Medicinal Chemistry Research

Instructions for Authors

1. General information

Medicinal Chemistry Research is a journal for the prompt disclosure of novel experimental achievements in many facets of drug design, drug discovery, and the elucidation of mechanisms of action of biologically active compounds. Articles are sought which emphasize research in chemical biological relationships, especially with respect to: structure-activity relationships, investigations of biochemical and pharmacological targets of drug action, and correlations of structures with the mode of action of biologically active compounds. Studies will be welcomed that increase our understanding of biochemical interactions between drug molecules, ions, free radicals, and sterically important sections of macromolecular targets. The Journal is also dedicated to medicinal plants and to bioactive natural products of plant, fungal, mammalian, and aquatic origin. The Journal publishes original contributions in the following major areas:

- Design, synthesis, and structure-activity relationships of bioactive compounds
- Docking, molecular modeling, and computational studies of bioactive interactions
- Characterization of active ingredients of medicinal plants and identification of bioactivity in plant extracts
- Identification of targets and mechanism of activity of bioactive compounds
- Chemistry and biochemistry of bioactive natural products of plant origin
- Critical reviews of the historical, clinical, and legal status of medicinal agents, and accounts on topical issues.

Contributions reporting the following are not normally considered for publication:

- Biological activity on crude extracts that have not been characterized by analysis of their secondary metabolites (HPLC, ^{1}H and ^{13}C NMR including 2D NMR).
- Unexceptional and predictable bioactivity (e.g. antioxidant properties of phenolic or antibacterial activity of essential oils or antioxidant properties of metals such as iron, copper, etc.).
- Uncritical ethnopharmacological investigations, where a list of plants and their use are simply reported.
- Synthetic work in which the spectroscopic characterization is not complete (e.g., ^{1}H and ^{13}C NMR, HRMS, CHN, UV, IR, etc.).
- Computational work that simply discusses the docking, molecular modeling, QSAR, SAR, and computational studies of bioactive interactions without validation of the method (with experimental data).
- Biological activity that is low and insufficient to generate meaningful structure activity relationship.

Violation of any of the following rules will result in an immediate rejection:

RULE 1: The manuscript does not fall into any of the areas of interest of the Journal.
RULE 2: The manuscript is too preliminary (e.g., data without comparison to a reference, or without a positive control).
RULE 3: The botanical source is not clearly identified, authenticated, or documented (voucher specimen).
RULE 4: The manuscript is too focused on a non-chemical subject (e.g., pharmacology, analytical studies of active ingredients, analytical studies of drug concentrations (ADME is suitable), etc.
RULE 5: Manuscripts that simply discuss antioxidant properties of phenols or other compounds known to possess antioxidant effects.

RULE 6: Computer QSAR/modeling manuscripts that lack experimental biological validation of the proposed model(s).
RULE 7: The manuscript does not follow the formatting provided in this document.
RULE 8: The manuscripts contains poor English or difficult to read language.

2. General Considerations and types of manuscripts

Authors are strongly encouraged to provide their manuscript in an electronic format. The text must be in a single-column format and lines with double space. Use plain font 12 point Times New Roman and symbols (use internationally accepted signs and symbols for units, SI units). Use the automatic page numbering function to number all the pages. Ensure that all special characters are presented in the body of the text and do not use graphics. Abbreviations, except for very common ones, must be defined the first time they are used and a list supplied with the manuscript.

Using clear and concise English will help the editors and the reviewers concentrate on the scientific merit of the manuscript and thus smooth the peer review process. We reject manuscripts with good science that are poorly written.

The text of a research manuscript should be divided into the following sections: **Introduction**, **Results and Discussion**, **Conclusions**, **Materials and Methods/Experimental**, **Acknowledgements** (Funding), **Conflict of Interest**, and **References** as appropriate for the specific manuscript type. Tables, figures, and schemes should be embedded in the text or be included right after the references on separate pages (one each per page). Do not upload tables, figures, and schemes that are to be published in the manuscript into the electronic supplementary material. Authors are encouraged to provide supplementary material to keep the manuscript to a reasonable length appropriate for the specific manuscript type.

Types of manuscript accepted include comments, reviews, brief reports, and original research articles.

2.1. Guidelines for comments

Comments are normally by invitation only. Unsolicited comment articles are rarely considered, but if you wish to enquire further about the suitability of your article, you can email Dr. Hans Detlef Klueber (detlef.klueber@springer.com).

Comments are short focused articles or viewpoints that are usually invited by the journal. These articles are generally peer-reviewed in consultation with the journal's Editorial Board. A comment article can be editorial in nature discussing new topics or new technologies in medicinal chemistry research and can also be used to highlight one or more exciting research articles recently published in Med. Chem. Res.

Comments should be less than 3,000 words with less than 15 references, preferably <5 references. No abstract or graphical abstract is needed. Supplementary materials are allowed.

2.2. Guidelines for review articles

Review articles are peer-reviewed articles covering important topic areas that are of significant interest to the broad community of scientists working in drug design, discovery, and development. They are typically 10-20 pages in length. We also welcome shorter, mini-review style articles under this article type that cover new drugs recently developed and tested in clinical trials and/or received regulatory approval.

Review articles do not need to be comprehensive and should focus on important drug targets, mechanism of action, and/or important structure-activity relationship findings and key physicochemical/pharmaceutical/DMPK properties that made the molecule into a drug. Authors should summarize important findings rather than reiterating details published in the primary literature. Whenever possible, authors should make their own summary figures instead of reusing multiple figures from the primary literature. If reusing or simply adapting figures already published, authors need to obtain permission from the copy right holders and reference accordingly.

Authors should include balanced coverage of the field reviewed and not just their own research. The authors are encouraged to incorporate their own perspectives and do their own analysis of data published. In the final section, the authors should discuss future directions and trends where appropriate.

2.3. Guidelines for brief reports

Brief reports are peer-reviewed short papers that present original and significant results in drug design, discovery, and development for rapid dissemination or short notes that present technical developments and innovations in the use of new technologies such as artificial intelligence, machine learning, high throughput experimentation, flow chemistry, and software to advance drug discovery and development.

Brief reports are limited to 6 pages in length. The paper should contain an abstract, graphical abstract, main body and references, and contain no more than 6 figures, schemes, or tables, combined. The abstract is limited to 150 words. The paper may not need an experimental section but details about compound characterization and purity confirmation can be placed in a supporting document.

2.4. Guidelines for original research articles

Original research articles are peer-reviewed full papers that present original and significant results in drug design, discovery, and development with an experimental section. There are no page limits, although most original research articles would have around 8-15 journal pages.

The text of an original research article should be divided into the following sections: Introduction, Results and Discussion, Conclusions, Materials and Methods/Experimental, Acknowledgements (Funding), Conflict of Interest, and References. Tables, figures, and schemes should be embedded in the text or be included right after the references on separate pages (one each per page). The authors should limit the number of schemes/figures/tables to a total of 10 or less in the manuscript.

2.5. Manuscript requirements at a glance

Article type	Brief description	Word count/ # print pages/ # illustrations	Abstract length	Graphical abstract	# Keywords	# references
1. Comments	• Short focused comments or Opinion pieces • By invitation only • Editorial in nature	<3,000 words ≤6 print pages With or without figures +schemes +tables	NOT NEEDED	NOT NEEDED	Optional	≤15, preferably <5
2. Reviews	• Broad topic areas in drug design, discovery, and development • Target focused • Drug/SAR focused	~5,000 -10,000 words ~10-20 print pages ~10 figures +schemes +tables, combined	≤250 words	YES	4-6	~100-200
3. Brief Reports	• Short papers w/o experimental or • Technical Notes with experimental	<3,000 words ≤6 print pages ≤6 figures +schemes +tables, combined	≤150 words	YES	4-6	≤30
4. Original Research Articles	• Full papers with experimental	~5,000 -10,000 words ~10-20 print pages ~10 figures +schemes +tables, combined	≤250 words	YES	4-6	~50

3. Manuscript Organization

3.1. Title Page. A concise and informative title should appear on a separate page and avoid abbreviations and formulas, and followed by the authors' first name, middle initial(s) and last name. Each name is followed by the digit(s) of the author's affiliation in superscript. For example:

Michael G. Mueller[1,2] ·Gregory C. Vain[1] ·Alexander B. Smith[2] ·Diamond A. Club[2]

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The affiliation list follows the author names and is separated from the author names by a blank line. It lists all affiliations within the author group. Each affiliation starts with a superscript number, which corresponds to the digit from the respective author names. Each subsequent affiliation will be separated by a blank line.

Each corresponding author's name should be clearly indicated and preceded by an envelope icon (✉) and the e-mail address should be indented by 5 mm. There is no need to supply e-mail addresses for authors who are not corresponding on the title page

Corresponding author(s):

✉ Michael G. Mueller
michael@abcpharm.com

✉ Diamond A. Club
diamond@xyz.edu

3.2. Abstract. This should be presented as one paragraph detailing the purpose, experimental results and major conclusions, in a finding oriented format. This must be on the second page and is limited to 250, ideally less than 150 words. The abstract should not contain any undefined abbreviations or unspecified references.

Graphical Abstract. The author(s) are strongly encouraged to provide a graphical abstract that is a single schematic image which visually represents the main findings of the article, allowing readers to easily capture the content of the article at a single glance. The graphical abstract must meet the same quality and permissions standards as any other figure in the article. A caption is not needed, while compound numbers can be given in the graphical abstract. The use of color is encouraged and there is no charge for the graphical abstract. The graphical abstract should be legible at a size of 5 × 3 inches (130 × 75 mm, w × h)) using a regular screen resolution of 96 dpi. Graphical abstracts can be selected as the front cover image.

> **Cover Image.** Authors are encouraged to submit a high resolution image of their graphical abstract as a separate file for consideration as a cover image at the revision/proofing stage. The image file should be created at publication size: 8 × 4.8 in (200 × 120 mm, w × h) at a resolution of at least 300 dpi in uncompressed JPEG, TIFF, PNG, PSD, AI, EPS, or PDF format.

Immediately after the abstract paragraph/graphical abstract, 4 to 6 keywords, should be provided for indexing purposes under the heading Keywords.

3.3. Introduction. The manuscript should start with an introduction where the rationale and aims of the research are discussed. Be sure to include and reference similar investigations in support of the work.

3.4. Results and Discussion. This section should concisely present the chemistry and medicinal/biological results. Tables, figures, and schemes help to present the experimental data and design to maximize the comprehension and clarity of the results. The discussion should interpret the results, and significantly analyze the data.

3.5. Conclusion. This is an optional section where authors can highlight their results.

3.6. Experimental/Material and Methods. The author(s) are encouraged to be as concise as possible in the experimental description. Specific details about instruments used and sources of the reagents used should be incorporated in the text headed by the word "experimental." In a separate paragraph experimental biological material should be used to describe the work and may include herbarium, voucher number, authenticated by, date of collection or cultivation, etc. Scientific names should be in italics (in manuscripts reporting natural product isolation) and the description of the isolation process, as well as other relevant data, should be provided in one paragraph. For synthetic papers all methodology used must be described.

The characterization of compounds should be presented in a separate paragraph. Generally, a listing of ^{1}H or ^{13}C NMR peaks is sufficient. However, when the NMR data is used as the basis for structural identification, the peaks from the ^{13}C NMR must be assigned to the corresponding carbon atom (i.e, if C-1 (carbon in position #1) has a NMR peak at 170.1 then the data should show that C-1 has the 170.1 peak (one decimal: do not use a range). There are a couple of ways to represent this information: ^{13}C-NMR (DMSO-d_6): 170.1 (C=O) or 170.1 (C-1)).

Under the material and methods section - compounds should be identified by IUPAC nomenclature and written using the following example:
*Compound (*or IUPAC name*)* (3a): Yellowish needles (MeOH) (This compound was prepared by.... It was obtained as a white solid, color, yield, etc); mp 85-86 °C; $[\alpha]^{25}_{D}$ + 92 (*c* 0.003, Py); UV (EtOH) λ_{max} (log ε) 240 (4.15), 278 (4.30) nm; IR (KBr) ν_{max} 3382, 2877, 2925, 1736, 1701, 1630, 1606, 1517, 1445, 1374, 1276, 1165, 1117, 1070 cm^{-1}; ^{1}H NMR ($CDCl_3$, 500 MHz) δ 7.84 (2H, d, *J* = 7.4 Hz, H-2′, H-6′), 6.78 (2H, d, *J* = 7.4 Hz, H-3′, H-5′), 5.15 (1H, d, *J* = 4.4 Hz, H-1), 4.60 (1H, dd, *J* = 2.4, 12.0 Hz, H-6a), 4.50 (1H, dd, *J* = 5.0, 12.0 Hz, H-6b), 4.38 (1H, dd, *J* = 1.2, 4.4 Hz, H-2), 4.24 (1H, dd, *J* = 1.6, 10.0 Hz, H-4), 3.92 (1H, ddd, *J* = 5.2, 7.4, 10.0 Hz, H-5), 3.49 (1H, dq, *J* = 6.8, 9.0 Hz, O-C<u>H</u>$_2$CH$_3$), 3.68 (1H, dq, *J* = 6.8, 9.0 Hz, O-C<u>H</u>$_2$CH$_3$), 1.12 (3H, t, *J* = 6.8, Hz, O-CH$_2$C<u>H</u>$_3$); ^{13}C NMR ($CDCl_3$, 125 MHz) δ 205.4 (C, C-3), 166.6 (C, <u>C</u>OBz), 161.6 (C, C-4′), 131.8 (CH, C-2′, C-6′), 120.8 (C, C-1′), 115.2 (CH, C-3′, -5′), 100.8 (CH, C-1), 74.7 (CH, C-2), 73.2 (CH, C-5), 72.7 (CH, C-4), 64.3 (CH_2, O-<u>C</u>H$_2$CH$_3$), 63.4 (CH_2, C-6), 14.5 (CH_3, O-CH$_2$<u>C</u>H$_3$); EIMS *m/z* 326 $[M]^+$ (5), 308 (100); HRMS (ESI^+) *m/z* calcd for $C_{15}H_{18}O_8Na$ 349.0899, found 349.0898 ($M+Na^+$); Anal. Calcd. for $C_{15}H_{15}N_5$: C, 67.90; H, 5.70; N, 26.40. Found: C, 67.84; H, 5.39; N, 26.12.

A paragraph with the pharmacological assays must be described in sufficient detail; positive and negative controls must be evaluated at the same concentration(s) to compare the effectiveness of the test compounds. With respect to the biological data, the concentration and doses must be presented as molar units, and presented as $IC_{50,}$ $EC_{50,}$ etc. References to statistical methods of calculation must be included in the manuscript. Also, the tested compounds, regardless if they are isolated as secondary metabolites,

synthesized or purchased, must range between 95-100 % purity (TLC is not a reliable procedure for analysis). Materials and methods must include statements of human and animal welfare. Generic names of drugs and pesticides are preferred; if trade names are used, the generic name should also be provided.

Theoretical calculations (docking, molecular modeling, QSAR, SAR, computational studies, etc.), software used, etc. should be included in the material and methods section. All models must be validated with biological experimental data.

3.7. Author Information. Provide ORCID and email address of the corresponding author(s), which can be follow by ORCID and email addresses of other authors (optional).

3.8. Acknowledgments. (Funding information) Acknowledgment of people, grants, funds, etc. should be placed in a separate section before the references. The complete names of funding organizations should be provided. In addition, please provide funding information, which includes a separate step in the submission process of the peer-review system. Funding providers should be selected from the standardized list provided during the submission of the manuscript. If the funding institution is not listed, it can be entered as free text. Funding information will be published as a searchable metadata for all accepted articles. Even so, acknowledgements of funding support should be described within the paper.

3.9. Conflict of Interest. Authors must disclose all relationships or interests that could have direct or potential influence or impart bias on the work. Although an author may not feel there is any conflict, disclosure of relationships and interests provides a more complete and transparent process, leading to an accurate and objective assessment of the work. Awareness of real or perceived conflicts of interest is a perspective to which readers are entitled. This is not meant to imply that a financial relationship with an organization that sponsored the research or compensation received for consultancy work is inappropriate. Examples of potential conflicts of interests **that are directly or indirectly related to the research** may include but are not limited to the following:

- Research grants from funding agencies (please give the grant agency and the grant number)
- Honoraria for speaking at symposia
- Financial support for attending symposia
- Financial support for educational programs
- Employment or consultation
- Support from a project sponsor
- Position on an advisory board or a board of directors or other type of management relationships
- Multiple affiliations (the affiliation where the work is performed is what should be listed)
- Financial relationships (for example equity ownership or investment interest)
- Intellectual property rights (e.g. patents, copyrights and royalties from such rights)
- Holdings of spouse and/or children that may have financial interest in the work

In addition, interests that go beyond financial interests and compensation (non-financial interests) that may be important to readers should be disclosed. These may include but are not limited to personal relationships or competing interests directly or indirectly tied to this research, or professional interests or personal beliefs that may influence your research.

The corresponding author collects the conflict of interest disclosure forms from all authors. In author collaborations, where formal agreements for representation allow it, it is sufficient for the corresponding author to sign the disclosure form on behalf of all authors. The corresponding author will include a summary

statement in the text of the manuscript, in a separate section before the reference list, which reflects what is recorded in the potential conflict of interest disclosure form.

Conflict of Interest: Author A has received research grants from Company A. Author B has received a speaker honorarium from Company X and owns stock in Company Y. Author C is a member of committee Z.

If no conflict exists, the authors should state: Conflict of Interest: The authors declare that they have no conflict of interest.

3.10. References. Citations appear in the text in a consecutive order as numbers in square brackets like [1-3, 5]. The list of references should only include works that are cited in the text and that have been published or accepted for publication. Personal communications and unpublished works should only be mentioned in the text. Do not use footnotes or endnotes as a substitute for a reference list. References should follow Vancouver reference style. For authors using EndNote, Springer provides an output style that supports the formatting of in-text citations and reference list (SpringerVancouverNumber.ens).

If available, please always include DOIs as full DOI links in your reference list (e.g. "https://doi.org/abc").

For Journal articles:

1. Obeng S, Kamble SH, Reeves ME, Restrepo LF, Patel A, Behnke M et al. Investigation of the adrenergic and opioid binding affinities, metabolic stability, plasma protein binding properties, and functional effects of selected indole-based kratom alkaloids. J Med Chem. 2020;63(1):433-9. https://doi.org/10.1021/acs.jmedchem.9b01465.
2. Anifowose A, Agbowuro AA, Yang X, Wang B. Anticancer strategies by upregulating p53 through inhibition of its ubiquitination by MDM2. Med Chem Res. 2020;29(7):1105-21. https://doi.org/10.1007/s00044-020-02574-9.

Articles published online through early access by DOI:

3. Klus NJ, Kapadia K, McDonald P, Roy A, Frankowski KJ, Muma NA et al. Discovery of sultam-containing small-molecule disruptors of the huntingtin–calmodulin protein–protein interaction. Med Chem Res. 2020:[Online first article]. https://doi.org/10.1007/s00044-020-02583-8.

Books:

4. Youssef JA, Badr MZ. Peroxisome Proliferator-Activated Receptors: Discovery and Recent Advances. New York: Humana Press, Springer; 2013.

Book chapters:

5. Gogineni V, Leon F, Avery BA, McCurdy CR, Cutler SJ. Phytochemistry of Mitragyna speciosa. In: Raffa RB, editor. Kratom and Other Mitragynines: the Chemistry and Pharmacology of Opioids from a Non-Opium Source. Boca Raton: CRC press; 2015. p. 77-94.

Online documents:

6. National Institute on Drug Abuse Press Office. Teen Prescription Opioid Abuse, Cigarette, and Alcohol Use Trends Down. 2014. http://www.drugabuse.gov/news-events/news-releases/2014/12/teen-prescription-opioid-abuse-cigarette-alcohol-use-trends-down. Accessed May 19 2020.

Dissertations:

7. Abed DA. Structure-activity relationships of small molecule direct inhibitors of Keap1-Nrf2 interaction [Dissertation]: Rutgers, The State University of New Jersey; 2018.

Patents:

8. Hu L, Sahota A, inventors; Cystine diamide analogs for the prevention of cystine stone formation in cystinuria patient. US9428453. 2016 August 30.

3.11. Tables. All tables are to be numbered using Arabic numerals. Tables should always be cited in the text and in consecutive numerical order. For each table, please supply a table caption (title) explaining the components of the table. Identify any previously published material by giving the original source in the form of a reference at the end of the table caption. Footnotes to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data) and included beneath the table body.

3.12. Schemes and Figures. The use of illustrations to clarify information is encouraged. Essential illustrations should be inserted into the main body whenever possible. Additional illustrations can be added to Electronic Supplementary Material. For effective use of journal space, the width of illustrations, when printed, will usually be 3.3 inches (84 mm, 1 column, preferred) or 5.1 inches (130 mm, 1.5 columns) or 6.85 in (174 mm, 2 columns) with a maximum length of 9.1 inches (230 mm). All figures and/or schemes are to be numbered using Arabic numerals. Figures and/or schemes should always be cited in text in consecutive numerical order. Figure or scheme parts should be denoted by uppercase letters (A, B, C, etc.). Figures in the Electronic Supplementary Material should, however, be numbered separately with S1, S2, etc. Each figure should have a concise caption describing accurately what the figure depicts. Include the captions in the text file of the manuscript, not in the figure file. Figure captions begin with the term Fig. in bold type, followed by the figure number, also in bold type. No punctuation is to be included after the number, nor is any punctuation to be placed at the end of the caption. Identify all elements found in the figure in the figure caption; and use boxes, circles, etc., as coordinate points in graphs. Identify previously published material by giving the original source in the form of a reference citation at the end of the figure caption.

It is preferred that chemical structures be drawn using the ChemDraw program with preferences set for "ACS Document 1996". Authors using other drawing packages should, modify their program's parameters to meet the ChemDraw "ACS Document 1996" preferences.

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