

AJVR Instructions for Authors

The *American Journal of Veterinary Research* is a monthly, peer-reviewed, veterinary medical journal owned by the American Veterinary Medical Association that publishes reports of original research and review articles in the general area of veterinary medical research.

MISSION

The mission of the *American Journal of Veterinary Research* is to publish, in a timely manner, peer-reviewed reports of the highest quality research that has the clear potential to enhance the health, welfare, and performance of animals and humans. The journal will maintain the highest ethical standards of scientific journalism and promote such standards among its contributors. In addition, the journal will foster global interdisciplinary cooperation in veterinary medical research.

SCOPE

The *American Journal of Veterinary Research* supports the collaborative exchange of information between researchers and clinicians by publishing novel research findings that bridge the gulf between basic research and clinical practice or that help to translate laboratory research and preclinical studies to the development of clinical trials and clinical practice. The journal welcomes submission of high-quality original studies and review articles in a wide range of scientific fields, including anatomy, anesthesiology, animal welfare, behavior, clinical pathology, epidemiology, genetics, infectious disease, microbiology, molecular biology, oncology, pharmacology, pathogenic mechanisms, physiology, surgery, theriogenology, toxicology, and vaccinology. Species of interest include production animals, companion animals, equids, exotic animals, birds, reptiles, and wild and marine animals. Reports of laboratory animal studies and studies involving the use of animals as experimental models of human diseases are considered only when the study results are of demonstrable benefit to the species used in the research or to another species of veterinary interest. Other fields of interest or animal species are not necessarily excluded from consideration, but such reports must focus on novel research findings. Submitted papers must make an original and substantial contribution to the veterinary medicine knowledge base; preliminary or pilot studies are not appropriate.

EDITORIAL POLICIES

Authorship

Individuals should be listed as authors only if they (1) made a substantial contribution to the conception and design of the study, the acquisition of the data used in the study, or the analysis and interpretation of that data; (2)

were involved in drafting or revising the manuscript critically for important intellectual content; and (3) approved the submitted version of the manuscript and will have an opportunity to approve subsequent revisions of the manuscript, including the version to be published. All 3 conditions must be met. Each individual listed as an author must have participated sufficiently to take public responsibility for the work. Acquisition of funding, collection of data, or general supervision of the research team does not, alone, justify authorship. Requests to list a working group or study group in the byline will be handled on a case-by-case basis. All authors must complete and submit the Copyright Assignment Agreement and Authorship Form (jav.ma/CAA-AF), confirming that they meet the criteria for authorship.

Conflicts of interest and financial disclosures

A conflict of interest exists whenever an individual has financial interests or personal relationships that might consciously or unconsciously influence his or her decisions. Conflicts of interest are ubiquitous and cannot be completely eliminated; they do not, by themselves, indicate improper behavior, wrongdoing, or scientific misconduct.

Financial relationships are the most easily identifiable conflicts of interest and include, among other things, ownership, employment, consultancies, honoraria, paid expert testimony, grants, patents, stock ownership or options, and service as an officer or board member. Other types of conflicts of interest include personal relationships, academic competition, and intellectual beliefs.

All authors must disclose in the Acknowledgments section of the manuscript any financial or personal relationships that could be perceived to influence or could give the appearance of influencing information in the submitted manuscript. This includes detailed information about all relevant financial interests, activities, relationships, and affiliations (other than affiliations listed on the title page of the manuscript) occurring at the present time or within the 3 years prior to manuscript submission. In this context, *relevant financial interests, activities, relationships, and affiliations* should be interpreted broadly. For example, authors should disclose relationships they have not only with companies that manufacture products that are the subject of research described in the manuscript but also with companies that manufacture competing products. If no such conflicts of interest existed, the following statement or an equivalent should be included: The authors declare that there were no conflicts of interest.

The editors reserve the right to reject any manuscript because of conflicts of interest. Failure to fully disclose conflicts of interest may be grounds for rejection or retraction of the manuscript.

Copyright

The *AJVR* is covered by copyright. All authors will be required to transfer copyright to the AVMA prior to publication of any manuscript or letter by completing and submitting the Copyright Assignment Agreement and Authorship Form (jav.ma/CAA-AF). Requests to copy, reprint, or use portions of published material (including information in figures, appendices, and tables) should be addressed to the editor-in-chief.

Authors must obtain and submit a statement of permission from the copyright holder (most often, the author or publisher) if they wish to include an exact duplicate or a slightly modified version of items such as figures, appendices, or tables that appeared or will have appeared in other published reports prior to publication of the manuscript, regardless of the originating source.

Original artwork (eg, drawings or photographs) that was created specifically for use in the manuscript must be accompanied by a letter explaining the conditions under which the work was created. The letter must be signed by the artist and specify the rights given to the authors for use of the artwork and the rights retained by the artist (if any). If rights are retained by the artist, the letter must include a statement that allows the journal to use the material for publication in print and online.

Dual-use research of concern

Openness is recognized as a priority when making decisions regarding scientific publishing. Advances in molecular and cellular biology, genetics, microbiology, and other life sciences have made it increasingly possible to manipulate aspects of biological systems to better understand healthy states and mechanisms of disease. However, these advances have also increased the potential that information, products, or technologies resulting from life sciences research may be misused for harmful purposes. The US National Science Advisory Board for Biosecurity (jav.ma/NSABB) has proposed the following definition for dual-use research:

Dual-use research of concern is research that, based on current understanding, can be reasonably anticipated to provide knowledge, products, or technologies that could be directly misapplied by others to pose a threat to public health, safety, agricultural crops and other plants, animals, the environment, or material.

Accordingly, the *AJVR* has adopted the following policy regarding assessment of submitted manuscripts with potential dual-use content:

- Any manuscript submitted for publication that raises concerns regarding dual-use potential will be subject to editorial review to determine the risks and benefits to the scientific community and to the public at large that may result from publication. The AVMA scientific

editors maintain a strong commitment against withholding scientific or other information unless there are compelling reasons to do so.

- The scientific editors reserve the right to seek special external review of these manuscripts from individuals with technical and biosecurity expertise to assist their decision.
- Authors and reviewers are expected to alert the AVMA scientific editors when submitting or reviewing manuscripts with dual-use potential.
- The final decision for publication as well as the means of communicating manuscripts with dual-use potential will be made by the editor-in-chief. An accompanying editorial may be published.

Editorial independence

The AVMA has adopted the following policy on editorial independence of the *AJVR*:

The AVMA recognizes and fully accepts the need for editorial independence of the AVMA journals and grants the editor-in-chief full authority over the editorial content of the journals, including the selection of content for publication and the timing of publication of that content. For these purposes, editorial content is understood to include research articles, other types of scientific reports, opinion articles, news, and advertising. Opinions and statements expressed in the AVMA journals are those of the contributors and do not represent the official policy of the AVMA, unless so stated. AVMA management does not interfere in the evaluation, selection, or editing of individual articles published in the AVMA journals, either directly or by creating an environment that strongly influences decisions of the editor-in-chief.

Funding and support

All funding, other financial support (eg, grant support), and material support (eg, provision of equipment or supplies) received directly or indirectly (via an author's institution) from any third party (eg, any government agency, foundation, or commercial enterprise) in connection with the study or writing of the manuscript must be clearly and completely described in the Acknowledgments section of the manuscript. If no third-party funding or support was received, the following statement or an equivalent should be included: No third-party funding or support was received in connection with this study or the writing or publication of the manuscript.

The authors must also include a relevant statement in the Acknowledgments section if any funding organization or sponsor had any role in the design or conduct of the study; collection, analysis, or interpretation of the data; writing or approval of the manuscript; or decision to

submit the manuscript for publication. Alternatively, the following statement or an equivalent should be included: Funding sources did not have any involvement in the study design, data analysis and interpretation, or writing and publication of the manuscript.

Failure to fully disclose sources of financial and other support may be grounds for rejection or retraction of the manuscript.

Humane animal care and use

To be considered for publication in the *AJVR*, all research studies involving animals must have been performed in compliance with guidelines outlined in the US Animal Welfare Act (jav.ma/AWA), US Public Health Service Policy on the Humane Care and Use of Laboratory Animals (jav.ma/HCULA), National Research Council's Guide for the Care and Use of Laboratory Animals (jav.ma/GCULA), or Guide for the Care and Use of Agricultural Animals in Research and Teaching (jav.ma/GCU-AART) or in compliance with equivalent guidelines. If animals were euthanized, the method of euthanasia must be indicated in the manuscript. Methods of euthanasia must comply with AVMA Guidelines for the Euthanasia of Animals (jav.ma/GEA). If a method not recommended by the AVMA Guidelines on Euthanasia was used, a justification for use of this method must be provided.

A manuscript containing information that suggests animals were subjected to adverse, stressful, or harsh conditions or treatments will not be considered for publication unless the authors demonstrate convincingly that the knowledge gained was of sufficient value to justify these conditions or treatments.

Institutional oversight and owner consent

With the exception of reports of retrospective studies based solely on reviews of medical records, manuscripts describing studies that involved the use of animals, including studies that involved the use of privately owned animals (eg, animals owned by clients, staff members, students, or private entities), must include a statement that the study protocol was reviewed and approved by an appropriate oversight entity (eg, an animal care and use committee or institutional review board) or was performed in compliance with institutional or other (eg, governmental or international) guidelines for research on animals.

Manuscripts describing prospective studies that involved privately owned animals must also include a statement indicating that informed owner consent was obtained. Manuscripts describing research involving human subjects, including surveys of human subjects, must include a statement that the research was performed under appropriate institutional review board oversight.

NIH Public Access Policy

The AVMA journals are in compliance with the National Institutes of Health Public Access Policy

(jav.ma/NIHPAP) and with the open access policies of other research funders. To assist authors of manuscripts subject to the NIH Public Access Policy (jav.ma/PAPA), the AVMA has arranged to submit articles to PubMed Central on behalf of the authors at the time of publication. Authors should not submit the accepted or any other version of their manuscript to PubMed Central, as this will preclude submission of the published version.

Patient confidentiality and the right to privacy

Authors have an obligation to protect the personal privacy of patients and clients and to maintain the confidentiality of patient-client information. For any manuscript containing patient information (eg, patient descriptions, photographs, or pedigrees) that would allow specific animals or their owners to be identified, the authors must obtain a signed statement of informed consent to publish the information (in print and online) from the owners. Generally, such consent should include an opportunity for the owner to read the manuscript to be submitted for publication. If necessary, nonessential identifying data can be removed, unless clinically or epidemiologically important. However, identifying data may not be altered or falsified. Cropping or altering photographs to remove nonessential identifying information is acceptable, so long as the photographs are not otherwise altered. Patient identifiers may not appear in photographs. Authors must also obtain informed consent to publish from any identifiable person appearing in photographs. Importantly, these guidelines also apply to any materials (eg, text, photographs, or videos) submitted for posting as supplementary materials.

Prior publication

A manuscript is received with the understanding that the information has not been published or submitted for publication in any compiled printed (eg, journals, symposia, proceedings, newsletters, or books) or electronic (eg, preprint servers, conference or university websites, blogs, or social media posts) format in English or any other language and will not be published or submitted for publication elsewhere while the manuscript is under consideration by the *AJVR*.

A manuscript containing previously published information may be rejected on the grounds of prior publication. Publication of abstracts containing 250 words or fewer will not be considered to constitute prior publication, but publication of longer abstracts in any compiled printed or electronic format may be (note that this includes posting of poster presentations to conference or university websites). Authors are encouraged to consult the guidelines for preparation of scientific abstracts (jav.ma/GPSA) when preparing scientific abstracts for publication or presentation at meetings. In general, figures, tables, footnotes, and references should not be included in abstracts.

At the time of manuscript submission, the cor-

responding author must include copies of any abstracts of the manuscript that have been published or submitted for publication or that are expected to be submitted for publication, along with copies of any closely related manuscripts or manuscripts with substantially similar content.

Publication fees and open access

All manuscripts accepted for publication in the *AJVR* are subject to an article publication charge of \$1,000.

All articles published in the *AJVR* are posted to the AVMA journals website (jav.ma/AJVR) at no charge to the authors. However, access to the full text of these articles is restricted to subscribers or available on a pay-per-view basis. Authors can elect to have their manuscripts made freely available online for all to read, download, and share. The fee for this open access is an additional \$1,000 per manuscript.

Reporting guidelines

To ensure thoroughness of reporting, authors are strongly encouraged to make use of the following guidelines, if applicable, when preparing manuscripts:

- CONSORT (Consolidated Standards of Reporting Trials)—for clinical trials
- REFLECT (Reporting Guidelines for Randomized Controlled Trials for Livestock and Food Safety)—for clinical trials in livestock and food safety
- STARD (Standards for the Reporting of Diagnostic Accuracy Studies)—for diagnostic test evaluation
- STROBE (Strengthening the Reporting of Observational Studies in Epidemiology)—for cross-sectional, case-control, and cohort studies
- PRISMA (Preferred Reporting Items of Systematic Reviews and Meta-analyses)—for systematic reviews and meta-analyses
- ARRIVE (Animal Research: Reporting of In Vivo Experiments)—for all studies involving laboratory animals
- SRQR (Standards for Reporting Qualitative Research)—for all studies involving qualitative research

These guidelines and more are available through the EQUATOR (Enhancing the Quality and Transparency of Health Research) Network (www.equator-network.org).

Scientific misconduct

The *AJVR* strongly supports and upholds the code of conduct espoused by the international Committee on Publication Ethics (COPE) to promote integrity in the conduct and reporting of research. The journal views gravely instances of scientific misconduct, which COPE defines as “the intention to cause others to regard as true that which is not.” Such misconduct includes but is not limited to data fabrication or falsification, deceptive image manipulation, and plagiarism. In signing the Copyright Assignment Agreement and Authorship Form, authors attest that their works are original and free of scientific

misconduct.

The *AJVR* is ethically obliged to investigate all suspicions or allegations of scientific misconduct, including plagiarism. Therefore, authors are expected to know and understand the definition of plagiarism as well as the consequences. The *AJVR* considers plagiarism to be the intentional or unintentional use of another’s ideas or words as one’s own, without attribution to the original source. Such use can range from copying of brief passages from previous publications (with or without changing a few words) to copying of entire portions of text, data, or both.

Detection of plagiarism and other instances of scientific misconduct will result in notification of the primary author, the coauthors, and possibly the author’s institution, depending on the extent of misconduct and nature of the deception (eg, intentional, reckless, or negligent). Further sanctions for misconduct detected prior to publication will depend on the author’s response to the allegations and may range from admonition by the editor to rejection of the manuscript, barring of the author(s) and their institution from future considerations, referral to the author’s institution for further disciplinary action, and informing of other editors and the indexing authorities. For misconduct detected after publication, these sanctions can extend to retraction of the report, with full explanation of the reason, and reporting to other authorities.

Special consideration is given to the practice of text recycling, also known as self-plagiarism, which refers to an author’s use of his or her own previously published text. Although text recycling may be acceptable in select instances (eg, in the Materials and Methods section of a scientific report), it generally will not be considered acceptable. The *AJVR* supports the text recycling guidelines developed by BioMed Central in collaboration with the COPE (jav.ma/COPE-TR).

MANUSCRIPT CATEGORIES

Reports of original research, review articles, and letters to the editor will be considered for publication in the *AJVR*; clinical reports that describe features of 1 or more clinical cases will generally not be considered. For reports of original research, preference is accorded to those that provide novel findings that could be expected to have clinical or practical value within the next several years. Review articles should focus on subject areas in which important advances have been made during the past 5 years.

Readers who submit letters to the editor must limit them to 500 words (longer letters will be condensed as needed) and 6 references. Letters must be original and cannot have been published or submitted for publication elsewhere. Not all letters are published; all letters accepted for publication are subject to editing. Those pertaining to anything published in the *AJVR* should be received within 1 month after the date of publication of the material to which they refer. Submission via email (JournalLetters@avma.org) is encouraged; authors should give their full contact information, including address,

daytime telephone number, fax number, and email address. Letters containing defamatory, libelous, or malicious statements will not be published, nor will letters representing attacks on or attempts to demean veterinary societies or their committees or agencies.

MANUSCRIPT PREPARATION

Authors should pay close attention to the following guidelines for manuscript preparation and format. Manuscripts that are not prepared in accordance with these guidelines will be returned to the authors for amendment and resubmission.

Format

Manuscripts (including footnotes, references, figure legends, appendices, and tables) should be prepared with the following attributes:

- 8.5 X 11-inch (or A4) page size
- Double-space typed
- 12-point font
- 1-inch (2.5-cm) margins
- Left justification
- Sequential line numbering

Organization and contents

Manuscripts should be organized as follows:

- Title page
- Structured abstract (when applicable; letters to the editor and review articles do not have a structured abstract)
- Abbreviations list (when applicable)
- Text
- Acknowledgments
- Footnotes
- References
- Figure legends
- Appendices
- Tables

Title page

The title page must include the manuscript title and the first name, middle initial, and last name of each author, along with each author's professional degree and highest earned academic degree (eg, MS or PhD, MPVM). Do not list academic degrees lower than the bachelor's degree (eg, associate degrees), specialty board certifications, fellowship designations, and honorary degrees; a bachelor's degree should be listed only if it is the author's only degree. Professional affiliations (full mailing addresses) of the authors at the time of the study should be indicated. If an author's affiliation has changed since the study was performed, the author's new affiliation must be identified as well. Finally, the name and email address of the corresponding author must also be included on the title page.

Structured abstract

With the exception of review articles, all manuscripts must include a structured abstract of 250 or fewer words, organized under the following headings:

- Objective
- Animals (or Sample)
- Procedures
- Results
- Conclusions and Clinical Relevance

Abbreviations list

All abbreviations except for standard abbreviations (see jav.ma/StdAbbr for full list) and units of measure should be listed in alphabetical order at the beginning of the manuscript text (after the Structured Abstract and before the introductory section), along with their definitions. These abbreviations should then be used without expansion in the text, figures, appendices, and tables, except at the start of a sentence, in which case the expanded term should be used.

Text

The text should begin with an introduction (which does not have a heading) and then be organized under the following headings:

- Materials and Methods
- Results
- Discussion

The introduction should supply sufficient pertinent background information to allow readers to understand why the study was performed. It must include the rationale for the study, a clear statement of the purpose of the study, and the investigators' hypothesis or hypotheses. The introduction is not intended to be a thorough review of the published literature on a subject. Rather, it should be brief (often, 2 or 3 paragraphs will suffice) and should focus on identifying the specific problem the study is meant to address; describing how the study addresses the problem, differs from previous studies, or improves our understanding; and explaining what the present study was meant to do and what hypotheses it was meant to test.

The Materials and Methods section should describe the study design in sufficient detail to allow others to reproduce the study. A subsection detailing statistical methods used to summarize data, evaluate data distributions, and test hypotheses, along with a statement regarding the cutoff for significance used for hypothesis testing, should be provided. Appendices and methods-related figures should be cited parenthetically. Products (including software), equipment, and drugs should be identified in the text by chemical or generic names or descriptions. For all statistical tests, authors are required to indicate whether

applicable test assumptions were met. When citing software products, a footnote should be used to cite the software (eg, PROC GLM, SAS, version 9.2, SAS Institute Inc, Cary, NC) and a reference should be used to cite a user's guide (eg, *SAS/STAT 9.2 user's guide*. Cary, NC: SAS Institute Inc, 2008;page number).

The Results section should provide data that are clearly and simply stated without discussion or conclusions. Tables and figures should be cited parenthetically. Authors should refrain from repeating within the text data that are also presented in tables and figures and are encouraged to report the number of subjects included in any statistical calculations (eg, means, medians, and results of statistical tests), particularly if that number differs among described variables. For each percentage, the numerator and denominator used in the calculation should also be reported. Authors of manuscripts reporting gene sequences should submit those sequences to an appropriate data bank.

The Discussion section should focus on findings in the manuscript and should be brief (generally no more than 2,000 words), containing only discussion that is necessary for the interpretation of findings. The major findings, including whether hypotheses stated in the introduction were supported, should be given in the first paragraph. Strengths and weaknesses of the study should be acknowledged, and the discussion should end with the principal points that readers should take away. The Discussion section should concentrate mainly on what is known in non-human animals, with less emphasis on what is known in humans. It should not contain any subheadings.

In general, the main text should be brief and focus on the main issues. Although there are no word limits for reports in the *AJVR*, the main text (ie, all text other than the acknowledgments, footnotes, references, figure legends, appendices, and tables) for most manuscripts should consist of no more than 3,000 to 4,000 words. Manuscripts that are excessively long may be returned for removal of nonessential information.

Acknowledgments

The Acknowledgments section is where information on sources of funding and support and conflicts of interest must be listed, along with any disclaimers, any acknowledgments of individuals who made important contributions to the study but did not meet the criteria for authorship, and any previous presentations of the findings at scientific meetings. In addition, for studies involving multiple institutions, a statement indicating where the work was done may be included, if applicable. For information on listing sources of funding and support and conflicts of interest, see the editorial policies on *Funding and support* and *Conflicts of interest and financial disclosures*.

The Acknowledgments section should be used to identify specific individuals who had an important role in or made important contributions to the study but who do not meet the criteria for authorship. In general, this

includes individuals who contributed intellectually to the study or report but whose contributions do not justify authorship, individuals who provided technical assistance (eg, individuals who performed special tests or research), and individuals who assisted with the statistical analyses.

The Acknowledgments section should not be used simply as a method of expressing gratitude to individuals who had a minor role in the study. The acknowledgments should not include individuals whose only contribution to the study or report involved the routine performance of their normal job duties and who did not provide any unusual or extraordinary intellectual contribution or technical expertise to the study. Acknowledgments of nonspecific groups (eg, the intensive care unit technicians) and unidentifiable groups (eg, the anonymous contributors or study participants) are not allowed. Individuals named in the acknowledgments must have given their permission to the authors to be listed, because readers may infer their endorsement of the data and conclusions.

Footnotes

Footnotes are to be used when referencing each of the following types of information:

- Abstracts
- Conference presentations
- Online databases
- Personal communications
- Products, drugs, equipment, and other materials
- Statistical and computer software
- Theses and dissertations
- Other unpublished materials (eg, preliminary reports)

Specific products, equipment, or drugs should be included in the footnotes only if they were essential to the outcome of the report or study. Products, equipment, and drugs that are commonly used materials in veterinary medicine need not be footnoted.

Footnotes should be cited in the text as superscript letters and listed alphabetically after the Acknowledgments section and before the references. If more than 26 footnotes are required, continue the sequence with double letters (eg, aa, bb, and cc). For products and equipment, provide complete information in the footnote, including manufacturer's name and location (ie, city, state, and country [if other than the United States]).

References

Authors bear primary responsibility for accuracy of all references. References must be limited to those that are necessary and must be cited in the text by superscript numbers in order of citation. Journal titles in the Reference section should be abbreviated in accordance with the National Library of Medicine and Index Medicus (jav.ma/NLM-JA). For references with more than 3 authors, only the first 3 authors should be listed, followed by

et al. The following is the style used for common types of references:

- **Article in a journal**

1. Lamont LA, Bulmer BJ, Sisson DD, et al. Doppler echocardiographic effects of medetomidine on dynamic left ventricular outflow tract obstruction in cats. *J Am Vet Med Assoc* 2002;221:1276–1281.

- **Book chapter**

2. Muir P, Johnson KA, Manley PA. Fractures of the pelvis. In: Birchard SJ, Sherding RG, eds. *Saunders manual of small animal practice*. 2nd ed. Philadelphia: WB Saunders Co, 2000;1126–1132.

- **Proceedings**

3. Moore MP, Bagley RS, Harrington ML, et al. Intracranial tumors, in *Proceedings*. 14th Annu Meet Vet Med Forum 1996;331–334.

- **Electronic material**

4. Animal and Plant Health Inspection Service. Bovine spongiform encephalopathy (BSE). Available at: www.aphis.usda.gov/lpa/issues/bse/bse.html. Accessed Feb 18, 2016.

Figures

Figures should be limited to those that reduce or clarify the text. Images of clinically normal animals are not usually required, nor are images of equipment unless the equipment has been set up in a special way and the setup is integral to the study. Text and symbols should be large enough that they will still be legible when the figure is reduced to 1 column in width during publication (in general, this means that all text and symbols must be at least 1.5 mm tall when the figure is reduced to 8 cm in width). For text labels, the first word of each label should start with a capital letter, with any remaining words other than proper nouns in lowercase letters (eg, Cranial vena cava).

To ensure high-quality reproduction, symbols used to represent data in graphs should be limited to white and black circles, triangles, and squares; axes should be labeled in Helvetica or Arial font. Keys to data symbols may be placed in a small box inserted into the unused portion of graphs. Symbols used in figures and tables should be assigned in the following order:

- Asterisk (*)
- Dagger (†)
- Double dagger (‡)
- Section indicator (§)
- Double vertical bar (||)
- Paragraph indicator (¶)
- Pound sign (#)
- Two asterisks (**)
- Two daggers (††)

- Two double daggers (‡‡)

Photomicrographs and electron micrographs must include an internal scale marker. For figures that include multiple panels, each panel should be sequentially labeled with a capital letter in the same corner of each panel. If a figure contains 2 or more rows of panels, the letter labels should be applied sequentially from left to right in the first row, then from left to right in the second row, and so on.

Figure legends must be provided at the end of the manuscript, after the references and before any appendices and tables. Sufficient information should be included to allow the figure to be understood without reference to the text. Abbreviations defined in the abbreviations list at the beginning of the text do not need to be expanded; however, newly introduced abbreviations in figures should be defined in the figure legend, in alphabetical order. When applicable, stains used for microscopic examination of specimens must be indicated in the legend as well as the scale of the marker bar (eg, H&E stain; bar = 100 µm). Figure legends for ECG traces must include the paper speed and scale (eg, Paper speed = 50 mm/s; 1 cm = 1 mV). Authors wishing to use any previously published figures must submit written permission from the copyright holder.

Appendices

Appendices may be provided when information pertaining to the Materials and Methods could be more succinctly and clearly summarized in tabular rather than narrative format. Examples of information that might lend itself to an appendix include scoring and classification rubrics; lists of nucleotide sequences; tabular summaries of complex treatment protocols; and compositions of diets or feedstuffs. Copies of questionnaires and surveys also qualify as appendix materials but should instead be submitted in pdf format for publication as online supplementary material.

Tables

Tables are reserved for reporting of findings and not for describing the materials and methods. Submission of excessive tabular data is discouraged, and tables should be limited to those containing data important to understanding and interpreting results of the study. All tables should be placed at the end of the manuscript, after the figure legends. Authors will be asked to delete tables containing data that could be reported more succinctly in the text. Tables that focus solely on findings in individual animals rather than summary data from groups of animals are to be avoided. Authors wishing to use any previously published tables must submit written permission from the copyright holder.

For the order of symbol use in tables, please refer to the instructions for figures. To indicate significant differences between or among values in a row or column, symbols or superscript lowercase letters assigned in alpha-

betical order (a–z) may be used. If additional differentiation is needed (eg, if differences need to be reported in both rows and columns) and lowercase letters have already been used, superscript uppercase letters in alphabetical order (A–Z) may be used.

Supplementary materials

Additional materials that are not in themselves essential to the understanding of the article but provide an important expansion of the article contents may be submitted for publication as supplementary materials. Examples include extended descriptions of experimental methods or statistical analyses, extended bibliographies, additional supporting data or results (eg, tables and figures), reporting checklists, copies of survey instruments or questionnaires, handouts, forms, and multimedia representations (eg, video clips) of relevant content. All published supplementary materials are subject to copyright.

Supplementary materials must be useful to readers and relevant to the article; redundant and extraneous content will not be accepted. Whether supplementary materials will be accepted for publication is solely at the discretion of the editors. Supplementary materials accepted for publication will not appear in the printed version of the journal but will be posted on the journal's website. Ideally, supplementary materials will be sent with the manuscript to external reviewers for peer review. Whether supplementary materials have or have not undergone peer review will be indicated on the landing page where the supplementary materials are posted.

Supplementary materials should be prepared in compliance with the general guidelines for manuscript style. Although supplementary materials may undergo minor copy editing or formatting, they generally will not undergo the same substantive editing provided for manuscripts. Therefore, the authors are responsible for ensuring clarity and accuracy of the content as well as consistency with the printed version.

MANUSCRIPT STYLE

For questions of style, refer to the latest edition of the American Medical Association Manual of Style (www.amamanualofstyle.com; online access requires a subscription; individual subscriptions are available on a monthly basis if desired). Manuscripts should be written in American English. For spelling of lay terms, refer to the latest American edition of the Merriam-Webster Dictionary. For anatomic terms, use anglicized versions of official terms listed in the latest edition of the *Nomina Anatomica Veterinaria*. Refer to the latest editions of the American Drug Index and USP Dictionary of US Adopted Names and International Drug Names for proper spelling of chemical and drug names and to the latest edition of Dorland's Illustrated Medical Dictionary for proper spelling and use of medical terms. Refer to Bergey's Manual of Determinative Microbiology for spelling and correct taxonomic classifications of microorganisms. For pharma-

cologic and pharmacokinetic terms, see the AVMA journal style sheet on the subject (jav.ma/pk-terms).

Authors of manuscripts that are not written in their first language or that required substantial language translation in the writing process are encouraged to seek professional language correction or copyediting services prior to submission. Such services can aid with language, grammar, and style in scientific writing and can help ensure the manuscript content can be understood by editors and potential reviewers.

Abbreviations

Overuse of abbreviations can be confusing and frustrating for readers. In general, use of abbreviations other than the journal's standard abbreviations (see jav.ma/StdAbbr for full list) and units of measure should be kept to a minimum.

In the Structured Abstract, a term should be abbreviated only if it is used at least 3 times in the Structured Abstract. The term must be expanded at first mention, with the abbreviation given in parentheses after the expanded term. Similarly, in the manuscript text, figures, appendices, and tables, a term should be abbreviated only if it is used at least 3 times. Abbreviations used in the Structured Abstract must be defined again in the abbreviations list. All abbreviations should be derived directly from the word or words that make up the expanded term.

Abbreviations that appear only in the figures or tables should be defined in the figure or table legend. Except for the abbreviations ELISA, ACTH, EDTA, DNA, and RNA, abbreviations should not be used in titles.

Products, equipment, drugs, and other materials

All materials used in the study or referred to in the manuscript should generally be identified by chemical or generic names or descriptions. A trade name should be included in a lettered footnote if that specific product, equipment, or drug was essential for the outcome. Trade-mark and similar proprietary symbols are not needed.

MANUSCRIPT SUBMISSION

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