

Pharmacological Reviews

Instructions to Authors



[Revised June 8, 2020]

NOTE: Information about the new manuscript submissions system is highlighted in blue.

Scope of Submitted Manuscripts

Pharmacological Reviews publishes papers that provide a comprehensive perspective of innovations in pharmacology and experimental therapeutics. High priority will be given to papers that critically examine potential novel therapeutic targets or approaches. Manuscripts should integrate work on basic and cellular pharmacology as well as physiologic aspects germane to the topic. Authors are encouraged to discuss data relevant to the clinical application of the field reviewed. Papers published in *Pharmacological Reviews* are generally invited by the Editor after consideration of recommendations from the Associate Editors. Others who have an interest in writing for *Pharmacological Reviews* are encouraged to send proposals to the Editor. See below for additional information about proposals. Articles in *Pharmacological Reviews* deal mainly with the current status of the subject under review. They are to be written clearly and concisely and should be intelligible to nonspecialists, with definitions of unfamiliar technical terms and explanations of difficult or controversial points included. At the same time, the review is to be sufficiently precise and detailed to command the attention and respect of experts in the field. Selective rather than exhaustive coverage of the literature is requested. Previous reviews of the subject and of related fields should be cited. Authors are asked to be critical of methods, results, and conclusions and to challenge accepted concepts where warranted. Conflicting points of view are to be presented objectively in good perspective. Deficiencies in the field may be pointed out and avenues for further work may be indicated. The usual length ranges between 10 and 30 printed pages, corresponding to about 30 to 90 manuscript pages. Diagrams, tables, and illustrations should be included to bring out new concepts and important relationships.

Submission of Proposals and Manuscripts

ASPET implemented a new manuscript submission system on March 18, 2020. Authors submitting a new proposal or new manuscript should follow the instructions below. Manuscripts submitted prior to March 18 will complete the peer review process in the old system. If you did not submit completed forms for a submission in the old system, contact the journal office at pharmrev@aspnet.org to get the forms.

All proposals and manuscript submissions must be made through the journal's online manuscript system at pharmrev.msubmit.net. If you are using the system for the first time, you must create an account before you can submit a paper. To do so, please click on "New users: Register here."

Proposals: A proposal is used to determine the journal's interest in the author's topic of choice and to determine if a

full review article should be developed for consideration by *Pharmacological Reviews*. Assessment of the proposal by an editor does not guarantee peer review or acceptance if the full manuscript is subsequently submitted. A proposal must include a cover letter, expanded outline, an abstract, a significance statement, and the corresponding author's CV.

Manuscripts: All authors must digitally sign the Copyright Transfer Form or Open Access License using the manuscript submission system. Submission of a manuscript amounts to assurance that it has received proper clearance from the author's company or institution, that it has not been copyrighted, published, or accepted for publication elsewhere, that it is not currently being considered for publication elsewhere, and that it will not be submitted elsewhere while under consideration by *Pharmacological Reviews*. Indicate all potential conflicts of interest.

During the manuscript submission process, the corresponding author will be asked to:

- list each author's contributions to the paper (in addition to noting that information in the manuscript itself; see Section 9 below), and
- disclose all financial conflicts.

The corresponding author is responsible for obtaining permission from the copyright owner to reproduce or modify figures and tables and to reproduce text (in whole or in part) from previous publications; permissions must allow electronic reproduction as well as print. A permission request form is available from the online Instructions to Authors. Signed permissions forms must be submitted with the manuscript as a supplemental file and be identified as to the relevant item in the manuscript (e.g., "permissions for Fig. 1"). In addition, a statement indicating that the material is being reprinted with permission must be included in the relevant figure legend or table footnote of the manuscript. Reprinted text must be enclosed in quotation marks, and the permission statement must be included as running text or indicated parenthetically.

Manuscripts must be in English, typewritten using **Arial** or **Times New Roman** fonts only, and double-spaced throughout, including references, tables, and figure legends, with at least 1 inch (25 mm) margins. Authors for whom English is not their native language are encouraged to have their manuscripts reviewed for grammar, vocabulary, syntax, and punctuation. Many English-language editing services can be found through an online search and are available for a fee. ASPET does not endorse or recommend any particular service.

Once manuscript preparation is complete, authors have the option to submit individual text and figure files or to provide a single PDF file containing the text and figures (but supplemental data in a separate file) with a file size of

less than **250 MB**. PDF preparation can be done by using Adobe Acrobat, which is available for purchase <http://adobe.com/products/main.html>. Microsoft Word also has a "Save As" feature that will allow you to save a file in PDF format. (PC versions 2007 and higher, Macintosh 2004 and higher.) Figure resolution may be reduced if this option is used. Authors are responsible for ensuring the accuracy and quality of the PDF. If submitting a single PDF:

- File size must be less than 250 MB.
- Text and figures must be in one file with figures at the end of the file.
- File must not contain supplemental data or supplemental legends. These must be uploaded separately.
- File name should be one word with no spaces and a .PDF file extension (e.g., PharmRev.pdf).
- Remove password protections from the file.
- Do not place restrictions on the extraction of content or modification of the PDF (this will disable reference extraction).

Similarity Check

Similarity Check is a multi-publisher initiative to screen published and submitted content for originality. ASPET uses iThenticate software to detect instances of overlapping and similar text in submitted manuscripts. All manuscripts considered for publication will be screened using Similarity Check and iThenticate prior to acceptance. Visit www.crossref.org/crosscheck.html for more information about Similarity Check. Plagiarism will be reported to the authors' institution(s) and funder(s).

Open Access Option

Authors have the option to publish their work under a Creative Commons Attribution license (CC-BY) or Creative Commons Attribution Noncommercial license (CC-BY-NC) for an open access fee. An Open Access License Agreement should be submitted in place of a Copyright Transfer Form. The form is available at <http://bit.ly/1TwxTD2>. Open access articles will not appear online until the open access fee has been paid through the Copyright Clearance Center's Rightslink for Open Access (ROA) system. A link to the ROA is provided from the manuscript submission system. Some funders require authors to utilize an open access option when it is available—**know your funder's requirements prior to submission**.

ASPET does not offer refunds of open access fees. If an error related to open access is identified in a published article (e.g., missing Creative Commons license, article not freely accessible, or article not deposited with PubMed Central), ASPET will correct the error.

Organization of the Manuscript

Manuscripts should contain the following sections in the order listed. Each section should begin on a new page and all pages should be numbered consecutively.

1. Title Page. This should contain the complete title of the article, the names of all authors, and the laboratory of origin. Financial support for the research should be indicated as an unnumbered footnote to the title and included with other footnotes on a separate page following the *References* section.

2. Running Title Page. The running title page should contain the following:

a) A running title, which conveys the sense of the full title (not to exceed 60 characters, including spaces and punctuation). Commonly used abbreviations (e.g., "ATP", "Ach", etc.) may be used.

b) The name, address, telephone and fax numbers, and e-mail address of the corresponding author. The e-mail address will also be used as a hypertext link in the paper. It is possible to list up to four additional co-corresponding authors on the published manuscript. In such cases, the relative roles of the co-corresponding authors need to be explained in the cover letter that accompanies submission. The additional co-corresponding author(s) should be listed on the manuscript's running title page only and not entered into the online manuscript submission system. Nonetheless, a **single** author needs to be designated at the time of submission who will be responsible for all correspondence during review and processing of the manuscript. The additional co-corresponding author(s) should be listed on the manuscript's running title page only and not entered into the online manuscript submission system.

c) The number of text pages, number of tables, figures, and references, and the number of words in the *Abstract* (each item should be placed on a separate line).

d) A list of nonstandard abbreviations used in the paper, with abbreviations listed in alphabetical order. A list of standard abbreviations is available at <http://bit.ly/2gbenCB>. The use of abbreviations should be minimized to enhance readability and comprehension of the text.

3. Abstract. An abstract of no more than 250 words must be included with the manuscript. A word is one or more characters bounded by white space. The abstract should be intelligible to the general reader without reference to the text. Reference citations are not permitted in abstracts, and nonstandard abbreviations should not be included. The abstract must be a single paragraph.

4. Significance Statement. The significance statement should succinctly explain in 1-2 sentences (80-word maximum) the relevance of the work in a broad context to a broad readership. It should identify the 2-3 most important points of the paper. A significance statement is required for all manuscripts that contain an abstract. The significance statement appears immediately after the abstract.

5. Visual Abstract. In addition to a text abstract, authors may submit a visual or graphic abstract that is intended to catch a reader's attention and provides a quick visual impression of the gist of the article. The graphic must be 440 pixels wide by 350-365 pixels tall, saved as RGB. TIFF or PDF file formats are preferred. Visual abstracts submitted in Word or PowerPoint are acceptable but should be avoided if possible. Follow the image preparation guidelines given below for figures. The visual abstract will appear below the text abstract in the abstract and HTML full-text views. A smaller version of the image, converted from the authors' file by our compositor, will appear on the table of contents.

A visual abstract should use color, be simple and clear, be entirely original (reprinted images and figures will not be accepted), and should not include an image of any person, living or dead. Trademarked items (e.g., company logos, images, and products) may not be used. The image should

be labeled "Visual Abstract," similar to labeling a figure for identification by reviewers.

6. Table of Contents. The table of contents must be identical to the headings and subheadings in the body of the manuscript and designated as I.A.I.a. The table of contents will not include fifth order or higher headings, but such headings may be used in the body of the manuscript, if necessary.

7. Body of Manuscript.

8. Acknowledgments. The *Acknowledgments* section is placed at the end of the text. Personal assistance is noted here. Financial support is acknowledged as an unnumbered footnote to the title. See Section 11, Footnotes.

9. Authorship Contributions. Each author's contributions to the manuscript as detailed on the Authorship Responsibility, Financial Disclosure, and Chemical Structure Statement Form are to be given in this section. All of the appropriate individuals must be named as authors of the work. Each of the applicable authorship categories from the form is to be listed followed by the last name of each respective author (use first initials when multiple authors share a last name). For example:

Participated in research design: Sung, Smith, Gupta, and Abel.

Conducted experiments: Sung, Smith, Gupta, J.D. White, S.T. White, and Abel.

Contributed new reagents or analytic tools: Sung, J.D. White, and S.T. White.

Performed data analysis: Sung, Gupta, J.D. White, and Abel.

Wrote or contributed to the writing of the manuscript: Gupta, J.D. White, S.T. White, and Abel.

10. References. References are cited in the text by giving the first author's name (or the first and second if they are the only authors) and the year of publication (e.g., Ruth and Gehrig, 1929; McCarthy, 1952; or Kennedy et al., 1960). In the reference list, references should be arranged alphabetically by author and not numbered. Names of all authors should be given in the reference list. If reference is made to more than one publication by the same author(s) in the same year, suffixes (a, b, c, etc.) should be added to the year in the text citation and in the references list. Journal titles should be abbreviated as given in the [National Center for Biotechnology Information U.S. National Library of Medicine catalog](#). References to personal communications, unpublished observations, preprints, and papers submitted for publication are given in parentheses at the appropriate location in the text, not in the list of references. Preprints should be used with discretion. Only papers that have been officially accepted for publication may be cited as "in press" in the reference list. Authors are responsible for the accuracy of references. The format for journal article, chapter, book, and publish-ahead-of-print journal article references is as follows:

Fricks IP, Maddileti S, Carter SRL, Lazarowski ER, Nicholas RA, Jacobson KA, and Harden TK (2008) UDP is a competitive antagonist at the human P2Y₁₄ receptor. *J Pharmacol Exp Ther* **325**: 588-594.

Kappas A (2002) Development of heme oxygenase inhibitors for the prevention of severe jaundice in infants: studies from laboratory bench to newborn nursery, in *Heme Oxygenase in Biology and Medicine* (Abraham NG, Alam J, and Nath KA eds)

pp 3-17, Kluwer Academic/Plenum Publishers, New York.

Wilson JH and Hunt T (2008) *Molecular Biology of the Cell: A Problems Approach*, 5th ed. Garland Science, New York.

Hanada K, Ikemi Y, Kukita K, Mihara K, and Ogata H (2008) Stereoselective first-pass metabolism of verapamil in the small intestine and liver in rats. *Drug Metab Dispos* doi: 10.1124/dmd.107.020339.

11. Footnotes. Footnotes should be listed on a separate page and presented in the following order:

a) Unnumbered footnote providing the source of financial support. This information must be in the form of a sentence with the name of the funding agency written out in full. Research funded by the NIH, the Wellcome Trust, and UK Research and Innovation and its agencies **MUST** include the grant number in square brackets:

This work was supported by the National Institutes of Health National Institute of Diabetes and Digestive and Kidney Diseases [Grant XXXX].

Multiple grant numbers should be separated by a comma and a space. Where the research was supported by more than one agency, the different agencies should be separated by a semi-colon with "and" before the final funder:

This work was supported by the Wellcome Trust [Grants XXX, YYY]; the National Institutes of Health National Cancer Institute [Grants ZZZ, AAA]; and UK Research and Innovation [Grant BBB].

Funding from these agencies may not be cited without a grant number.

Articles funded by the NIH, the Wellcome Trust, and UK Research and Innovation will be deposited with PubMed Central ONLY when such funding is cited.

When one or more authors are NIH employees, the following footnote must be included:

This research was supported [in part] by the Intramural Research Program of the National Institutes of Health [name of institute].

b) Unnumbered footnote providing thesis information, citation of meeting abstracts where the work was previously presented, etc.

c) The name and full address (with street address or P.O. box and postal code) and e-mail address of person to receive reprint requests.

d) Numbered footnotes, using superscript numbers, beginning with those (if any) to authors' names and listed in order of appearance.

12. Tables. Each table must be on a separate page. The tables are numbered consecutively with Arabic numerals and designed to fit the column or page size of the journal. A brief descriptive title is provided at the top of each table. General statements about the table follow the title in paragraph form. Footnotes to tables are referenced by italicized, lower case, superscript letters (^a, ^b, ^c, etc.) and defined beneath the table. The acceptable format for tables is Word.

13. Figure Legends. Figures are numbered consecutively with Arabic numerals, with each one displayed on a separate page. Legends must provide sufficient explanation for the reader to understand the figure independent of the text. Legends may appear directly

underneath figures during initial PDF submission to facilitate review, but must be provided as a separate section (as part of the text file) upon acceptance.

14. Figures. There is no charge for using color figures.

Image Manipulation: Figures in manuscripts considered for acceptance will be examined for evidence of manipulation. While certain modifications of primary data are often needed for clarity and/or brevity, image manipulation for deceptive purposes, to unfairly enhance or eliminate or otherwise obscure data, are grounds for rejection and may constitute misconduct. Inappropriate image manipulation will result in rejection of the manuscript. Suspected misconduct may be reported to the authors' institution(s) and funder(s). No specific feature within an image may be enhanced, obscured, moved, removed, or introduced. The groupings of images from different parts of the same gel, or from different gels, fields, or exposures must be made explicit by the arrangement of the figure (e.g., using dividing lines or ensuring white space separates lanes from different gels) and in the text of the figure legend. Adjustments of brightness, contrast, or color balance are acceptable if they are applied to every pixel in the image and as long as they do not obscure, eliminate, or misrepresent any information present in the original, including the background. Nonlinear adjustments (e.g., changes to gamma settings) must be disclosed in the figure legend. This policy is consistent with many leading peer-reviewed journals publishing biological data. For more detailed information, see "Guidelines for Best Practices in Image Processing" at <http://bit.ly/2gbA5Sf> from the Office of Research Integrity. [With thanks to Rockefeller Univ. Press.]

Figure Preparation: If your manuscript is accepted for publication, you will be required to provide source files prepared according to the following instructions. To publish the figures in your article with the highest quality, it is important to submit digital art that conforms to the appropriate resolution, size, color mode, and file format. Doing so will help to avoid delays in publication and maximize the quality of images. These instructions are available as a PDF file with screen shots and example images at <http://bit.ly/2h3l19s>.

Sizing and Preparation: Submit figures at their final publication size; do not scale figures (printed 1:1). Most figures should fit within a single column. See the table below for allowable widths. The height of all figures must be ≤ 9.375 inches / 24 cm / 56.5 picas.

Columns	Inches	Centimeters	Picas
1	≤ 3.5	≤ 8.9	≤ 21
2	≤ 7.125	≤ 18.2	≤ 43

All panels of a multipart figure should be provided in the same file. Identify figure panels with capital letters. If symbols are not explained on the face of the figure, only standard print characters may be used. Include figure titles in the legend and not on the figure itself. Photomicrographs and electron micrographs must be labeled with a magnification calibration in micrometers and Angstrom units. A statement concerning the magnification must appear in the figure legend.

Labeling and Font Usage: Please use the same font for all figures in your manuscript, and use a standard font such as Arial, Helvetica, Times, Symbol, Mathematical Pi, and

European Pi. Do not use varying letter type sizes within a single figure; use the same size or similar sizes throughout. The preferred font size is 8 points; the minimum font size is 6 points. Embed all fonts used in vector files. In Illustrator, either convert text to outlines or check the box that reads **Embed Fonts** when saving the file.

Number each figure at the bottom, outside the image area. Do not put a box around the figure. Legends may appear directly underneath figures during initial PDF submission to facilitate review, but must be provided as a separate section (as part of the text file) upon acceptance.

Two Categories of Digital Artwork:

- **Raster Images** (i.e., pixel-based, also called mapped images; TIF files support only raster data) or
- **Vector Images** (i.e., object-based; EPS, AI, and PDF files support both vector and raster data).

Vector images are preferred because they have the highest quality and produce the best results in publication. JPEG and GIF are not recommended formats for providing figures.

Resolution and Raster Images: Low-resolution images are one of the leading causes of art resubmission and schedule delays. Submitted raster (i.e., pixel-based) images must meet the minimum resolution requirements. Raster images can be classified as monochrome (line-art), halftone, and or combination halftone. TIFF, EPS, PDF, or PNG file formats are preferred.

- **Monochrome (1-bit) images (line-art):** Common examples are graphs and charts made of solid black and white, with no gray values. The suggested minimum resolution for this type of image is 1,000 ppi at publication size.
- **Combination Halftones:** Common examples are color or grayscale figures containing halftone and line art elements. The suggested minimum resolution for this type of image is 600 ppi at publication size.
- **Halftones:** Common examples are color or grayscale figures containing pictures only, with no text or line art. The suggested minimum resolution for this type of image is 300 ppi at publication size.

Color Mode: All color image files must be submitted in their original RGB color. To ensure accurate color in publication when you work with raster images, it is best to use an application that supports ICC profiles, such as Adobe Photoshop. Whatever application you use, be sure to always embed the originating ICC profile when saving the file. This is usually the default behavior. The box to embed the ICC profile is checked by default. Just be sure to leave the box checked. If you are using a different application, please check the documentation to be sure you are properly embedding the ICC profiles.

Vector Graphics: Vector images are typically generated using drawing or illustration programs (e.g., Adobe Illustrator) and are composed of mathematically defined geometric shapes—lines, objects, and fills. Vector graphics are resolution independent and can be enlarged to any size without quality loss.

- **Vector line art:** Common examples are graphs and charts created in illustration programs. It is preferable to have these saved as EPS files, with all fonts embedded or converted to outlines, and graph lines at least 0.25 points thick.

- **Combination line/halftone:** Common examples are color or grayscale figures containing halftone and line art elements. The halftone elements should be processed in Photoshop and the line elements in Illustrator, and the two elements from the two applications should be combined in Illustrator. It is preferable to have these saved as EPS files, with all fonts embedded or converted to outlines, and graph lines at least 0.25 points thick.

Microsoft Office: Figures submitted in Word or PowerPoint are acceptable but should be avoided if possible. Excel files cannot be used. If MS Office is your only choice, please follow these general rules to ensure that the file is properly prepared:

1. Do not use pattern or textured fills in graphics. Instead, use solid fills or percentage screens: these will be effectively maintained as vector data during file conversion. **Note:** A 20% difference in percent screens is most effective for differentiation.
2. Artwork placed within an MS Office application should be of acceptable minimum resolution for print production: 300 ppi for halftones, 600-900 ppi for combinations, and 1,000-1,200 ppi for line art.
3. When inserting pictures/images into files, be sure to select "insert" rather than "insert link." The latter will not properly embed the high-resolution image into the MS Office file.
4. Always embed fonts in your documents. Follow these guidelines for embedding fonts in MS Office documents:
 - a. From the file menu, select Save As...
 - b. From the **Tools** menu, select **Save Options...**, then check the **Embed Fonts in the file** box.

Authors who do not comply with these guidelines will be asked to resubmit their figures in a print-quality format, which may delay publication.

15. Cover Images. The image that appears on the journal's cover is taken from an article in the issue. Authors may submit for consideration by the editor a separate cover image based on their article. A composite of multiple images from the article is permissible. All submitted images must be in color. Previously published covers are in the journal's [archive of all online content](#).

The ideal image is wider than it is high and no larger than 6.5 inches wide by 5.5 inches high. Submissions should be of a similar width-to-height ratio. Submit the image as a .tiff or .eps file at a resolution of at least at 600 DPI.

Cover art created by a nonauthor must be submitted with a signed copyright transfer form, and an acknowledgment to the creator should be included in the legend.

Submit the cover image file through the [online submission system](#) when invited to submit a revised manuscript or source files. Authors will be notified if their cover image has been selected for the cover.

16. Supplemental Data. Materials that cannot be presented in print may be published online as supplemental data. These materials are subject to the same review process as the rest of the manuscript. Supplemental data must be cited in the text.

Acceptable formats for supplemental data include Adobe PDF, Microsoft AVI video, MPEG movie, QuickTime video, and PDB files. Large data sets may be submitted in other file formats as necessary. Manuscripts including pharmacokinetic or pharmacodynamic simulations and

modeling should be accompanied by a representative model output file in Excel or another compatible format that is widely accessible. Authors are encouraged to also upload CMPX files together with the compound summary table and compound file, where applicable. Files may be compressed using the ZIP® compression utility. Multiple still images, tables, and text must be combined into a single PDF file.

Except for videos and large data sets, supplemental data must be labeled with the article's authors and title and the journal title. This is to identify the source article of the supplemental data should a reader print the file. The label should be placed at the top of the page. Data supplement pages will be neither edited nor formatted by ASPET. They should be prepared with the reader in mind. For example, legends should appear below figures instead of on separate pages. Text may be single spaced and put in columns for easier reading.

Videos should be submitted in QuickTime 3.0 or higher format and may be prepared on either a PC or Mac computer. All videos should be submitted at the desired reproduction size and length. The legend must be included as a separate file. To avoid excessive delays in downloading the files, videos must be no more than 5 MB in size and 30 to 60 seconds in length. Authors are encouraged to use QuickTime's "compress" option when preparing files to help control file size. Additionally, cropping frames and image sizes can significantly reduce file sizes. Files submitted can be looped to play more than once, provided file size does not become excessive. Authors will be notified if problems exist with videos as submitted and will be asked to modify them. No editing will be done to the videos at the editorial office. All changes are the responsibility of the author.

Drugs

Generic drug names are used in text, tables, and figures. Trade names may be given in parentheses following the first text reference, but should not appear in titles, figures, or tables. Whereas trade names are capitalized, generic or chemical names are not. The chemical structure of new compounds (or a citation to the published structure) must be given. The form used in calculating concentrations (e.g., base or salt) must be indicated.

Receptor Nomenclature

The nomenclature used to identify receptors and ion channels should conform to guidelines of the Committee on Receptor Nomenclature and Drug Classification of the International Union of Basic and Clinical Pharmacology (NC-IUPHAR). These are published periodically in *Pharmacological Reviews* and are accessible at www.iuphar-db.org/nomenclature.html.

Revised Manuscripts

Revised manuscripts must be submitted within the designated time and must contain an itemized list of all changes made, or a rebuttal, in response to each of the reviewers' suggestions. Address the format deficiencies noted in the decision letter. Make sure figures conform to specifications (see Figures) and the Abstract metadata box is updated, with special characters coded. Publication of accepted papers will be delayed pending correction of any outstanding deficiencies.

After Acceptance

Authors will receive an e-mail message with a username and password to access their page proofs online. Complete instructions will be included with the page proofs. Authors will be billed for substantial changes to page proofs, which must be returned within 48 hours after receipt. In exceptional cases, a "Note added in proof" may be published with the Editor's approval. Authors of published reviews receive jointly up to 100 reprints free of charge. A link to an online reprint order form for additional reprints will be sent with the page proofs.

Submission Checklist

- ___ Letter of submission
- ___ Running title page includes the number of text pages, tables, figures, and references, and the number of words in the *Abstract*
- ___ Manuscript double spaced throughout including references, figure legends, and tables
- ___ References checked for accuracy