DESCRIPTION

*Matrix Biology* (established in 1980 as *Collagen and Related Research*) is a cutting-edge journal that is devoted to publishing the latest results in matrix biology research. We welcome articles that reside at the nexus of understanding the cellular and molecular pathophysiology of the extracellular matrix. *Matrix Biology* focuses on solving elusive questions, opening new avenues of thought and discovery, and challenging longstanding biological paradigms.

Papers considered for review, and ultimately for publication, must contain substantial advances supported by mechanistic and functional insights germane to important physiological or pathological processes. These aspects are crucial and required for publication.

*Matrix Biology* welcomes original research articles, brief reports, commentaries, (mini) reviews, and announcements. Please view our Guide for Authors for more information.

**Reasons to submit your next article to Matrix Biology:** The premier journal in matrix biology; published articles have a universal appeal, value, and utility to the researcher community worldwide. High impact metrics: find our current metrics in the left-hand column. An international board of key researchers in the field. Rigorous, fair and efficient peer review process. Your paper your way: no unnecessary formatting requests. Flexible publication: you can choose to publish open access. Rapid publication: your article available online within a week after acceptance. No page charges and no color charges for online version. Option of co-submitting a data article to *Data in Brief*.

IMPACT FACTOR

2018: 6.986 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

Scopus
EMBiology
Elsevier BIOBASE
Biological Abstracts
Biological & Agricultural Index
BIOSIS Previews
Current Awareness in Biological Sciences
Genetics Abstracts
Biochemistry and Biophysics Citation Index
BIOSIS Citation Index
Chemical Abstracts
Current Advances in Ecological and Environmental Sciences
Elsevier BIOBASE
Current Contents
Leather Science Abstracts
Embase
PubMed/Medline
Index to Dental Literature
Index to Scientific Reviews
Reference Update
Research Alert
Science Citation Index
Web of Science

EDITORIAL BOARD

Editor-in-Chief
Renato Iozzo, Thomas Jefferson University, Philadelphia, Pennsylvania, United States

Deputy Editors
Nikos Karamanos, University of Patras Department of Chemistry, Patras, Greece
Liliana Schaefer, Goethe University Frankfurt, Frankfurt am Main, Germany

Founding Editors (Collagen and Related Research)
Steffen Gay, UniversitätsSpital Zurich Zentrum fur Experimentelle Rheumatologie, Zürich, Switzerland
Edward J. Miller

Science Editors (Matrix Biology Highlights)
Maria Gubbiotti, Thomas Jefferson University, Philadelphia, Pennsylvania, United States
Thomas Neill, Thomas Jefferson University, Philadelphia, Pennsylvania, United States

Senior Associate Editor
Ralph Sanderson, University of Alabama at Birmingham, Birmingham, Alabama, United States

Associate Editors
Joanne Murphy-Ullrich, University of Alabama at Birmingham, Birmingham, Alabama, United States
Alexander Nyström, University Medical Center Freiburg, Freiburg, Germany
Maurizio Pacifici, Thomas Jefferson University, Philadelphia, Pennsylvania, United States
Ambra Pozzi, Vanderbilt University, Nashville, Tennessee, United States
Francesco Ramirez, Icahn School of Medicine at Mount Sinai, New York, New York, United States
Sylvie Ricard-Blum, Institute of Molecular and Supramolecular Chemistry and Biochemistry, Villeurbanne Cedex, France
Jean Schwarzbauer, Princeton University, Princeton, New Jersey, United States
Jouni Utito, Thomas Jefferson University, Philadelphia, Pennsylvania, United States
Thomas Wight, University of Washington, Seattle, Washington, United States
Marian Young, National Institutes of Health, Bethesda, Maryland, United States
Peter Yurchenco, Rutgers Robert Wood Johnson Medical School Department of Pathology and Laboratory Medicine, Piscataway, New Jersey, United States

Editorial Board
Suneel Apte, Cleveland Clinic, Cleveland, Ohio, United States
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eri Arikawa-Hirasawa</td>
<td>Juntendo University, Bunkyo-Ku, Japan</td>
</tr>
<tr>
<td>Thomas Barker</td>
<td>University of Virginia, Charlottesville, Virginia, United States</td>
</tr>
<tr>
<td>Enrique Brandon</td>
<td>Pontifical Catholic University of Chile, Santiago, Chile</td>
</tr>
<tr>
<td>Leena Bruckner-Tuderman</td>
<td>University of Freiburg, Freiburg im Breisgau, Germany</td>
</tr>
<tr>
<td>Shukti Chakravarti</td>
<td>New York University, New York, New York, United States</td>
</tr>
<tr>
<td>Danny Chan</td>
<td>University of Hong Kong Li Ka Shing Faculty of Medicine School of Biomedical Sciences, Hong Kong, Hong Kong</td>
</tr>
<tr>
<td>Edna Cukierman</td>
<td>Fox Chase Cancer Center, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>George Dodge</td>
<td>University of Pennsylvania Department of Orthopaedic Surgery, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Beate Eckes</td>
<td>University of Cologne, Koln, Germany</td>
</tr>
<tr>
<td>Adam Engler</td>
<td>Sanford Consortium for Regenerative Medicine, La Jolla, California, United States</td>
</tr>
<tr>
<td>Mary Cynthia Farach-Carson</td>
<td>University of Texas Health Science Center at Houston, Houston, Texas, United States</td>
</tr>
<tr>
<td>Reinhard Fässler</td>
<td>Max-Planck-Institute of Biochemistry, Martinsried, Germany</td>
</tr>
<tr>
<td>Jorge Filmus</td>
<td>University of Toronto, Toronto, Ontario, Canada</td>
</tr>
<tr>
<td>Jens Fischer</td>
<td>University Hospital Dusseldorf Clinic of Psychiatry and Psychotherapy, Düsseldorf, Germany</td>
</tr>
<tr>
<td>Hudson Freeze</td>
<td>Sanford Burnham Prebys Medical Discovery Institute, La Jolla, California, United States</td>
</tr>
<tr>
<td>Stavros Garantziotis</td>
<td>National Institute of Environmental Health Sciences, Research Triangle Park, North Carolina, United States</td>
</tr>
<tr>
<td>Susanne Grässel</td>
<td>University of Regensburg, Regensburg, Germany</td>
</tr>
<tr>
<td>Vincent Hascall</td>
<td>Cleveland Clinic Lerner Research Institute, Cleveland, Ohio, United States</td>
</tr>
<tr>
<td>Boris Hinz</td>
<td>University of Toronto, Toronto, Ontario, Canada</td>
</tr>
<tr>
<td>Hannu Järveläinen</td>
<td>University of Turku, TURKU, Finland</td>
</tr>
<tr>
<td>Jean X. Jiang</td>
<td>University of Texas Health Science Center at San Antonio Department of Biochemistry and Structural Biology, San Antonio, Texas, United States</td>
</tr>
<tr>
<td>Wei Kong</td>
<td>Peking University Department of Physiology and Pathophysiology, Beijing, China</td>
</tr>
<tr>
<td>Ilona Kovaříková</td>
<td>Semmelweis University of Medicine, Budapest, Hungary</td>
</tr>
<tr>
<td>Themis Kyriakides</td>
<td>Yale University, New Haven, Connecticut, United States</td>
</tr>
<tr>
<td>Lucia Langino</td>
<td>University of Pennsylvania, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Rachel Lennon</td>
<td>The University of Manchester, Manchester, United Kingdom</td>
</tr>
<tr>
<td>Merry Lindsey</td>
<td>UNIVERSITY OF NEBRASKA MEDICAL CENTER, Omaha, Nebraska, United States</td>
</tr>
<tr>
<td>Robert Mecham</td>
<td>Washington University School of Medicine, Saint Louis, Missouri, United States</td>
</tr>
<tr>
<td>Kim Midwood</td>
<td>University of Oxford, Oxford, United Kingdom</td>
</tr>
<tr>
<td>Jeffrey Miner</td>
<td>Washington University in Saint Louis, Saint Louis, Missouri, United States</td>
</tr>
<tr>
<td>Maurizio Mongiati</td>
<td>Cancer Institute, Torino, Italy</td>
</tr>
<tr>
<td>Andrea Morrione</td>
<td>Thomas Jefferson University, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Alexandra Naba</td>
<td>University of Illinois at Chicago, Chicago, Illinois, United States</td>
</tr>
<tr>
<td>Eok-Soo Oh</td>
<td>Ewha Womans University, Seoul, Korea, Republic of</td>
</tr>
<tr>
<td>Christopher Overall</td>
<td>The University of British Columbia, Vancouver, British Columbia, Canada</td>
</tr>
<tr>
<td>Andrea Page-McCaw</td>
<td>Vanderbilt University, Nashville, Tennessee, United States</td>
</tr>
<tr>
<td>Alberto Passi</td>
<td>University of Insubria, Varese, Italy</td>
</tr>
<tr>
<td>Taina Pihlajaniemi</td>
<td>University of Oulu Centre of Excellence in Cell-Extracellular Matrix Research, OULU, Finland</td>
</tr>
<tr>
<td>Addolorata Piscitelli</td>
<td>University of Liverpool, Liverpool, United Kingdom</td>
</tr>
<tr>
<td>Ellen Pure</td>
<td>University of Pennsylvania Department of Political Science, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Dieter Reinhardt</td>
<td>McGill University, Montréal, Quebec, Canada</td>
</tr>
<tr>
<td>Kirsi Rilla</td>
<td>University of Eastern Finland, JOENSUU, Finland</td>
</tr>
<tr>
<td>Makarand Risbud</td>
<td>Thomas Jefferson University, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Irit Sagi</td>
<td>Weizmann Institute of Science, Rehovot, Israel</td>
</tr>
<tr>
<td>Rashmin C. Savani</td>
<td>UNIVERSITY OF TEXAS SOUTHWESTERN MEDICAL CENTER, Dallas, Texas, United States</td>
</tr>
<tr>
<td>Katja Schenke-Layland</td>
<td>Eberhard Karls University Tübingen, Tübingen, Germany</td>
</tr>
<tr>
<td>Irving M. Shapiro</td>
<td>Thomas Jefferson University, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>David Sherwood</td>
<td>Duke University, Durham, North Carolina, United States</td>
</tr>
<tr>
<td>Melanie Simpson</td>
<td>North Carolina State University, Raleigh, North Carolina, United States</td>
</tr>
<tr>
<td>Lydia Sorokin</td>
<td>University of Münster, Munster, Germany</td>
</tr>
<tr>
<td>Louis Sosolsky</td>
<td>University of Pennsylvania Department of Bioengineering, Philadelphia, Pennsylvania, United States</td>
</tr>
<tr>
<td>Achilleas Theocharis</td>
<td>University of Patras Department of Chemistry, Patras, Greece</td>
</tr>
<tr>
<td>Israel Vlodavsky</td>
<td>Technion Israel Institute of Technology, Haifa, Israel</td>
</tr>
<tr>
<td>Andrea Vortkamp</td>
<td>University of Duisburg Essen Department of Aquatic Ecology, Essen, Germany</td>
</tr>
<tr>
<td>Hideto Watanabe</td>
<td>Aichi Medical University, Aichi-Gun, Japan</td>
</tr>
<tr>
<td>Malgorzata Wygrecka</td>
<td>University of Giessen, Gießen, Germany</td>
</tr>
<tr>
<td>Kenneth Yamada</td>
<td>National Institute of Dental and Craniofacial Research, Bethesda, Maryland, United States</td>
</tr>
<tr>
<td>Roy Zent</td>
<td>Vanderbilt University, Nashville, Tennessee, United States</td>
</tr>
</tbody>
</table>
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
Matrix Biology publishes Regular Research Papers, Brief Reports, Mini Reviews, Landmark Essays, Full Length Reviews and Announcements. The section Types of Papers describes the conditions each of these submission types should meet.

Papers that do not conform to the general criteria for publication in Matrix Biology will be returned immediately to authors to avoid unnecessary delay in submission elsewhere.

The decision of the Editor is final; the Editor cannot enter into correspondence about a paper that is considered unsuitable for publication.

Revisions should be submitted within 90 days. If we do not receive your revision within 120 days, your paper will be withdrawn and removed from the system.

Types of papers
Regular Research Papers
are studies utilizing most scientific technologies including molecular biology, cell biology, immunochemistry, structural biology, computational biology, theoretical biology, and macromolecular chemistry where the subject is extracellular matrix or is substantially related to matrix and its biological role. The journal will publish articles that are scientifically rigorous, complete within a logical framework, and, most importantly, address molecular or cellular mechanisms that are timely and represent above average significance.

Brief Reports
are short papers that meet the same standards of quality and field of interest as regular papers, but have a narrower scope and a more focused interest. Brief reports should present new information of exceptional novelty, importance and interest to the broad readership of the journal. Reports should have a maximum of 3 figures, and no longer than 30,000 characters, including spaces. There are no limitations for references.

Commentaries
are brief reviews that present a sharply focused view of a rapidly advancing area of research. Authorship is normally by invitation. Generally, commentaries include a manuscript of 6-10 double-spaced pages with 1-2 schematics. References are limited to 20-30.

Mini Reviews
are timely and original analyses of current topics of high interest. The mini-reviews should summarize the general concepts in the field, provide a brief summary of the new information and define unresolved questions about currently available data. The mini reviews must contain up to 3 original graphics of high quality or equivalent images, and a manuscript containing 12-15 double-spaced pages. There are no limitations for references. We do not accept previously-published graphics or images. The Editor-in-Chief should be consulted in advance by anyone wishing to submit an unsolicited mini review.

Full Length Reviews
are comprehensive and critical analyses of topics that have been under investigation for some time. Most of them are invited reviews from experts in the relevant topic. The reviews must contain up to five high-quality, original graphics or equivalent images, and a manuscript containing 20-40 double-spaced pages. No limitations for references. We do not accept previously-published graphics or images. The Editor-in-Chief should be consulted in advance by anyone wishing to submit an unsolicited full-length review.
Announcements
Announcements of national or international meetings may be published in Matrix Biology.

Contact details for submission
Manuscripts for Matrix Biology should be submitted via the journal's online submission page at https://www.evise.com/profile/api/navigate/MATBIO.

For all technical queries please consult our help site at http://service.elsevier.com/. Here you will be able to learn more about the online submission system via interactive tutorials, explore a range of online submission solutions via our knowledgebase, and find answers to frequently asked questions. You will also find our 24/7 support contact details should you need any assistance from one of our customer service representatives.

Submission checklist
You can use this list to carry out a final check of your submission before you send it to the journal for review. Please check the relevant section in this Guide for Authors for more details.

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

All necessary files have been uploaded:

Manuscript:
• Include keywords
• All figures (include relevant captions)
• All tables (including titles, description, footnotes)
• Ensure all figure and table citations in the text match the files provided
• Indicate clearly if color should be used for any figures in print

Graphical Abstracts / Highlights files (where applicable)

Supplemental files (where applicable)

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)
• A competing interests statement is provided, even if the authors have no competing interests to declare
• Journal policies detailed in this guide have been reviewed
• Referee suggestions and contact details provided, based on journal requirements

For further information, visit our Support Center.

BEFORE YOU BEGIN

Ethics in publishing
Please see our information pages on Ethics in publishing and Ethical guidelines for journal publication.

Declaration of interest
All authors must disclose any financial and personal relationships with other people or organizations that could inappropriately influence (bias) their work. Examples of potential competing interests include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. Authors must disclose any interests in two places: 1. A summary declaration of interest statement in the title page file (if double-blind) or the manuscript file (if single-blind). If there are no interests to declare then please state this: 'Declarations of interest: none'. This summary statement will be ultimately published if the article is accepted. 2. Detailed disclosures as part of a separate Declaration of Interest form, which forms part of the journal's official records. It is important for potential interests to be declared in both places and that the information matches. More information.
Submission declaration and verification
Submission of an article implies that the work described has not been published previously (except in the form of an abstract, a published lecture or academic thesis, see 'Multiple, redundant or concurrent publication' for more information), 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 in the same form, in English or in any other language, including electronically without the written consent of the copyright-holder. To verify originality, your article may be checked by the originality detection service Crossref Similarity Check.

Use of inclusive language
Inclusive language acknowledges diversity, conveys respect to all people, is sensitive to differences, and promotes equal opportunities. Articles should make no assumptions about the beliefs or commitments of any reader, should contain nothing which might imply that one individual is superior to another on the grounds of race, sex, culture or any other characteristic, and should use inclusive language throughout. Authors should ensure that writing is free from bias, for instance by using 'he or she', 'his/her' instead of 'he' or 'his', and by making use of job titles that are free of stereotyping (e.g. 'chairperson' instead of 'chairman' and 'flight attendant' instead of 'stewardess').

Author contributions
For transparency, we encourage authors to submit an author statement file outlining their individual contributions to the paper using the relevant CRediT roles: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Roles/Writing - original draft; Writing - review & editing. Authorship statements should be formatted with the names of authors first and CRediT role(s) following. More details and an example

Changes to authorship
Authors are expected to consider carefully the list and order of authors before submitting their manuscript and provide the definitive list of authors at the time of the original submission. Any addition, deletion or rearrangement of author names in the authorship list should be made only before the manuscript has been accepted and only if approved by the journal Editor. To request such a change, the Editor must receive the following from the corresponding author: (a) the reason for the change in author list and (b) written confirmation (e-mail, 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. Only in exceptional circumstances will the Editor consider the addition, deletion or rearrangement of authors after the manuscript has been accepted. While the Editor considers the request, publication of the manuscript will be suspended. If the manuscript has already been published in an online issue, any requests approved by the Editor will result in a corrigendum.

Copyright
Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (see more information on this). 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. 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.

For gold open access articles: Upon acceptance of an article, authors will be asked to complete an 'Exclusive License Agreement' (more information). Permitted third party reuse of gold open access articles is determined by the author's choice of user license.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.
Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.

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 a number of agreements with funding bodies which allow authors to comply with their funder's open access policies. Some funding bodies will reimburse the author for the gold open access publication fee. Details of existing agreements are available online.

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

Subscription
- Articles are made available to subscribers as well as developing countries and patient groups through our universal access programs.
- No open access publication fee payable by authors.
- The Author is entitled to post the accepted manuscript in their institution's repository and make this public after an embargo period (known as green Open Access). The published journal article cannot be shared publicly, for example on ResearchGate or Academia.edu, to ensure the sustainability of peer-reviewed research in journal publications. The embargo period for this journal can be found below.

Gold open access
- Articles are freely available to both subscribers and the wider public with permitted reuse.
- A gold open access publication fee is payable by authors or on their behalf, e.g. by their research funder or institution.

Regardless of how you choose to publish your article, the journal will apply the same peer review criteria and acceptance standards.

For gold open access articles, permitted third party (re)use is defined by the following Creative Commons user licenses:

Creative Commons Attribution (CC BY)
Lets others distribute and copy the article, create extracts, abstracts, and other revised versions, adaptations or derivative works of or from an article (such as a translation), include in a collective work (such as an anthology), 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-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.

The gold open access publication fee for this journal is USD 3300, excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing.

Green open access
Authors can share their research in a variety of different ways and Elsevier has a number of green open access options available. We recommend authors see our open access page for further information. Authors can also self-archive their manuscripts immediately and enable public access from their institution's repository after an embargo period. This is the version that has been accepted for publication and which typically includes author-incorporated changes suggested during submission, peer review and in editor-author communications. Embargo period: For subscription articles, an appropriate amount of time is needed for journals to deliver value to subscribing customers before an article becomes freely available to the public. This is the embargo period and it begins from the date the article is formally published online in its final and fully citable form. Find out more.

This journal has an embargo period of 12 months.
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 Author Services.

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.

PREPARATION
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.

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. The corresponding caption should be placed directly below the figure or table.

Peer review
This journal operates a single blind review process. All contributions will be initially assessed by the editor for suitability for the journal. Papers deemed suitable are then typically sent to a minimum of two independent expert reviewers to assess the scientific quality of the paper. The Editor is responsible for the final decision regarding acceptance or rejection of articles. The Editor's decision is final. More information on types of peer review.

REVISED SUBMISSIONS
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). 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.

Article structure
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.

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

**Experimental procedures**
Be detailed with all the various techniques.

**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.** Please clearly indicate the given name(s) and family name(s) of each author and check that all names are accurately spelled. You can add your name between parentheses in your own script behind the English transliteration. Present the authors' affiliation addresses (where the actual work was done) below the names. Indicate all affiliations with a lowercase 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. This responsibility includes answering any future queries about Methodology and Materials. **Ensure that the e-mail address is given and that contact details are 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.

**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.).

**Formatting of funding sources**
List funding sources in this standard way to facilitate compliance to funder's requirements:

Funding: This work was supported by the National Institutes of Health [grant numbers xxxx, yyyy]; the Bill & Melinda Gates Foundation, Seattle, WA [grant number zzzz]; and the United States Institutes of Peace [grant number aaaa].

It is not necessary to include detailed descriptions on the program or type of grants and awards. When funding is from a block grant or other resources available to a university, college, or other research institution, submit the name of the institute or organization that provided the funding.

If no funding has been provided for the research, please include the following sentence:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.
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.

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 JPEG): Color or grayscale photographs (halftones): always use a minimum of 300 dpi.
TIFF (or JPEG): Bitmapped line drawings: use a minimum of 1000 dpi.
TIFF (or JPEG): Combinations bitmapped line/halftone (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. Further information on the preparation of electronic artwork.

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 and shading in table cells.

References
Citation in text
Please ensure that every reference cited in the text is also present in the reference list (and vice versa). 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 and a copy of the title page of the relevant article must be submitted.

Web references
As a minimum, the full URL should be given. Any further information, if known (DOI, author names, dates, reference to a source publication, etc.), should also be given. Reference to material which is available on the Internet but has not been published elsewhere should be made in the text only and should not be included in the reference list.

Data references
This journal encourages you to cite underlying or relevant datasets in your manuscript by citing them in your text and including a data reference in your Reference List. Data references should include the following elements: author name(s), dataset title, data repository, version (where available), year, and global persistent identifier. Add [dataset] immediately before the reference so we can properly identify it as a data reference. The [dataset] identifier will not appear in your published article.

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
Most Elsevier journals have their reference template available in many of the most popular reference management software products. These include all products that support Citation Style Language styles, such as Mendeley. Using citation plug-ins from these products, authors only need to select the appropriate journal template when preparing their article, after which citations and bibliographies will be automatically formatted in the journal's style. If no template is yet available for this journal, please follow the format of the sample references and citations as shown in this Guide. If you use reference management software, please ensure that you remove all field codes before submitting the electronic manuscript. More information on how to remove field codes from different reference management software.

Users of Mendeley Desktop can easily install the reference style for this journal by clicking the following link:
http://open.mendeley.com/use-citation-style/matrix-biology
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Reference style
References should be listed at the end of the manuscript. They should be listed in the order in which they appear in the text, tables, and figure legends and numbered sequentially. When cited in the text, reference numbers should be in brackets. Only papers that have been published or accepted should be cited in the reference list. The title of the article, the volume number, and first and last page numbers should be cited. Journal titles should be abbreviated, e.g.,


2. Goto, Y., Calciano, L. J. & Fink, A. F. (1990). Acid-induced folding of proteins. Proc. Natl. Acad. Sci. USA 87, 573-577. Articles in books should include the title of the article, the name of the book, editor(s), edition number, first and last page numbers, the name and the location of the publisher, e.g.,


Journal abbreviations source
Journal names should be abbreviated according to the List of Title Word Abbreviations.
**Video**
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 file in one of our recommended file formats with a preferred maximum size of 150 MB per file, 1 GB in total. Video and animation files supplied will be published online in the electronic version of your article in Elsevier Web products, including ScienceDirect. 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. 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.

**Supplementary material**
Supplementary material such as applications, images and sound clips, can be published with your article to enhance it. Submitted supplementary items are published exactly as they are received (Excel or PowerPoint files will appear as such online). Please submit your material together with the article and supply a concise, descriptive caption for each supplementary file. If you wish to make changes to supplementary material during any stage of the process, please make sure to provide an updated file. Do not annotate any corrections on a previous version. Please switch off the 'Track Changes' option in Microsoft Office files as these will appear in the published version.

**Research data**
This journal encourages and enables you to share data that supports your research publication where appropriate, and enables you to interlink the data with your published articles. Research data refers to the results of observations or experimentation that validate research findings. To facilitate reproducibility and data reuse, this journal also encourages you to share your software, code, models, algorithms, protocols, methods and other useful materials related to the project.

Below are a number of ways in which you can associate data with your article or make a statement about the availability of your data when submitting your manuscript. If you are sharing data in one of these ways, you are encouraged to cite the data in your manuscript and reference list. Please refer to the "References" section for more information about data citation. For more information on depositing, sharing and using research data and other relevant research materials, visit the research data page.

**Data linking**
If you have made your research data available in a data repository, you can link your article directly to the dataset. Elsevier collaborates with a number of repositories to link articles on ScienceDirect with relevant repositories, giving readers access to underlying data that gives them a better understanding of the research described.

There are different ways to link your datasets to your article. When available, you can directly link your dataset to your article by providing the relevant information in the submission system. For more information, visit the database linking page.

For supported data repositories a repository banner will automatically appear next to your published article on ScienceDirect.

In addition, you can link to relevant data or entities through identifiers within the text of your manuscript, using the following format: Database: xxxx (e.g., TAIR: AT1G01020; CCDC: 734053; PDB: 1XFN).

**Proteins**
For submissions containing proteome research, it is mandatory that all data sets are submitted to one of the ProteomeXchange proteomics data repositories as a "complete submission". Authors are responsible to ensure that they meet the ProteomeXchange guidelines.
PXD identifier(s) must be provided in the manuscript abstract. In your abstract, please include the following sentence: "The proteomic data has been deposited to the ProteomeXchange Consortium via the xxx (e.g. PRIDE,MassIVE, etc.) partner repository with the data set identifier PXDxxxxxx".

Credentials to access the non-public data should be provided in the Materials and Methods at the time of submission. A condition of acceptance is to allow public access to the data sets via a PDxx identifier at the time of publication. Manuscripts will not be reviewed if the data have not been deposited - the data can remain password protected until acceptance but before the paper is in press, the password protection must be lifted and the data publicly available.

Please ensure to use the most recent version of the neXtProt or UniProt reference proteome for all informatics. For protein identification, ≥ two uniquely mapping, non-fully nested peptides of length ≥ 9 are required.

Describe in detail the calculation of FDRs at the PSM, peptide, and protein levels. Report the PSM-, peptide-, and protein-level FDR values along with the total number of expected true positives and false positives at each level. Present large-scale results thresholded at equal to or lower than 1% protein-level global FDR. If any large-scale datasets are individually thresholded and then combined, calculate the new, higher peptide- and protein-level FDRs for the combined result.

**Mendeley Data**
This journal supports Mendeley Data, enabling you to deposit any research data (including raw and processed data, video, code, software, algorithms, protocols, and methods) associated with your manuscript in a free-to-use, open access repository. During the submission process, after uploading your manuscript, you will have the opportunity to upload your relevant datasets directly to Mendeley Data. The datasets will be listed and directly accessible to readers next to your published article online.

For more information, visit the Mendeley Data for journals page.

**Data in Brief**
You have the option of converting any or all parts of your supplementary or additional raw data into one or multiple data articles, a new kind of article that houses and describes your data. Data articles ensure that your data is actively reviewed, curated, formatted, indexed, given a DOI and publicly available to all upon publication. You are encouraged to submit your article for Data in Brief as an additional item directly alongside the revised version of your manuscript. If your research article is accepted, your data article will automatically be transferred over to Data in Brief where it will be editorially reviewed and published in the open access data journal, Data in Brief. Please note an open access fee of 600 USD is payable for publication in Data in Brief. Full details can be found on the Data in Brief website. Please use this template to write your Data in Brief.

**Data statement**
To foster transparency, we encourage you to state the availability of your data in your submission. This may be a requirement of your funding body or institution. If your data is unavailable to access or unsuitable to post, you will have the opportunity to indicate why during the submission process, for example by stating that the research data is confidential. The statement will appear with your published article on ScienceDirect. For more information, visit the Data Statement page.

**Amino acid and nuclei sequences**
Sequences should be computer printed using a monospace font and high quality printer. They should be assembled as a camera-ready figure, not a table, so that the alignment can be maintained.

**AFTER ACCEPTANCE**

**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 will, at no cost, receive a customized Share Link providing 50 days free access to the final published version of the article on ScienceDirect. The Share Link can be used for sharing the article via any communication channel, including email and social media. 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 Author Services. Corresponding authors who have published their article gold open access do not receive a Share Link as their final published version of the article is available open access on ScienceDirect and can be shared through the article DOI link.

**AUTHOR INQUIRIES**
Visit the Elsevier Support Center to find the answers you need. Here you will find everything from Frequently Asked Questions to ways to get in touch. You can also check the status of your submitted article or find out when your accepted article will be published.