**DESCRIPTION**

*Experimental Hematology* publishes new findings, methodologies, reviews and perspectives in all areas of hematology and immune cell formation on a monthly basis that may include Special Issues on particular topics of current interest. The overall goal is to report new insights into how normal blood cells are produced, how their production is normally regulated, mechanisms that contribute to hematological diseases and new approaches to their treatment. Specific topics may include relevant developmental and aging processes, stem cell biology, analyses of intrinsic and extrinsic regulatory mechanisms, in vitro behavior of primary cells, clonal tracking, molecular and omics analyses, metabolism, epigenetics, bioengineering approaches, studies in model organisms, novel clinical observations, transplantation biology and new therapeutic avenues.

*Experimental Hematology* publishes 2 types of articles: (1) Reviews and Perspectives (4,000 words), and (2) original findings sub-classified either as Brief Communications of significant singular results (1,500 words), and longer Research Articles presenting the results of more developed studies(4,000 words).

For additional details on manuscript submission, please see *Experimental Hematology* online at [www.exphem.org](http://www.exphem.org).

Address correspondence to the Editor-in-Chief:
Connie J. Eaves, PhD, *Experimental Hematology*, Terry Fox Laboratory, BC Cancer Research Centre, 675 West 10th Avenue, Vancouver BC V5Z 1L3, Canada.
E-mail: ceaves@bccrc.ca.

**AUDIENCE**

Hematologists, Oncologists, Transfusion Scientists, Immunologists, Cell Biologists and Marrow Transplanters

**IMPACT FACTOR**

2018: 2.462 © Clarivate Analytics Journal Citation Reports 2019
ABSTRACTING AND INDEXING

Scopus
Science Citation Index
Web of Science
EBSCOhost
Gale
BioInfoBank Library
OCLC ArticleFirst
Current Contents
PubMed/Medline
BIOSIS Citation Index
Chemical Abstracts
Embase

EDITORIAL BOARD

Editor-in-Chief
Connie J. Eaves, The University of British Columbia, Vancouver, British Columbia, Canada

Scientific Editor
Carolina Abramovich, British Columbia Cancer Research Centre, Vancouver, British Columbia, Canada

Journal Manager
Mickie Cathers

Associate Editors
Tao Cheng, Beijing, China
Willem Fibbe, Leiden, Netherlands
Atsushi Iwama, Chiba, Japan
Irmela Jeremias, Munich, Germany
Tosio Kitamura, Bunkyo-Ku, Tokyo, Japan
Terence Lappin, Belfast, Ireland
Jean-Pierre Lévesque, Brisbane, Queensland, Australia
Anna Rita Migliaccio, New York, NY, USA -- Bologna, Italy
Ellen Rothenberg, Pasadena, California, United States

Past Editors-in-Chief
R. Keith Humphries
Esmail D. Zanjani
Ronald Hoffman
Peter J. Quesenberry
Eugene P. Conkrite
Michael P. McGarry
Dane R. Boggs
Lyle R. Heim

Inside this Issue Section Editor
Carolina Abramovich, British Columbia Cancer Research Centre, Vancouver, British Columbia, Canada

Editorial Board
Anna Bigas, Barcelona, Spain
Dominique Bonnet, London, United Kingdom
David Bryder, Lund, Sweden
Ben Ebert, Boston, MA, United States
Boris Fehse, Hamburg, Germany
Camilla Forsberg, Santa Cruz, CA, United States
Kai Fu, Omaha, NE, United States
Saghi Ghaffari, New York, NY, United States
Brian J.P. Huntly, Cambridge, United Kingdom
Xiaoyan Jiang, Vancouver, Canada
Yoshio Katayama, Kobe, Japan
Karen Keeshan, Glasgow, Scotland, United Kingdom
Issay Kitabayashi, Tokyo, Japan
Yangqui Li, China
Bing Liu, China
Punam Malik, Cincinnati, OH, United States
Simón Méndez-Ferrer, Cambridge, United Kingdom
Kateri Moore, United States
Hideaki Nakajima, Yokohama, Japan
Claus Nerlov, Oxford, United Kingdom
Trista North, Boston, MA, United States
Sjaak Philipsen, Rotterdam, The Netherlands
Jan Jacob Schuringa, Groningen, The Netherlands
Radek Skoda, Basel, Switzerland
Merav Socolovsky, Worcester, Massachusetts, United States
Jianmin Wang, Shanghai, China
Claudia Waskow, Dresden, Germany
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.

Aim and scope
Experimental Hematology publishes new findings, methodologies, reviews and perspectives in all areas of hematology and immune cell formation on a monthly basis and may include Special Issues on particular topics of current interest. The overall goal is to report new insights into how normal blood cells are produced, how their production is normally regulated, mechanisms that contribute to hematological diseases and new approaches to their treatment. Specific topics may include relevant developmental and aging processes, stem cell biology, analyses of intrinsic and extrinsic regulatory mechanisms, in vitro behavior of primary cells, clonal tracking, molecular and omics analyses, metabolism, epigenetics, bioengineering approaches, studies in model organisms, novel clinical observations, transplantation biology and new therapeutic avenues. Experimental Hematology publishes 2 types of articles: (1) Reviews and Perspectives (4,000 words), and (2) original findings sub-classified either as Brief Communications of significant singular results (1,500 words), and longer Research Articles presenting the results of more developed studies (4,000 words). For additional details on manuscript submission, please see Experimental Hematology online at www.exphem.org.

Types of articles
Research articles will be published under the following scientific categories: Stem Cells (hematopoietic, mesenchymal, embryonic and induced pluripotent stem cells); Experimental Stem Cell Transplantation; Normal Hematopoiesis (myelopoiesis, erythropoiesis, lymphopoiesis, megakaryocytopoiesis); Malignant Hematopoiesis; Microenvironment and Niche; Systems Biology; Genomics/Proteomics of Hematopoiesis; Immunobiology and Immunotherapy; Gene Therapy; Clinical Investigations (stem cell or other cell transplant related therapies); New Techniques and Technologies.

Regular Submissions: These are full-length reports of original research. We welcome articles on a range of topics with particular interest in those covering regulation and development of normal hematopoietic stem cells, stem cell expansion and self-renewal; novel sources of hematopoietic cells including embryonic stem cells and reprogrammed induced pluripotent stem cells; hematopoietic progenitors and differentiation control; growth factors/receptors and signal transduction; genomics, transcription factors and epigenetics; mechanisms of hematopoietic transformation; properties of leukemic stem cells and novel therapeutic targets; the hematopoietic niche/microenvironment; homing and engraftment of hematopoietic stem cell; immunotherapy of hematologic malignancy; non-malignant hematopoietic disease; application of model organisms to the study of hematopoiesis, and new techniques/methods and technology for hematopoiesis investigation. Studies centered on cell transplantation, both at the pre-clinical/experimental and early clinical stage are also of high priority.

Brief communications: We also welcome articles on the same range of topics as outlined for regular submissions, but that can be reported in a shorter format. Brief communications are intended to allow publication of highly significant findings reported concisely, and not of incomplete or preliminary data. As with regular submissions, brief communications are expected to provide mechanistic insights, elucidate novel disease biology or approaches to therapy.

Brief communications should contain a maximum of 1,500 words exclusive of the abstract, figure legends and references. Format can be as for regular submissions, but a combined Results and Discussion section is encouraged. Only 3 figures/tables and 30 references are allowed.

Fast-Track Submission: Expedited review will be offered, on request, for research articles falling within the scope of the topics suitable for Experimental Hematology that have been previously considered by other top ranked journals and for which the previous reviewers' comments and the appropriate responses can be provided. Decisions will be made by the Editor-in-Chief in consultation by one or more members of the Editorial Board within 7-10 days of submission.

Reviews and Perspectives: Review Articles are summaries of a topic of interest to Experimental Hematology's broad readership. Perspectives are articles discussing significant topics and controversies relevant to the field of hematology and stem cells, generally from a more personal or
opinion-based standpoint than a Review Article. Review Articles and Perspectives are welcomed by the journal and are generally solicited by the Editor-in-Chief; however, authors wishing to submit an unsolicited Review Article or Perspectives are invited to contact the editorial office prior to submission.

Contact details for submission
Journal Manager:
Mickie Cathers
Elsevier
1600 John F. Kennedy Blvd. STE 1800
Philadelphia, PA 19103
Phone: (239) 245-3239
E-mail: exphem@elsevier.com

Charges to author
Authors pay the following charges: Experimental Hematology requires a submission fee of US $50 to process Regular Submissions (not applicable for Invited articles). Current members of ISEH are not required to pay the submission fee when they are the corresponding author of the submission. You may pay by check or credit card. If paying by check, please make checks payable to the ISEH and mail to the Editorial Office address listed at the end of this document. To pay the submission fee by credit card please click on the following link: https://www.iseh.org/store/view_product.asp?id=653991. Please note that we cannot release the editorial decision if we have not received the submission fee. Suitable color art submitted to the Journal will appear in the Journal at no charge to the authors. Authors may choose to have their figures professionally redrawn at the expense of the authors. ISEH members will be eligible for a 50% discount for the first image redrawn per manuscript submitted. Contact the Editorial office at exphem@elsevier.com for pricing details. Expense for offprints. The publisher will send the corresponding author the price quotation with the page proofs.

Review process and policies
Each submitted manuscript will normally undergo peer review by at least two editorial board members or other experts designated by the editor-in-chief or associate editor in charge of the manuscript's review. Authors' names will be seen by reviewers, but reviewers' names will not be disclosed to the authors. A paper can be rejected without undergoing the peer review process if the editor determines that the content is inappropriate for the journal. Authors usually receive the editorial decision within 4 to 6 weeks of their manuscript's arrival at the editorial office.

The editorial office assigns a manuscript number and acknowledges receipt of submission within 3 days of receipt. Papers submitted by editors or editorial board members are subjected to the same rigorous standards as other manuscripts. An editor who submits a manuscript for consideration does not have access to the reviewers' identities or their confidential remarks for that submission.

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.

Studies in humans and animals
If the work involves the use of human subjects, the author should ensure that the work described has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans. The manuscript should be in line with the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals and aim for the inclusion of representative human populations (sex, age and ethnicity) as per those recommendations. The terms sex and gender should be used correctly.

Authors should include a statement in the manuscript that informed consent was obtained for experimentation with human subjects. The privacy rights of human subjects must always be observed.

All animal experiments should comply with the ARRIVE guidelines and should be carried out in accordance with the U.K. Animals (Scientific Procedures) Act, 1986 and associated guidelines, EU Directive 2010/63/EU for animal experiments, or the National Institutes of Health guide for the care and use of Laboratory animals (NIH Publications No. 8023, revised 1978) and the authors should clearly indicate in the manuscript that such guidelines have been followed. The sex of animals must be indicated, and where appropriate, the influence (or association) of sex on the results of the study.

Conflict of interest policy
A conflict of interest exists when an author, reviewer, or editor has financial or personal relationships with other persons or organizations that may inappropriately influence or bias his or her actions. There is a potential for a conflict of interest whether or not an individual believes that a relationship affects his or her scientific judgment. Conflicts can occur as the result of employment, consultancies, stock ownership, honoraria, paid expert testimony or opinions, personal and family relationships, or academic competitive pressures. All participants in the peer review and publication process must disclose all relationships that could be viewed as a potential conflict of interest.

Potential Author Conflicts
Authors should disclose at the time of manuscript submission all financial and interpersonal relationships that could be viewed as presenting a potential conflict of interest. These include, but are not limited to, any financial relationship that involves conditions or tests or treatments discussed in the manuscript or alternatives to tests or treatments. Authors should disclose information even when there is a question as to whether a relationship constitutes a conflict. Potential conflicts should be listed for each author on the page following the title page; a summary of relevant information will be published with the manuscript.

Authorship of editorials and reviews requires interpretation of the literature and therefore is inherently subject to bias, thus authors of such manuscripts should not have a significant financial interest in the subject matter of the manuscript.

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').

Authorship
All authors should have made substantial contributions to all of the following: (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data, (2) drafting the article or revising it critically for important intellectual content, (3) final approval of the version to be submitted.

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.

Article transfer service
This journal is part of our Article Transfer Service. This means that if the Editor feels your article is more suitable in one of our other participating journals, then you may be asked to consider transferring the article to one of those. If you agree, your article will be transferred automatically on your behalf with no need to reformat. Please note that your article will be reviewed again by the new journal.

More information.

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.

Author rights
As an author you (or your employer or institution) have certain rights to reuse your work. More information.

All material that is accepted for publication becomes the sole property of the ISEH. Authors must sign a copyright transfer form upon acceptance of any material for publication. The ISEH does, however, grant the authors the right to reproduce tables and figures from their articles published by the ISEH in the author's future publications.

Elsevier supports responsible sharing
Find out how you can share your research published in Elsevier journals.
**Role of the funding source**
List all sources of support for research (from funding agencies or industry) and disclose any potential financial conflicts of interest (relevant consulting fees, stock options, employment, etc) for each author. If no financial conflict of interest is identified, 'none' should be written next to the author name. **Note:** If the manuscript is accepted for publication, a summary of the relevant information will be transferred to the Acknowledgements section.

**Open access**
Please visit our Open Access page from the Journal Homepage for more information.
- 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

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

Elsevier has established agreements with funding bodies, https://www.elsevier.com/fundingbodies. This ensures authors can comply with funding body open access requirements, including specific user licenses, such as CC BY. Some authors may also be reimbursed for associated publication fees. If you need to comply with your funding body policy, you can apply for the CC BY license after your manuscript is accepted for publication.

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.

**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.

**Informed consent and patient details**
Studies on patients or volunteers require ethics committee approval and informed consent, which should be documented in the paper. Appropriate consents, permissions and releases must be obtained where an author wishes to include case details or other personal information or images of patients and any other individuals in an Elsevier publication. Written consents must be retained by the author but copies should not be provided to the journal. Only if specifically requested by the journal in exceptional circumstances (for example if a legal issue arises) the author must provide copies of the consents or evidence that such consents have been obtained. For more information, please review the Elsevier Policy on the Use of Images or Personal Information of Patients or other Individuals. Unless you have written permission from the patient (or, where applicable, the next of kin), the personal details of any patient included in any part of the article and in any supplementary materials (including all illustrations and videos) must be removed before submission.

**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.

**Submit your article**
Please submit your article via https://www.editorialmanager.com/exphem.
**Reviewers**
Authors are encouraged to suggest several potential reviewers without conflicts of interest, including at least one member of the journal’s editorial board. When submitting your manuscript electronically through Editorial Manager, both suggested and opposed reviewers can be identified as part of the submission process.

**Statement of Authorship**
An Authorship Statement form is required. The statement must include the name and signature of the corresponding author on behalf of ALL authors who have contributed significantly to the research described in the paper and have read and approved the final manuscript. The Authorship Statement form is available here. It may be included in the Editorial Manager submission, or submitted off-line by email (exphem@elsevier.com) to the Journal Manager.

**Manuscript length**
Write succinctly. Authors are urged to keep the word count of their papers (excluding references, figure legends, and tables) to less than 3,600 words. Longer papers of scientific merit will not be excluded from publication, but should still be as concise as possible.

**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.

**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 article number or 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. 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 in Word 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
Subdivision - unnumbered sections
Divide your article into clearly defined sections. Each subsection is given a brief heading. Each heading should appear on its own separate line. Subsections should be used as much as possible when cross-referencing text: refer to the subsection by heading as opposed to simply 'the text'.

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 details to allow the work to be reproduced by an independent researcher. Methods that are already published should be summarized, and indicated by a reference. If quoting directly from a previously published method, use quotation marks and also cite the source. Any modifications to existing methods should also 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.

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. The title should accurately reflect the manuscript’s content. If the main species used in the study is not human, the species should be included in the title.
• 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. Provide the corresponding author's courtesy title (Prof. or Dr.), full name, and credentials (MD, Phd). 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. Provide contact information for offprints if different from that of 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.
• Category for the Table of Contents. Provide the category that best describes the manuscript’s topic: Stem Cells (hematopoietic, mesenchymal, embryonic and induced pluripotent stem cells); Normal Hematopoiesis (myelopoiesis, erythropoiesis, lymphopoiesis, megakaryocytopoiesis); Malignant Hematopoiesis; Microenvironment and Niche; Systems Biology; Genomics/Proteomics of Hematopoiesis; Immunobiology and Immunotherapy; Gene Therapy; Clinical Investigations (stem cell or other cell transplant related therapies); New Techniques and Technologies.
• Word count. Supply the paper’s word count excluding references, figure legends, and tables.
For manuscripts about clinical studies, use the category of "Clinical Investigation." If your manuscript's topic does not fit within one of these categories, it may not be within the journal's scope. Contact the editorial office for confirmation before submitting the manuscript.

**Highlights**

Highlights are mandatory for this journal as they help increase the discoverability of your article via search engines. They consist of a short collection of bullet points that capture the novel results of your research as well as new methods that were used during the study (if any). Please have a look at the examples here: example Highlights.

Highlights 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).

**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.

The abstract should be a continuous narrative (not broken into subheadings) and consist of no more than 250 words. Please include a short list of key words. Where possible, consider using MESH terms. For a list of MESH terms please visit [http://www.nlm.nih.gov/mesh/](http://www.nlm.nih.gov/mesh/).

**Graphical abstract**

Although a graphical abstract is optional, its use is encouraged as it draws more attention to the online article. The graphical abstract should summarize the contents of the article in a concise, pictorial form designed to capture the attention of a wide readership. Graphical abstracts should be submitted as a separate file in the online submission system. Image size: Please provide an image with a minimum of 531 × 1328 pixels (h × w) or proportionally more. The image should be readable at a size of 5 × 13 cm using a regular screen resolution of 96 dpi. Preferred file types: TIFF, EPS, PDF or MS Office files. You can view Example Graphical Abstracts on our information site.

Authors can make use of Elsevier's Illustration Services to ensure the best presentation of their images and in accordance with all technical requirements.

**Acknowledgments**

If authors wish to express thanks or acknowledge substantive contributions or assistance of individuals who are not authors, this should be included in the Acknowledgments section after the manuscript text and before the reference list. Authors are responsible for informing all named individuals/parties that they are being mentioned in their submitted manuscript and obtaining their approval prior to publication.

**Units**

Follow internationally accepted rules and conventions: use the international system of units (SI). If other units are mentioned, please give their equivalent in SI.

**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**

Figures that are grouped together must match in size, particularly in height, and be uniform in style and size of lettering. Supply a scale bar with photomicrographs.
Proofread all text in the figures and ensure that all figure components are clearly distinguishable from each other (e.g., bar graph hatchings). Ensure that the body of the paper does not repeat data reported in figures.

**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): Bitmapted 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.

**Illustration services**

Elsevier's Author Services offers Illustration Services to authors preparing to submit a manuscript but concerned about the quality of the images accompanying their article. Elsevier's expert illustrators can produce scientific, technical and medical-style images, as well as a full range of charts, tables and graphs. Image 'polishing' is also available, where our illustrators take your image(s) and improve them to a professional standard. Please visit the website to find out more.

**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**

Begin each table on a separate page. Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with symbols in this order: symbols1.jpg"/. Avoid vertical rules. Be sparing in the use of tables and ensure that the data presented in tables do not duplicate results described elsewhere in the article.

**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 highly encouraged.

A DOI is guaranteed never to change, so you can use it as a permanent link to any electronic article. An example of a citation using DOI for an article not yet in an issue is: VanDecar J.C., Russo R.M., James D.E., Ambhe W.B., Franke M. (2003). Aseismic continuation of the Lesser Antilles slab beneath northeastern Venezuela. Journal of Geophysical Research, https://doi.org/10.1029/2001JB000884. Please note the format of such citations should be in the same style as all other references in the paper.

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.

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 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 article number or 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
Include only published materials or those accepted for publication (in press) in the reference list. Cite references in numerical order according to first mention in the text. Verify all entries against original sources, especially journal titles, publication dates, accents, diacritical marks, and spelling in languages other than English. All listed references must be cited in the text.

Journal titles should be abbreviated according to titles listed in Index Medicus. Cite abstracts only if they are the sole source. References should include complete page ranges. Follow these models when organizing references:
For a journal article with up to 6 authors, list all authors:
Fraser ST, Ogawa M, Yu RT, Nishikawa S, Yoder MC, Nishikawa S-I. Definitive hematopoietic commitment within the embryonic vascular endothelial-caderin^+ population. Exp Hematol. 2002;30:1061-1069. For a journal article with more than 6 authors, list the first 3 authors, followed by et al.:
Riley RL, Knowles J, King AM. Levels of E2A protein expression in B cell precursors are stage-dependent and inhibited by stem cell factor (c-kit ligand). Exp Hematol. In press. For a chapter in a book:
For other formats, please follow the recommendations of the International Committee of Medical Journal Editors at [http://www.icmje.org/](http://www.icmje.org/) (this will help those individuals utilizing referencing software.)

Unpublished observations and personal communications cannot be included in the References section, although they may be cited in the text as "(unpublished data, year)." Papers that rely on such citations for details that are essential for critical review of the manuscript may be rejected. For personal communications, the permission of the individual who communicated the data is required.

**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).

**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. Before submitting your article, you can deposit the relevant datasets to **Mendeley Data**. Please include the DOI of the deposited dataset(s) in your main manuscript file. 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](https://www.mendeley.com).  

**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](https://www.sciencedirect.com).  

**Style guidelines**

**Abbreviations:** All abbreviations must be defined the first time that they are used in the text.

**Distribution of reagents:** By publishing in this journal, authors imply that they will make freely available to other academic researchers any easily provided materials (e.g., cells, clones of cells, antibodies, DNA probes, nucleic acid sequences, or genetic strains of animals) that were used in the research reported and that are not available from commercial suppliers.

**Drugs:** Trade names, spelled exactly as trademarked and with the initial letter capitalized, may be used after a drug has been identified once by its generic name or by its systematic chemical name. Unfamiliar compounds other than drugs must also be designated, when first issued, by their correct systematic names. Systematic chemical names should conform to the usage given in the indexes of Chemical Abstracts.

**Human Experimentation:** In experimental studies with human subjects, details of age, race, and sex of the subject must be included. There must also be a statement that informed consent was obtained from the subjects and that the investigations had been approved by an institutional Human Research Committee. In addition, safeguards for protection of the rights of minors and mentally impaired subjects should be stated. In all material, patients must be identified by number or serial letter and not by initials or names. If the manuscript requires photographs of faces or other identifiable body parts or detailed case descriptions, authors must obtain written consent from the identifiable subject and provide a copy of the permission with the manuscript upon submission.

**Manufacturers:** Include the name of the pharmaceutical or equipment company, as well as the city, state or province, and country, in parentheses after the first mention of every material used.

**Mathematical Notation:** Use typewritten letters, numbers, and symbols whenever possible. Identify boldface, script letters, etc., at their first occurrence. Distinguish between one and the letter "I" and zero and the letter "O" whenever confusion might result.

Any data previously published in any form (except abstracts) must be clearly identified as such.

**Measurements:** Use chapter 11.12 of *AMA Manual of Style*, 9th ed. Use metric system and Celsius degrees; use L for liter.

**Nomenclature and Symbols:** Follow the recommendations of the International Union of Pure and Applied Chemistry (IUPAC) and the International Union of Biochemistry (IUB). In respect to molecular regulators of hemopoiesis that are either essential for proliferation and differentiation of a given cell line or potentiate the action of a specific regulator, sufficient information should be given in respect to its molecular weight, chemical characteristics, stability, resistance to enzymatic digestion, method of assay, etc., so that others can appreciate the basic properties. When a regulatory molecule has been
purified to homogeneity, sequenced, cloned, and produced as a pure entity, the name then given to
the humoral regulator should be used. When there are numerous synonyms, these should be listed
once. Until there is a consensus in respect to nomenclature, authors may use the names they prefer.

**Statistical Analyses:** In respect to bioassay or radioimmunoassay, potency estimates should
be accompanied by a measure of the precision of these estimates. Both bioassays and
radioimmunoassays should be precision-related to within-assay variability and to the variability
measurements or subsequent independent assays. When data are insufficient to determine whether
the data conform to a normal or other distribution, it is more appropriate to use nonparametric tests of
significance. Manuscripts must describe novel methods, models, and approaches to statistical analysis
concisely, but in sufficient detail to allow evaluation of the results reported.

**Recombinant DNA:** With the use of "recombinant" material in research, particularly with
recombinant viral vectors that may infect human cells, investigators must include a statement
regarding the containment category of genetically engineered organisms. Procedures and safeguards
must be specified for the construction and handling of recombinant DNA molecules and organisms
and viruses containing recombinant DNA.

**AFTER ACCEPTANCE**

**Online proof correction**
To ensure a fast publication process of the article, we kindly ask authors to provide us with their proof
corrections within two days. 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.

**Editorial office**
Editor-in-Chief:
Connie J. Eaves, PhD
British Columbia Cancer Agency and
University of British Columbia
Terry Fox Laboratory
BCCA Cancer Research Centre
675 West 10th Avenue
Vancouver, BC V5Z L3 Canada