Our online submission system guides you stepwise through the process of entering your article details and uploading your files. The system converts your article files to a single PDF file used in the peer-review process. Editable files (e.g., Word, LaTeX) are required to typeset your article for final publication. All correspondence, including notification of the Editor's decision and requests for revision, is sent by e-mail.

Referees

Please submit the names and institutional e-mail addresses of several potential referees. For more details, visit our [Support site](#). Note that the editor retains the sole right to decide whether or not the suggested reviewers are used.

Additional information

If material from other copyrighted works is included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: contact Elsevier Global Rights Department, P.O. Box 800, Oxford OX5 1DX, UK; phone: (+44) 1865 843830, fax: (+44) 1865 853333, permissions@elsevier.com.

PREPARATION

Please note that figures and tables should be embedded in the text as close as possible to where they are initially cited. It is also mandatory to upload separate graphic and table files as these will be required if your manuscript is accepted for publication.

NEW SUBMISSIONS

Submission to this journal proceeds totally online and you will be guided stepwise through the creation and uploading of your files. The system automatically converts your files to a single PDF file, which is used in the peer-review process.

As part of the Your Paper Your Way service, you may choose to submit your manuscript as a single file to be used in the refereeing process. This can be a PDF file or a Word document, in any format or layout that can be used by referees to evaluate your manuscript. It should contain high enough quality figures for refereeing. If you prefer to do so, you may still provide all or some of the source files at the initial submission. Please note that individual figure files larger than 10 MB must be uploaded separately.

References

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct.

Formatting requirements

There are no strict formatting requirements but all manuscripts must contain the essential elements needed to convey your manuscript, for example Abstract, Keywords, Introduction, Materials and Methods, Results, Conclusions, Artwork and Tables with Captions.

If your article includes any Videos and/or other Supplementary material, this should be included in your initial submission for peer review purposes.

Divide the article into clearly defined sections.

Figures and tables embedded in text

Please ensure the figures and the tables included in the single file are placed next to the relevant text in the manuscript, rather than at the bottom or the top of the file.

REVISED SUBMISSIONS

Line Spacing

All revised submissions required 1.5 line spacing

Use of word processing software

Regardless of the file format of the original submission, at revision you must provide us with an editable file of the entire article. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: <http://www.elsevier.com/guidepublication>). See also the section on Electronic artwork.

To avoid unnecessary errors you are strongly advised to use the 'spell-check' and 'grammar-check' functions of your word processor.

LaTeX

You are recommended to use the Elsevier article class `elsarticle.cls` (<http://www.ctan.org/tex-archive/macros/latex/contrib/elsarticle>) to prepare your manuscript and BibTeX (<http://www.bibtex.org>) to generate your bibliography.

For detailed submission instructions, templates and other information on LaTeX, see <http://www.elsevier.com/latex>.

Article structure

Subdivision - numbered sections

Divide your article into clearly defined and numbered sections. Subsections should be numbered 1.1 (then 1.1.1, 1.1.2, ...), 1.2, etc. (the abstract is not included in section numbering). Use this numbering also for internal cross-referencing: do not just refer to 'the text'. Any subsection may be given a brief heading. Each heading should appear on its own separate line.

Introduction

State the objectives of the work and provide an adequate background, avoiding a detailed literature survey or a summary of the results.

Material and methods

Provide sufficient detail to allow the work to be reproduced. Methods already published should be indicated by a reference: only relevant modifications should be described.

Results

Results should be clear and concise.

Discussion

This should explore the significance of the results of the work, not repeat them. A combined Results and Discussion section is often appropriate. Avoid extensive citations and discussion of published literature.

Conclusions

The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.

Appendices

If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

Essential title page information

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.
- **Author names and affiliations.** Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lower-case superscript letter immediately after the author's name and in front of the appropriate address. Provide the full postal address of each affiliation, including the country name and, if available, the e-mail address of each author.
- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. **Ensure that phone numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address. Contact details must be kept up to date by the corresponding author.**
- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Abstract

A concise and factual abstract is required. The abstract should state briefly the purpose of the research, the principal results and major conclusions. An abstract is often presented separately from the article, so it must be able to stand alone. For this reason, References should be avoided, but if essential, then cite the author(s) and year(s). Also, non-standard or uncommon abbreviations should be avoided, but if essential they must be defined at their first mention in the abstract itself.

Graphical Abstract

Authors must supply a graphical abstract for all types of articles at the time the paper is first submitted. The graphic should summarize the contents of the paper in a concise, pictorial form designed to capture the attention of a wide readership and for compilation of databases. Carefully drawn figures

that serve to illustrate the theme of the paper are desired. The dimensions of the graphical abstract are 200 x 500 pixels. Authors must supply the graphic separately as an electronic file. For an example of a graphical abstract please [click here](#).

Highlights

Highlights are mandatory for this journal. They consist of a short collection of bullet points that convey the core findings of the article and should be submitted in a separate editable file in the online submission system. Please use 'Highlights' in the file name and include 3 to 5 bullet points (maximum 85 characters, including spaces, per bullet point). See <http://www.elsevier.com/highlights> for examples.

Keywords

Immediately after the abstract, provide a maximum of 6 keywords, using American spelling and avoiding general and plural terms and multiple concepts (avoid, for example, 'and', 'of'). Be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.

Abbreviations

Define abbreviations that are not standard in this field in a footnote to be placed on the first page of the article. Such abbreviations that are unavoidable in the abstract must be defined at their first mention there, as well as in the footnote. Ensure consistency of abbreviations throughout the article.

Acknowledgements

Collate acknowledgements in a separate section at the end of the article before the references and do not, therefore, include them on the title page, as a footnote to the title or otherwise. List here those individuals who provided help during the research (e.g., providing language help, writing assistance or proof reading the article, etc.).

Database linking

Elsevier encourages authors to connect articles with external databases, giving their readers one-click access to relevant databases that help to build a better understanding of the described research. Please refer to relevant database identifiers using the following format in your article: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN). See <http://www.elsevier.com/databaselinking> for more information and a full list of supported databases.

Math formulae

Please submit math equations as editable text and not as images. Present simple formulae in line with normal text where possible and use the solidus (/) instead of a horizontal line for small fractional terms, e.g., X/Y. In principle, variables are to be presented in italics. Powers of e are often more conveniently denoted by exp. Number consecutively any equations that have to be displayed separately from the text (if referred to explicitly in the text).

Footnotes

Footnotes should be used sparingly. Number them consecutively throughout the article. Many word processors build footnotes into the text, and this feature may be used. Should this not be the case, indicate the position of footnotes in the text and present the footnotes themselves separately at the end of the article.

Artwork

Electronic artwork

General points

- Make sure you use uniform lettering and sizing of your original artwork.
 - Preferred fonts: Arial (or Helvetica), Times New Roman (or Times), Symbol, Courier.
 - Number the illustrations according to their sequence in the text.
 - Use a logical naming convention for your artwork files.
 - Indicate per figure if it is a single, 1.5 or 2-column fitting image.
 - For Word submissions only, you may still provide figures and their captions, and tables within a single file at the revision stage.
 - Please note that individual figure files larger than 10 MB must be provided in separate source files.
- A detailed guide on electronic artwork is available on our website:

<http://www.elsevier.com/artworkinstructions>.

You are urged to visit this site; some excerpts from the detailed information are given here.

Formats

Regardless of the application used, when your electronic artwork is finalized, please 'save as' or convert the images to one of the following formats (note the resolution requirements for line drawings, halftones, and line/halftone combinations given below):

EPS (or PDF): Vector drawings. Embed the font or save the text as 'graphics'.

TIFF (or JPG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.

TIFF (or JPG): Bitmapped line drawings: use a minimum of 1000 dpi.

TIFF (or JPG): Combinations bitmapped line/half-tone (color or grayscale): a minimum of 500 dpi is required.

Please do not:

- Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); the resolution is too low.
- Supply files that are too low in resolution.
- Submit graphics that are disproportionately large for the content.

Color artwork

Please make sure that artwork files are in an acceptable format (TIFF (or JPEG), EPS (or PDF), or MS Office files) and with the correct resolution. If, together with your accepted article, you submit usable color figures then Elsevier will ensure, at no additional charge, that these figures will appear in color online (e.g., ScienceDirect and other sites) regardless of whether or not these illustrations are reproduced in color in the printed version. **For color reproduction in print, you will receive information regarding the costs from Elsevier after receipt of your accepted article.** Please indicate your preference for color: in print or online only. For further information on the preparation of electronic artwork, please see <http://www.elsevier.com/artworkinstructions>.

Please note: Because of technical complications that can arise by converting color figures to 'gray scale' (for the printed version should you not opt for color in print) please submit in addition usable black and white versions of all the color illustrations.

Figure captions

Ensure that each illustration has a caption. A caption should comprise a brief title (**not** on the figure itself) and a description of the illustration. Keep text in the illustrations themselves to a minimum but explain all symbols and abbreviations used.

Tables

Please submit tables as editable text and not as images. Tables can be placed either next to the relevant text in the article, or on separate page(s) at the end. Number tables consecutively in accordance with their appearance in the text and place any table notes below the table body. Be sparing in the use of tables and ensure that the data presented in them do not duplicate results described elsewhere in the article. Please avoid using vertical rules.

Equations

Number equations consecutively, with the number placed in parentheses to the extreme right of the equation. Refer to equations as Eq. (3) or simply (3). Punctuate equations to conform to their place in the syntax of the sentence.

References

Citation in text

Please ensure that every reference cited in the text is also present in the reference list (and vice versa). Any references cited in the abstract must be given in full. Unpublished results and personal communications are not recommended in the reference list, but may be mentioned in the text. If these references are included in the reference list they should follow the standard reference style of the journal and should include a substitution of the publication date with either 'Unpublished results' or 'Personal communication'. Citation of a reference as 'in press' implies that the item has been accepted for publication.

Reference links

Increased discoverability of research and high quality peer review are ensured by online links to the sources cited. In order to allow us to create links to abstracting and indexing services, such as Scopus, CrossRef and PubMed, please ensure that data provided in the references are correct. Please note that incorrect surnames, journal/book titles, publication year and pagination may prevent link creation. When copying references, please be careful as they may already contain errors. Use of the DOI is encouraged.

Web references

As a minimum, the full URL should be given and the date when the reference was last accessed. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Web references can be listed separately (e.g., after the reference list) under a different heading if desired, or can be included in the reference list.

References in a special issue

Please ensure that the words 'this issue' are added to any references in the list (and any citations in the text) to other articles in the same Special Issue.

Reference management software

This journal has standard templates available in key reference management packages EndNote (<http://www.endnote.com/support/enstyles.asp>) and Reference Manager (<http://refman.com/support/rmstyles.asp>). Using plug-ins to wordprocessing packages, authors only need to select the appropriate journal template when preparing their article and the list of references and citations to these will be formatted according to the journal style which is described below.

Reference formatting

There are no strict requirements on reference formatting at submission. References can be in any style or format as long as the style is consistent. Where applicable, author(s) name(s), journal title/book title, chapter title/article title, year of publication, volume number/book chapter and the pagination must be present. Use of DOI is highly encouraged. The reference style used by the journal will be applied to the accepted article by Elsevier at the proof stage. Note that missing data will be highlighted at proof stage for the author to correct. If you do wish to format the references yourself they should be arranged according to the following examples:

Reference style

Text: Indicate references by number(s) in square brackets in line with the text. The actual authors can be referred to, but the reference number(s) must always be given.

List: Number the references (numbers in square brackets) in the list in the order in which they appear in the text.

Examples:

Reference to a journal publication:

[1] Van der Geer J, Hanraads JA, Lupton RA. The art of writing a scientific article. *J Sci Commun* 2010;163:51–9.

Reference to a book:

[2] Strunk Jr W, White EB. *The elements of style*. 4th ed. New York: Longman; 2000.

Reference to a chapter in an edited book:

[3] Mettam GR, Adams LB. How to prepare an electronic version of your article. In: Jones BS, Smith RZ, editors. *Introduction to the electronic age*, New York: E-Publishing Inc; 2009, p. 281–304.

Note shortened form for last page number. e.g., 51–9, and that for more than 6 authors the first 6 should be listed followed by 'et al.' For further details you are referred to 'Uniform Requirements for Manuscripts submitted to Biomedical Journals' (*J Am Med Assoc* 1997;277:927–34) (see also http://www.nlm.nih.gov/bsd/uniform_requirements.html).

Journal abbreviations source

Journal names should be abbreviated according to the List of Title Word Abbreviations: <http://www.issn.org/services/online-services/access-to-the-ltwa/>.

Video data

Elsevier accepts video material and animation sequences to support and enhance your scientific research. Authors who have video or animation files that they wish to submit with their article are strongly encouraged to include links to these within the body of the article. This can be done in the same way as a figure or table by referring to the video or animation content and noting in the body text where it should be placed. All submitted files should be properly labeled so that they directly relate to the video file's content. In order to ensure that your video or animation material is directly usable, please provide the files in one of our recommended file formats with a preferred maximum size of 50 MB. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect: <http://www.sciencedirect.com>. Please supply 'stills' with your files: you can choose any frame from the video or animation or make a separate image. These will be used instead of standard icons and will personalize the link to your video data. For more detailed instructions please visit our video instruction pages at

<http://www.elsevier.com/artworkinstructions>. Note: since video and animation cannot be embedded in the print version of the journal, please provide text for both the electronic and the print version for the portions of the article that refer to this content.

AudioSlides

The journal encourages authors to create an AudioSlides presentation with their published article. AudioSlides are brief, webinar-style presentations that are shown next to the online article on ScienceDirect. This gives authors the opportunity to summarize their research in their own words and to help readers understand what the paper is about. More information and examples are available at <http://www.elsevier.com/audioslides>. Authors of this journal will automatically receive an invitation e-mail to create an AudioSlides presentation after acceptance of their paper.

Supplementary data

Elsevier accepts electronic supplementary material to support and enhance your scientific research. Supplementary files offer the author additional possibilities to publish supporting applications, high-resolution images, background datasets, sound clips and more. Supplementary files supplied will be published online alongside the electronic version of your article in Elsevier Web products, including ScienceDirect: <http://www.sciencedirect.com>. In order to ensure that your submitted material is directly usable, please provide the data in one of our recommended file formats. Authors should submit the material in electronic format together with the article and supply a concise and descriptive caption for each file. For more detailed instructions please visit our artwork instruction pages at <http://www.elsevier.com/artworkinstructions>.

Submission checklist

The following list will be useful during the final checking of an article prior to sending it to the journal for review. Please consult this Guide for Authors for further details of any item.

Ensure that the following items are present:

One author has been designated as the corresponding author with contact details:

- E-mail address
- Full postal address
- Telephone

All necessary files have been uploaded, and contain:

- Keywords
- All figure captions
- All tables (including title, description, footnotes)

Further considerations

- Manuscript has been 'spell-checked' and 'grammar-checked'
- All references mentioned in the Reference list are cited in the text, and vice versa
- Permission has been obtained for use of copyrighted material from other sources (including the Internet)

Printed version of figures (if applicable) in color or black-and-white

- Indicate clearly whether or not color or black-and-white in print is required.
- For reproduction in black-and-white, please supply black-and-white versions of the figures for printing purposes.

For any further information please visit our customer support site at <http://support.elsevier.com>.

AFTER ACCEPTANCE

Use of the Digital Object Identifier

The Digital Object Identifier (DOI) may be used to cite and link to electronic documents. The DOI consists of a unique alpha-numeric character string which is assigned to a document by the publisher upon the initial electronic publication. The assigned DOI never changes. Therefore, it is an ideal medium for citing a document, particularly 'Articles in press' because they have not yet received their full bibliographic information. Example of a correctly given DOI (in URL format; here an article in the journal *Physics Letters B*):

<http://dx.doi.org/10.1016/j.physletb.2010.09.059>

When you use a DOI to create links to documents on the web, the DOIs are guaranteed never to change.

Online proof correction

Corresponding authors will receive an e-mail with a link to our online proofing system, allowing annotation and correction of proofs online. The environment is similar to MS Word: in addition to editing text, you can also comment on figures/tables and answer questions from the Copy Editor. Web-based proofing provides a faster and less error-prone process by allowing you to directly type your corrections, eliminating the potential introduction of errors.

If preferred, you can still choose to annotate and upload your edits on the PDF version. All instructions for proofing will be given in the e-mail we send to authors, including alternative methods to the online version and PDF.

We will do everything possible to get your article published quickly and accurately. Please use this proof only for checking the typesetting, editing, completeness and correctness of the text, tables and figures. Significant changes to the article as accepted for publication will only be considered at this stage with permission from the Editor. It is important to ensure that all corrections are sent back to us in one communication. Please check carefully before replying, as inclusion of any subsequent corrections cannot be guaranteed. Proofreading is solely your responsibility.

Offprints

The corresponding author, at no cost, will be provided with a personalized link providing 50 days free access to the final published version of the article on [ScienceDirect](#). This link can also be used for sharing via email and social networks. For an extra charge, paper offprints can be ordered via the offprint order form which is sent once the article is accepted for publication. Both corresponding and co-authors may order offprints at any time via Elsevier's WebShop (<http://webshop.elsevier.com/myarticleservices/offprints>). Authors requiring printed copies of multiple articles may use Elsevier WebShop's 'Create Your Own Book' service to collate multiple articles within a single cover (<http://webshop.elsevier.com/myarticleservices/booklets>).

AUTHOR INQUIRIES

You can track your submitted article at http://help.elsevier.com/app/answers/detail/a_id/89/p/8045/. You can track your accepted article at <http://www.elsevier.com/trackarticle>. You are also welcome to contact Customer Support via <http://support.elsevier.com>.

© Copyright 2014 Elsevier | <http://www.elsevier.com>