DESCRIPTION

Currents in Pharmacy Teaching and Learning is devoted to dissemination of high quality, peer-reviewed scholarship relevant to all areas of pharmacy education—promoting educational research excellence. The Journal maintains a particular focus in two major areas: pharmacy faculty development in the scholarship of teaching and learning and the scholarship of interprofessional pharmacy education. With diverse editorial board members, authors, and peer reviewers, the Journal engages a variety of stakeholders in pharmacy education: educators, researchers, faculty practitioners, as well as interprofessional colleagues. Diverse author contributions are within original research, review articles, commentaries, and letters categories.

Original research topics include, but are not limited to: Scholarship of Teaching and Learning: teaching/learning strategies; interprofessional education Quality Improvement - assessment of programmatic/curricular outcomes Curricular Revision: design, implementation, evaluation New school/program strategies Attitudes/perceptions within pharmacy education

EDITORIAL BOARD

Editor-in-Chief
Robin Zavod, Midwestern University - Downers Grove Campus, Downers Grove, Illinois, United States

Executive Associate Editor
Kristin Janke, University of Minnesota, Minneapolis, Minnesota, United States

Associate Editors
Jeffrey Cain, University of Kentucky, Lexington, Kentucky, United States
Craig Cox, Texas Tech University, Lubbock, Texas, United States
Spencer Harpe, Midwestern University - Downers Grove Campus, Downers Grove, Illinois, United States
Michael Peeters, UNIVERSITY OF TOLEDO, Toledo, Ohio, United States
Andy Traynor, Concordia University, Wisconsin School of Pharmacy, Mequon, Wisconsin, United States

Editorial Board
Jeanine Abrons, University of Iowa, Iowa City, Iowa, United States
Ben Aronson, Ohio Northern University R H Raabe College of Pharmacy, Ada, Ohio, United States
Jill Augustine, Mercer University College of Pharmacy, Atlanta, Georgia, United States
Scott Baggarly, University of Louisiana at Monroe, Monroe, Louisiana, United States
Meghan Bodenberg, Butler University College of Pharmacy and Health Sciences, Indianapolis Indiana, United States
Andrew Bzowyckyi, University of Missouri Kansas City, Kansas City, Missouri, United States
Ashley Castleberry, UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES, Little Rock, Arkansas, United States
Michael Gonyeau, Northeastern University, Boston, Massachusetts, United States
Kristopher Harrell, University of Mississippi School of Pharmacy, Jackson, Mississippi, United States
Amy Heck Sheehan, Purdue University, Indianapolis, Indiana, United States
Kelly Lempicki, Midwestern University - Downers Grove Campus, Downers Grove, Illinois, United States
John Lonie, Long Island University, Brooklyn, New York, United States
Cherie Lucas, University of Technology Sydney, Sydney, Australia
Jacqui McLauglin, University of North Carolina at Chapel Hill Eshelman School of Pharmacy, Chapel Hill, North Carolina, USA
Lisa Meny, Ferris State University, Grand Rapids, Michigan, United States
Cortney Mospan, Wingate University, Wingate, North Carolina, United States
Adam Pace, Belmont University, Nashville, Tennessee, United States
Erin Pauling, Binghamton University, Binghamton, New York, United States
Jennifer Phillips, Midwestern University, Downers Grove, Illinois, United States
Ann Ryan Haddad, Creighton University, Omaha, Nebraska, United States
Stacey Schneider, Northeastern Ohio Medical University, Rootstown, Ohio, United States
Susan Stein, Pacific University Oregon Hillsboro Campus, Forest Grove, Oregon, United States
Deborah Sturpe, University of New England, Biddeford, Maine, United States
Jennifer Trujillo, University of Colorado, Aurora, Colorado, United States
Cherie Tsingos-Lucas, The University of Sydney, Sydney, Australia
Kerry Wilbur, Qatar University, Doha, Qatar
Kyle Wilby, University of Otago, Dunedin, New Zealand
INTRODUCTION

Journal Description

Currents in Pharmacy Teaching and Learning is devoted to dissemination of high quality, peer-reviewed scholarship relevant to all areas of pharmacy education-promoting educational research excellence. The Journal maintains a particular focus in two major areas: pharmacy faculty development in the scholarship of teaching and learning and the scholarship of inter-professional pharmacy education. With diverse editorial board members, authors, and peer reviewers, the Journal engages a variety of stakeholders in pharmacy education: educators, researchers, faculty practitioners, as well as inter-professional colleagues. Diverse author contributions are within original research, review articles, commentaries, and letters categories.

Original research topics include, but are not limited to:
- Scholarship of Teaching and Learning: teaching/learning strategies; inter-professional education
- Quality Improvement - assessment of programmatic/curricular outcomes
- Curricular Revision - design, implementation, evaluation
- New school/program strategies
- Attitudes/perceptions within pharmacy education

Types of paper

Types of Paper (additional information is available for each manuscript type - contact Editor-in-Chief at cptl@midwestern.edu)

1. Research Paper

Original Research Articles and Research Notes are both hypothesis-driven inquiries with the purpose of contributing to generalizable knowledge (i.e., builds on prior knowledge) about teaching, learning, or education in pharmacy. The primary difference between these two article types is that studies described in Research Notes exhibit notable issues related to validity and/or generalizability that limit the extent to which the findings contribute to the literature. Authors are strongly encouraged to submit manuscripts that represent a pilot study of a larger research project as a Research Notes.

Clear and direct communication of the scientific process is a vital guiding principle for both Original Research Articles and Research Notes. An important part of research is the potential for replication by others, which is very difficult if the study methods and procedures are poorly described. Many of these reporting guidelines can be found online at the EQUATOR Network clearinghouse (http://www.equator-network.org).

This type of manuscript should report completed qualitative or quantitative original research. The manuscript should include discrete sections including introduction, methods, results, discussion, and conclusions. Authors are encouraged to use subheadings throughout their manuscript, especially with the Methods and Results sections. Limitations of the research should be included in the Discussion section. A thorough review of the literature should be conducted and a discussion of the same should be included in the manuscript text in the Introduction section. Consideration of the literature in other relevant healthcare professions is recommended. The length of the manuscript text should not exceed 5000 words not including the title page, tables, figures, or references.

Book Review

Book Review Content Guidelines:

Book Reviews include answers to the following questions (as appropriate), as well as justification/evidence for each offered answer. The review itself doesn't have to read "question, answer, question, answer" and can adopt whatever format showcases your "answers" in a meaningful, easy to read manner.

1. Who is best served by reading/using this book (e.g., faculty, researchers, students, teaching assistants, practitioners)?

2. What kind of book is this (e.g., resource, textbook, adjunct to textbook)?
3. Would you suggest others read this book cover-to-cover, by chapter, or based on an acute need?

4. What does this book do best (e.g., readability of text, examples, practice problems, references)?

5. How much of the content is relevant to a PharmD curriculum vs. of value to a pharmacy educator and/or practitioner?

6. If there is also online content available in addition to the printed text, what value do you see in that online content?

7. If applicable, what kind of student would benefit from using this book (e.g., in need of remediation or refresher, currently enrolled in PharmD curriculum, a FGEE student)?

8. If applicable, in what kind of settings would you see this textbook as best being used (e.g., lecture, small group learning, laboratory, IPPE, APPE)?

9. How does this book complement (or duplicate) other books that are available? When comparing this book to others like it - what are this book's strengths and weaknesses?

10. How are various aspects of this book (e.g., table of contents, glossary, indices, appendices, figures, tables) beneficial to a learner or instructor?

11. If possible, provide your opinion on a couple of pointers or comments to the author(s) that could be of value to those using this book as well.

**Book Review Format Guidelines:**

- 1000 word limit

**Title must include full book citation, ISBN, and cost**

**Case Report**

**Teaching and Learning Matters (TALM) Content Guidelines:**

Articles in this category focus on describing advancements in teaching and learning practices in pharmacy education. It provides an opportunity to share, in a peer-reviewed environment, the teaching and learning techniques currently being used to advance pharmacy education. While not minimizing the importance of evidence-based teaching and student outcomes, this category is tailored to those authors whose work is in the early stages of implementation. As such, much of or even all of the evidence of the impact of the teaching and learning techniques described in manuscripts in this section of *Currents in Pharmacy Teaching and Learning (CPTL)* will rely on smaller cohorts of learners, critical reviews conducted by instructors and students, instructor, peer and/or student reactions to teaching initiatives, and pilot student outcome data. It is anticipated that manuscripts in this category may have no or minimal comparative controls. The niche for this category is dissemination of the everyday opportunities, risks, challenges, and rewards experienced by the authors for the benefit and growth of the CPTL readership and the profession.

The aim of this article type is to encourage sharing the wisdom that is gained through a scholarly approach to teaching. By sharing this knowledge, it is hoped that others will be (1) inspired to utilize the techniques discussed and (2) join in enhancing the scholarship by supporting the technique. In order to accomplish these goals, the scholarship must be written to a caliber that merits recognition and dissemination. Therefore, this article provides guidance as it relates to the expectations for manuscripts submitted under this category.

**Background**

- Basic overview of the learning environment sufficient to understand the strategy's fit and context, including attributes of learners

- Background on teaching opportunity or challenge
o Impetus for change

o Summary of literature documenting similar challenges or potential solutions referenced sufficiently to build on previous scholarship

Educational activity

o Description of learning activity/strategy/technique/approach should include the following: any pre-activity learner preparation, an activity description, and any post-activity learner follow-up.

o If a novel use of an existing technique: Clear articulation of the adaptation of the activity/strategy/technique/approach or its novelty

o Rationale for strategy/approach selected and educational aim/objective

o Required resources, such as physical space, personnel and relevant expertise, training and preparation processes, time to create, and technology?

Educational Activity

o Methods of assessment of student learning and/or evaluation of strategy:

o An overview of methods used and rationale

o Description of assessment's and/or evaluation's tie to the course grade/final assessment (if applicable)

Data supporting students learning and/or evaluation of strategy, which may include the following:

. Learning evaluation (including tool(s) if applicable) (e.g., summaries of rubric ratings and scores)

. Student evaluations of activity (e.g., course evaluations, focus groups, and surveys)

. Peer evaluations of educational materials (e.g., slides, exams, assignments, and online support materials)

. Peer evaluations of instructional delivery

. Peer review of outcomes of teaching advancement (e.g., student work products)

. Peer recommendations for improvements of teaching advancement

Critical analysis of the educational activity

o Criteria by which educational activity is critically analyzed, which may include the following:

o Resources to implement (e.g., time)

o Publicly available or locally established standards, thresholds, or benchmarks used to interpret the data on student learning and/or evaluation of the strategy

o Evidence of drawing together data from multiple sources

. Summary of analysis-a clear and concise statement of the findings of your analysis of the educational activity

. Lessons learned:

o Most rewarding part(s) of developing and implementing this educational activity

o Most challenging part(s) of developing and implementing this educational activity
Planned improvements for this educational activity

- Statement of the work’s contribution to previous scholarship
- Implications for the curriculum, to other colleges/schools of pharmacy and/or the profession

A structured abstract using these section headings also should be submitted.

For more information, see the Teaching and Learning Matters announcement in CPTL.

**Teaching and Learning Matters (TALM) Format Guidelines:**

- 5000 word limit (somewhat flexible - contact Editor-in-Chief)

- Use graphs and tables as appropriate to best present the study results; however, do not duplicate data in graphs, tables, and text.

- Tables, figures, and references are not included in the word limit.

**Quality Improvement (QI) Article Content Guidelines:**

These articles are focused on the cycle of continuous quality improvement (CQI) as applied to pharmacy education in its broadest sense. The focus should reside on the CQI process. The inclusion of institutional or other study data that is not specifically germane to this process is not appropriate. Authors are encouraged to consult the Standards for Quality Improvement Reporting Excellence (SQUIRE) guidelines (www.squire-statement.org). While these guidelines were originally developed for quality improvement in health care, the recommendations in these guidelines are useful in concept for CQI activities in educational settings. QI articles include the following components: [NOTE: bolded headers below are required as the article section headers]

**Problem Description.** Describe the nature and significance of the education-related problem that inspired the work, including how the need was identified.

- Describe the context and/or setting in which your quality improvement activities are being performed (e.g., if it is a course, then that course and its placement in the overall program, as well as the entire program need to be described; if it is a sequence such as a research track, describe that sequence, its placement in the program, as well as the entire program)

- Describe the relevance of your process to readers and the academy-at-large.

**Quality Improvement Methods**

- Describe your process in developing the improvements, including the members, activities and timeline.

- Explain how you implemented these improvements, including your interventions, measures and analysis.

- Describe the methods by which your improvements were evaluated.

**Results of CQI Inquiry**

- Explain the findings from your CQI process. (Note: While results and evaluative data are not the central issue in this article section, a discussion of their role in your CQI process is needed.)

**Interpretation and Discussion.** Summarize your most important findings and CQI changes.

- Discuss any limitations.

- When appropriate, discuss whether your findings suggested any other future changes
Conclusions

- Address only the objectives and do not overstate your findings.
- Do not give assertions that are beyond your findings.
- Provide a summary statement of the implications of your work for your program and for others.

A structured abstract using these section headings also should be submitted.

Quality Improvement Article Format Guidelines:

- 5000 word limit (somewhat flexible - contact Editor-in-Chief)
- Use graphs and tables as appropriate to best present the study results; however, do not duplicate data reporting in graphs, tables, and text.
- Tables, figures, and references are not included in the word limit.

Short Communication
This type of manuscript should report the results from preliminary studies or when limited data is available from qualitative or quantitative original research. The length of the manuscript should not exceed 3000 words not including the title page, tables, figures, or references. The manuscript components are dependent on the type of short communication submitted (see below). These manuscripts will fall into one of the following four categories.

Research Note (Section Headers: same as Research Article)

Description and Section Headers: See Research Article

Experiences in Teaching and Learning (EiTL)

While articles in the Teaching and Learning Matters section focus on development and evaluation of a teaching and learning approach that make a substantial contribution to or advancement in pharmacy education, EiTL articles report efforts that make a more modest contribution to the pharmacy education literature. Articles in this section generally focus on application and implementation of a previously developed teaching and learning approach, or are focused on application of a teaching and learning approach to a different setting, discipline, or audience. An EiTL article may also report an experience with a modification or improvement over a previously reported technique.

Initiatives suitable for this category may have had minimal evaluation or prospective consultation of the existing literature. There may be notable methodological (e.g., participant surveys that lack connection to previous work or a foundational model, non-specific measures of student learning such as overall course grades) or logistical (e.g., small sample size, low response rate) limitations. While some broad outcome data are included, the focus of the article is truly on reporting the context and experience rather than relying heavily on providing evidence of the approach's effectiveness. Section Headers: Background and purpose, Educational activity and Setting, Findings, Discussion, Summary

Interprofessional Education (IPE) Report:
Interprofessional Education (IPE) Reports describe innovative, promising, early-stage IPE models alongside thoughtful analysis of the insights gained and barriers identified/overcome by pharmacy educators working to address IPE requirements embedded within accreditation standards. Authors are encouraged to contact the Editor-in-Chief (cptl@midwestern.edu) for article topic suitability prior to submission. Section Headers: Background, Interprofessional Education Activity.

Live and Learn:

Live and Learn articles describe studies during which a problem or significant limitation negatively impacted any substantial results and/or interpretation of the results. Authors are expected to be concise. Section Headers: Background, Impact, Recommendations(s), Discussion

Reflective Practice

Wisdom of Experience Article Content Guidelines:

In this article type, we seek to capture the wisdom of practice by providing a platform to share. Articles will communicate a lived experience and the insights, opinions, views, ideas, concerns, philosophies and positions derived from it. Authors may choose to explore focal areas such as: what I think or believe; how I’ve grown or changed; what I’ve learned; what inspires me; what incites me; what challenges or concerns me; what I wonder about; where I see excellence or where I’ve failed. However, articles appearing in this section will not be simple reports of experience; they will be characterized by moving beyond the "What?" to more firmly address the "So What?" and "Now What?" of the experience. Authors are expected to undertake significant introspection, in-depth analysis and critical review of their experience. Authors are expected to use scholarly rigor, present original insights from the reflective process, add consequentially to the field, and conceivably contribute to the professional growth and development of others.

Faculty, preceptors, administrators, professional students, graduate students, and residents are invited as authors. Manuscripts can comment on insights derived from one-to-one interactions (e.g. advising, mentoring, teaching), group work (e.g. teaching teams, classrooms, task forces) or institutional/multi-institutional initiatives (e.g. curriculum reform, regional collaborations, new administrative structures). Manuscripts may be inspired by reflections on didactic, experiential, and/or laboratory teaching experiences. Manuscripts may also be inspired by career transitions or significant moments of self-reflection and review, such as the promotion and tenure process, nomination, application or receipt of awards, or peer-observations of teaching. Authors should be conscious of and identify shifts in their own perspective or paradigm.

Articles in this category include the following components: [NOTE: bolded words represent the required article section headings].

Purpose:

. Clearly states the purpose of the reflective work and its importance to the field

. Explains the gap in the teaching-learning literature that this reflective work begins to fill

Description (including background knowledge):

. Presents an objective, complete and well-expressed description* of the experience in an authentic and engaging manner.

. Demonstrates adequate background knowledge by weaving in relevant theoretical, conceptual and/or empirical work from the existing teaching-learning knowledge base.

Analysis/Interpretation:

. Engages in substantive analysis and interpretation, which generates insights of value to others:

. Considers characteristics of participants, content or context

. Acknowledges previous assumptions, beliefs, approaches and/or attitudes
o Identifies shifts in own perspective or paradigm

o Provides evidence of using alternate perspectives/lenses to enrich the interpretation and learning from the experience/incident

**Conclusions**

. Draw conclusions from the experience, making connections to relevant literature as appropriate.

**Implications:**

. Explore the implications and value of the learning to others (i.e. individuals, institutions, the academic community).

. Comment on additional areas for exploration and future directions.

A brief structured abstract using these section headings also should be submitted.

For more information, see *Wisdom of Experience* announcement in CPTL Volume 9 Issue 5.

**Wisdom of Experience Article Format Guidelines:**

. 1500-2500 word limit (somewhat flexible - contact Editor-in-Chief)

. No more than ten references (not included in word limit)

. No more than a total of two figures and/or tables (not included in word limit)

*Letter to the Editor*

**Letter to the Editor Content Guidelines:**

Articles in this category respond to articles previously published in the Journal, in order to enhance the intellectual rigor and continue scholarly dialogue in pharmacy education.

. Provide a clear, succinct critique and/or comment on an issue in an article published in the Journal in the previous 12 months

. A letter must not duplicate other material that has been published or submitted for publication

. Letter authors must disclose any competing or conflicts-of-interest; in the absence of competing or conflicts-of-interest, authors must provide a statement that they do not have any competing or conflicts-of-interest.

There is no need to provide an abstract for this article type.

For more information, see *Letter to the Editor* announcement in CPTL.

**Letter to the Editor Format Guidelines:**

. 500 word limit

. No more than six references

*Review Article*

**Methodology Matters Article Content Guidelines:**

*Methodology Matters* review articles focus on guiding readers and the academy-at-large on appropriate methodology. These critical reviews of methodology are focused towards readers without substantial training in research methods, analysis, or educational measurement. This article category
is intended to provide faculty and future author development, while being helpful and instructive for our peer-reviewers. Methodology Matters articles include the following components. [NOTE: bolded headers below must be used as the article section headers].

**My (or our) Situation (or Issue, Problem):**

- This section situates your review within a particular problem, as well as includes a poignant objective for the review-this section will set the stage for this article.

- Briefly note the importance of this topic as it relates to education scholarship.

- As appropriate, point out your expertise (e.g., Does the situation described represent questions you frequently receive? Is this something you have encountered frequently as an expert peer-reviewer?).

**Methodological Literature Review:**

- Clearly and succinctly discuss poignant literature that informs this methodology topic. Help readers to understand the basis for your upcoming recommendations.

- Make sure this review's concepts and terminology are described for readers without substantial training in research methods, analysis, or educational measurement.

**My Recommendations and their Application(s):**

- Provide clear, logical, and practical advice/recommendations.

- Connect your recommendations to the existing literature base and/or evidence

- If applicable, give your solution to the situation at beginning of this article (this also can serve as your example/application, unless you want to point out other examples in the literature)

- Describe other examples of the recommended course of action (these may not come from the pharmacy education literature, but examples from the health sciences are preferred-please keep in mind AMA-style/article length when giving examples from outside articles).

**Potential Impact:**

- Discuss benefits and limitations of your recommendations

- Describe the manner in which your recommendations could potentially change/impact educational scholarship in pharmacy

- If applicable, briefly provide any theoretical implications from your situation and recommendations

- If applicable, briefly discuss any recommendations for changes at the broader level that may avoid the potential for encountering these problems/issues or diminish their impact in the future (e.g., changes in education or practice)

- Supply a Box 1 (table) of recommended resources for interested readers to further explore.

A structured abstract using these section headings also should be submitted.

For more information, see Methodology Matters announcement in CPTL.

**Methodology Matters Review Articles Format Guidelines:**

- 7500 word limit (somewhat flexible - contact Editor-in-Chief)

- These review articles should not include any new data or data analyses
Reviews in Education

Educational Review Articles Content Guidelines:

Manuscripts in this category should summarize and build on prior literature with insights for future practice and investigations. Unless the topic is truly unique to pharmacy education, a comparison to studies in other health professions is a necessary component of the review. Authors are strongly encouraged to consult available resources related to recommended best practices. When conducting a systematic review, authors are strongly encouraged to consult the Campbell Collaboration (http://www.campbellcollaboration.org/) or the Cochrane Collaboration (http://www.cochrane.org/) for guidance on systematic review procedures and to consult appropriate reporting guidelines (e.g., PRISMA). For narrative reviews, consult appropriate guidelines, such as the RAMESES projects (http://www.ramesesproject.org). Reviews in Education include the following components: [NOTE: bolded headers below are required as the article section headers]

General considerations

- Pay attention to timing of previously conducted reviews; if a previous review has been conducted, sufficient time should have elapsed to allow for the generation of an adequate amount of new evidence by other investigators (whether evolutionary or confirmatory)

- Some areas evolve faster than others (e.g., use of technology in educational settings) and therefore may warrant more frequent reviews (i.e., a shorter review timeframe).

Background

- Provide sufficient background to situate your review (i.e., show relevance for readers)

- Include a clear, poignant objective for this review.

Methods

- Clearly describe your search process, including search terms and combinations as appropriate

- For systematic reviews, explicit criteria for including or excluding identified articles from the review should be included, as well as an explicit timeframe over which the review was conducted

- Flowcharts, such as described in systematic review reporting criteria (e.g., PRISMA), can help the reader follow your search and inclusion process

- Report your software and analysis for meta-analyses (e.g., MIX 2.0 or RevMan).

Results

- As appropriate to your objective and methods, provide quantitative- or qualitative-synthesis of data from identified articles (Do not simply restate results from those articles)

- When appropriate, your review should include discussion of relevant, related topics and concepts

- Highlight unconventional or unexpected relationships noted during your review.

Implications

- Provide clear applications for pharmacy education and implications to theory and/or future investigations from the results of the review.

- This discussion should help build a pathway from review results towards practical implications for the academy.

A structured abstract using these section headings also should be submitted.
Educational Review Articles Format Guidelines:

. 5000 word limit (somewhat flexible - contact Editor-in-Chief)

. Review articles summarize prior literature and should not include the collection or analysis of new data

. Tables, figures, and references are not included in word limit.

Commentary

Issues in Pharmacy Education Article Content Guidelines

Articles in this category are informed opinions that foster scholarly dialogue on issues, trends, or findings believed to be important in the context of pharmacy education and related areas. Descriptions of original research results and educational innovations are not accepted as a Commentary, but may be appropriate for one of the other sections of the Journal. Articles in this category include the following components: [NOTE: bolded words represent the required article section headings]

Introduction

. Explain the controversy, issue, trend, or innovation in pharmacy education

. Describe your perspective and/or provide a framework for the commentary.

. Discuss its importance for readers and the academy-at-large.

Perspective or Commentary

. Discuss your perspective, while using an informed, scholarly tone

. Provide information to support your perspective (e.g. citations, experience).

Implications

. Provide suggestions and/or implications for moving forward for the academy-at-large.

A brief structured abstract using these section headings also should be submitted.

For more information, see Commentary announcement in CPTL.

Issues in Pharmacy Education Article Format Guidelines:

. 1500 word limit (somewhat flexible - contact Editor-in-Chief)

. No more than six references (not included in word limit)

. No more than a total of two figures and/or tables (not included in word limit)

. Commentaries should not include the description or analysis of new data

Teachable Moments Matter

Teachable Moments Matter (TMM) Content Guidelines:

TMM articles are intended to be instructive for readers and the academy-at-large. A TMM article is published alongside or within one issue of the original parent Original Research Article, Case Report, or Short Communication. The Editor-in-Chief will invite individuals with appropriate expertise to write these when a commentary may offer helpful suggestions on methodology for readers and the academy-at-large. These articles are written in collaboration with the original contributor(s). Articles in this category include the following components: [NOTE: bolded words represent the required article section headings]
Background
. Identify and describe the problem and/or limitation encountered during the associated study

Impact
. Describe the impact of this problem and/or limitation on study results, analysis, and/or generalizability/interpretation

Teachable Moment
. For other researchers, describe how this problem/limitation could have been prevented or avoided

A brief structured abstract using these section headings also should be submitted.

Teachable Moments Matter (TMM) Format Guidelines:
. 1500 word limit (somewhat flexible - contact Editor-in-Chief)
. No more than six references (not included in word limit)
. No more than a total of two figures and/or tables (not included in word limit)

Before You Begin
Ethics in publishing

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

Human and animal rights

If the work involves the use of animal or human subjects, the author must 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 http://www.wma.net/en/30publications/10policies/b3/index.html; EU Directive 2010/63/EU for animal experiments http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm; Uniform Requirements for manuscripts submitted to Biomedical journals http://www.icmje.org. Authors must 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.

Conflict 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 conflicts of interest include employment, consultancies, stock ownership, honoraria, paid expert testimony, patent applications/registrations, and grants or other funding. See also https://www.elsevier.com/conflictofinterest. Further information and an example of a Conflict of Interest form can be found at: http://help.elsevier.com/app/answers/detail/a_id/286/p/7923.

Submission declaration

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

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.

Copyright

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

For Subscription articles

Upon acceptance of an article, authors will be asked to complete a 'Journal Publishing Agreement' (for more information on this and copyright, see https://www.elsevier.com/copyright). An e-mail will be sent to the corresponding author confirming receipt of the manuscript together with a 'Journal Publishing Agreement' form or a link to the online version of this agreement. Subscribers may reproduce tables of contents or prepare lists of articles including abstracts for internal circulation within their institutions. Permission of the Publisher is required for resale or distribution outside the institution and for all other derivative works, including compilations and translations (please consult https://www.elsevier.com/permissions). If excerpts from other copyrighted works are included, the author(s) must obtain written permission from the copyright owners and credit the source(s) in the article. Elsevier has preprinted forms for use by authors in these cases: please consult https://www.elsevier.com/permissions.

For Open Access articles

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

Retained author rights

As an author you (or your employer or institution) retain certain rights. For more information on author rights for: Subscription articles please see https://www.elsevier.com/journal-authors/author-rights-and-responsibilities. Open access articles please see https://www.elsevier.com/OAauthoragreement.

Role of the Funding Source

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

Funding body agreements and policies

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

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').
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.

OPEN ACCESS
This journal offers authors a choice in publishing their research:

0 Articles are freely available to both subscribers and the wider public with permitted reuse

0 An Open Access publication fee is payable by authors or their research funder

Subscription

0 Articles are made available to subscribers as well as developing countries and patient groups through our access programs

0 No Open Access publication fee

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

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

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

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.

The publication fee for this journal is $2,500, excluding taxes. Learn more about Elsevier's pricing policy: https://www.elsevier.com/openaccesspricing.

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

Submission
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 source files to a single PDF file of the article, which is used in the peer-review process. Please note that even though manuscript source files are converted to PDF files at submission for the review process, these source files are needed for further processing after acceptance. All correspondence, including notification of the Editor's decision and requests for revision, takes place by e-mail removing the need for a paper trail.

**Submit your article**

Please submit your article via http://ees.elsevier.com/cptl.

**PREPARATION**

**Double-blind review**

This journal uses double-blind review, which means that both the reviewer and author name(s) are not allowed to be revealed to one another for a manuscript under review. The identities, institutional affiliation, and location of the authors are concealed from the reviewers, and vice versa. For more information please refer to https://www.elsevier.com/reviewers/peer-review. To facilitate this, please include the following separately:

Title page (with author details): This should include the manuscript title, authors' names and affiliations (including a complete address, telephone, and e-mail address for the corresponding author) followed by an abstract, key words, disclosure statements.

Corresponding author contact information format example:

Robin M. Zavod, PhD, FAPhA  
Professor of Pharmaceutical Sciences  
Midwestern University Chicago College of Pharmacy  
555 31st Street  
Downers Grove, IL 60515  
Phone 630-515-6478  
rzavod@midwestern.edu

Blinded manuscript (no author details): The main body of the paper (including the references, figures, tables and any Acknowledgements) should not include any identifying information, such as the authors' names, affiliations, and locations.

**Use of wordprocessing software**

It is important that the file be saved in the native format of the wordprocessor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the wordprocessor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier: https://www.elsevier.com/guidepublication). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. 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 wordprocessor.

**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'.

Each manuscript category has specific section headings that were previously listed. The section headings used in the manuscript must also be used when providing the required abstract.
Appendices, Tables, and Figures

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. Each table, figure and appendix should be uploaded separately in its original format.

Essential title page information

- **Title.** Concise and informative. Titles are often used in information-retrieval systems. Avoid abbreviations and formulae where possible.

- **Author names and affiliations.** Where the family name may be ambiguous (e.g., a double name), please indicate this clearly. Present the authors' affiliation addresses (where the actual work was done) below the names. Provide the full postal address of each affiliation, including the country name and, if available, the phone number and e-mail address of each author. Do not use superscripts.

- **Corresponding author.** Clearly indicate who will handle correspondence at all stages of refereeing and publication, also post-publication. Ensure that phone numbers (with country and area code) are provided in addition to the e-mail address and the complete postal address. Contact details must be kept up to date by the corresponding author.

- **Present/permanent address.** If an author has moved since the work described in the article was done, or was visiting at the time, a 'Present address' (or 'Permanent address') may be indicated as a footnote to that author's name. The address at which the author actually did the work must be retained as the main, affiliation address. Superscript Arabic numerals are used for such footnotes.

Structured abstract

A structured abstract, by means of appropriate headings, should provide the context or background for the research and should state its purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations. Section headings are the same as within the manuscript.

**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.). In order to preserve the double blinding process, acknowledgements should not be included until after the manuscript has been peer reviewed.

**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.
Footnotes should be used sparingly. Number them consecutively throughout the article, using superscript Arabic numbers. Many wordprocessors 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. Do not include footnotes in the Reference list.

Table footnotes
Indicate each footnote in a table with a superscript lowercase letter.

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.

Elsevier Researcher Academy
Researcher Academy is a free e-learning platform designed to support early and mid-career researchers throughout their research journey. The “Learn” environment at Researcher Academy offers several interactive modules, webinars, downloadable guides and resources to guide you through the process of writing for research and going through peer review. Feel free to use these free resources to improve your submission and navigate the publication process with ease.

Language services
Please write your text in good English (American or British usage is accepted, but not a mixture of these). Authors who feel their English language manuscript may require editing to eliminate possible grammatical or spelling errors and to conform to correct scientific English may wish to use the English Language Editing service available from Elsevier's WebShop http://webshop.elsevier.com/languageediting/ or visit our customer support site https://service.elsevier.com for more information. The Editorial Office reserves the right to require authors to produce evidence (e.g., paid invoice) that this type of service was employed.

Teaching and Learning Matters (TaLM):

Articles in this category focus on describing advancements in teaching and learning practices in pharmacy education. It provides an opportunity to share, in a peer-reviewed environment, the teaching and learning techniques currently being used to advance pharmacy education. While not minimizing the importance of evidence-based teaching and student outcomes, this category is tailored to those authors whose work is in the early stages of implementation. As such, much of or even all of the evidence of the impact of the teaching and learning techniques described in manuscripts in this section of Currents in Pharmacy Teaching and Learning (CPTL) will rely on smaller cohorts of learners, critical reviews conducted by instructors and students, instructor, peer and/or student reactions to teaching initiatives, and pilot student outcome data. It is anticipated that manuscripts in this category may have no or minimal comparative controls. The niche for this category is dissemination of the everyday opportunities, risks, challenges, and rewards experienced by the authors for the benefit and growth of the CPTL readership and the profession.

The aim of this article type is to encourage sharing the wisdom that is gained through a scholarly approach to teaching. By sharing this knowledge, it is hoped that others will be (1) inspired to utilize the techniques discussed and (2) join in enhancing the scholarship by supporting the technique. In order to accomplish these goals, the scholarship must be written to a caliber that merits recognition...
and dissemination. Therefore, this article provides guidance as it relates to the expectations for manuscripts submitted under this category. Section Headers: Background, Educational; Activity, Critical Analysis of the Educational Activity.

Peer review
This journal operates a double 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.

Double-blind review
This journal uses double-blind review, which means the identities of the authors are concealed from the reviewers, and vice versa. More information is available on our website. To facilitate this, please include the following separately:

- **Title page (with author details):** This should include the title, authors' names, affiliations, acknowledgements and any Declaration of Interest statement, and a complete address for the corresponding author including an e-mail address.
- **Blinded manuscript (no author details):** The main body of the paper (including the references, figures, tables and any acknowledgements) should not include any identifying information, such as the authors' names or affiliations.

Use of word processing software
It is important that the file be saved in the native format of the word processor used. The text should be in single-column format. Keep the layout of the text as simple as possible. Most formatting codes will be removed and replaced on processing the article. In particular, do not use the word processor's options to justify text or to hyphenate words. However, do use bold face, italics, subscripts, superscripts etc. When preparing tables, if you are using a table grid, use only one grid for each individual table and not a grid for each row. If no grid is used, use tabs, not spaces, to align columns. The electronic text should be prepared in a way very similar to that of conventional manuscripts (see also the Guide to Publishing with Elsevier). Note that source files of figures, tables and text graphics will be required whether or not you embed your figures in the text. 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.

- **Conclusions**
  The main conclusions of the study may be presented in a short Conclusions section, which may stand alone or form a subsection of a Discussion or Results and Discussion section.
Appendices
If there is more than one appendix, they should be identified as A, B, etc. Formulae and equations in appendices should be given separate numbering: Eq. (A.1), Eq. (A.2), etc.; in a subsequent appendix, Eq. (B.1) and so on. Similarly for tables and figures: Table A.1; Fig. A.1, etc.

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

Ensure that the following items are present:
One author has been designated as the corresponding author with contact details:
• E-mail address
• Full postal address
• Phone numbers

All necessary files have been uploaded, and contain:
• Abstract with appropriate section headings, Keywords, Disclosure statements (title page)
• Ethics statement (approval, exempt) (manuscript text)
• All figure captions
• All tables/figures/appendices (including title, description, footnotes; each uploaded separately)

Further considerations
• Manuscript has been 'spell-checked', 'grammar-checked', and appropriate section headings used
• All identifiers (author names-initials, affiliations, and locations) have been removed from all components of the manuscript, including the file names.
• All abbreviations in text, tables, and figures are defined the first time used (text) and in the appropriate table and/or figure legends.

References are in the correct format for this journal (AMA Style)
• All references mentioned in the Reference list are cited in the text using AMA Style format, and vice versa
• Volume, issue, and page range are included for each relevant citation.
• Permission has been obtained for use of copyrighted material from other sources (including the Web)
• Color figures are clearly marked as being intended for color reproduction on the Web (free of charge) and in print, or to be reproduced in color on the Web (free of charge) and in black-and-white in print
• If only color on the Web is required, black-and-white versions of the figures are also supplied for printing purposes

For any further information please visit our customer support site at https://service.elsevier.com.

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 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. 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.
Structured abstract

A structured abstract, by means of appropriate headings, should provide the context or background for the research and should state its purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect sizes and their statistical significance, if possible), and principal conclusions. It should emphasize new and important aspects of the study or observations.

Artwork

Electronic artwork

General points

• Make sure you use uniform lettering and sizing of your original artwork.
• Embed the used fonts if the application provides that option.
• Aim to use the following fonts in your illustrations: Arial, Courier, Times New Roman, Symbol, or use fonts that look similar.
• Number the illustrations according to their sequence in the text.
• Use a logical naming convention for your artwork files.
• Provide captions to illustrations separately.
• Size the illustrations close to the desired dimensions of the printed version.
• Submit each illustration as a separate file.

A detailed guide on electronic artwork is available on our website: https://www.elsevier.com/artworkinstructions

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

Formats

If your electronic artwork is created in a Microsoft Office application (Word, PowerPoint, Excel) then please supply 'as is' in the native document format.

Regardless of the application used other than Microsoft Office, 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 all used fonts.

TIFF (or JPEG): Color or grayscale photographs (halftones), keep to a minimum of 300 dpi.

TIFF (or JPEG): Bitmapped (pure black and white pixels) line drawings, keep to a minimum of 1000 dpi.

TIFF (or JPEG): Combinations bitmapped line/halftone (color or grayscale), keep to a minimum of 500 dpi.

Please do not:

• Supply files that are optimized for screen use (e.g., GIF, BMP, PICT, WPG); these typically have a low number of pixels and limited set of colors;
• 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 on the Web (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 on the Web only. For further information on the preparation of electronic artwork, please see https://www.elsevier.com/artworkinstructions. Please note: Because
of technical complications which can arise by converting color figures to 'gray scale' (for the printed version should you not opt for color in print) please submit in addition usable black and white versions of all the color illustrations.

**Illustration Services**
Elsevier's WebShop (http://webshop.elsevier.com/illustrationservices) 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. If necessary, supply captions separately. 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. Each figure should be uploaded separately in its original format.

**Tables**
Number tables consecutively in accordance with their appearance in the text. Place footnotes to tables below the table body and indicate them with superscript lowercase letters. 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. Each table should be uploaded separately in its original format.

**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 (AMA style) 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. Access dates must be provided and must be within the year the manuscript was submitted.

**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. Access dates must be provided and must be within the year the manuscript was submitted.

**Reference style**

Text: Indicate references by (consecutive) superscript arabic numerals in the order in which they appear in the text. The numerals are to be used outside periods and commas, inside colons and semicolons. For further detail and examples you are referred to the AMA Manual of Style, A Guide for Authors and Editors, Tenth Edition, ISBN 0-978-0-19-517633-9 (see http://www.amanualofstyle.com).
List: Number the references in the list in the order in which they appear in the text.

Examples:
Reference to a journal publication:

Reference to a book:


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:
When preparing your manuscript, you will then be able to select this style using the Mendeley plug-ins for Microsoft Word or LibreOffice.

Journal abbreviations source
Journal names should be abbreviated according to the List of Title Word Abbreviations.

Data visualization
Include interactive data visualizations in your publication and let your readers interact and engage more closely with your research. Follow the instructions here to find out about available data visualization options and how to include them with your article.

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

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. 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](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.elsevier.com/locate/cptl).

**AFTER ACCEPTANCE**

**Use of the Digital Object Identifier**

The Digital Object Identifier (DOI) may be used to cite and link to electronic documents. The DOI consists of a unique alpha-numeric character string which is assigned to a document by the publisher upon the initial electronic publication. The assigned DOI never changes. Therefore, it is an ideal medium for citing a document, particularly 'Articles in press' because they have not yet received their full bibliographic information. Example of a correctly given DOI (in URL format; here an article in the journal *Physics Letters B*): [http://dx.doi.org/10.1016/j.physletb.2010.09.059](http://dx.doi.org/10.1016/j.physletb.2010.09.059)

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

**Online proof correction**

Corresponding authors will receive an e-mail with a link to our ProofCentral 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 upload all of your corrections within 48 hours. 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. Note that Elsevier may proceed with the publication of your article if no response is received.

**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.

AUTHOR INQUIRES
For inquiries relating to the submission of articles (including electronic submission) please visit this journal's homepage. For detailed instructions on the preparation of electronic artwork, please visit https://www.elsevier.com/artworkinstructions. Contact details for questions arising after acceptance of an article, especially those relating to proofs, will be provided by the publisher. You can track accepted articles at https://www.elsevier.com/trackarticle. You can also check our Author FAQs at https://www.elsevier.com/authorFAQ and/or contact Customer Support via https://service.elsevier.com.

© Copyright 2018 Elsevier | https://www.elsevier.com