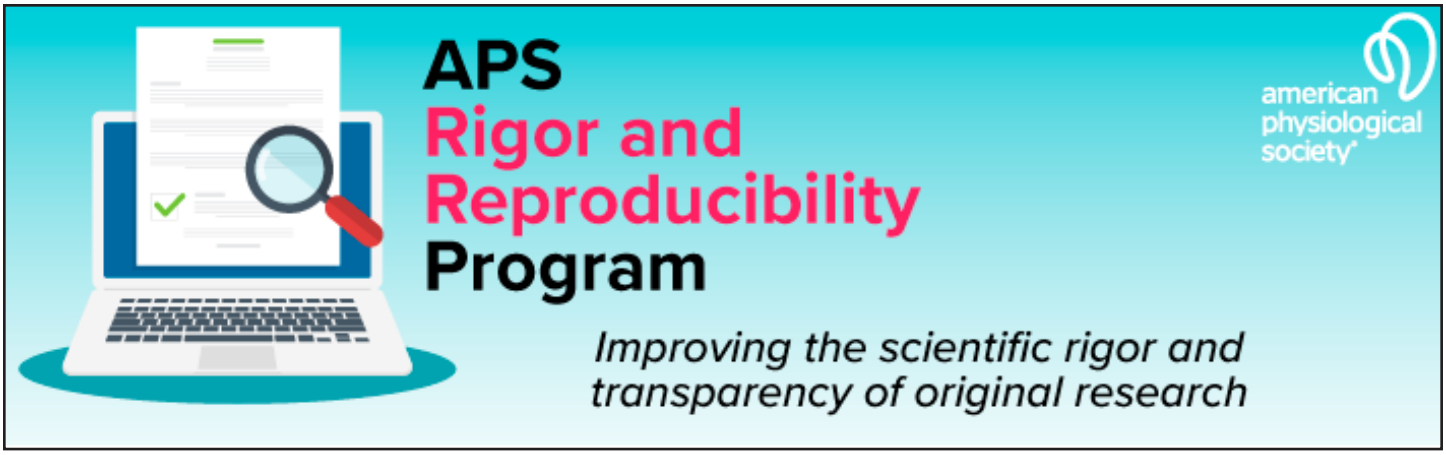

Rigor and Reproducibility Checklist

Articles published in APS Journals must report experimental methods in sufficient detail to allow for transparency of data and replication by others. APS recommends that authors utilize this checklist when preparing their article for manuscript for publication in APS Journals.

	Yes, included in manuscript	No, does not apply (N/A)
If your manuscript includes ____, then the Methods must:		
1. ANIMAL EXPERIMENTS		
APS strongly recommends following the ARRIVE Guidelines Checklist		
a. Include a statement that the animal protocol was approved by an institutional committee, or that the protocol was performed under a license obtained from such a committee, board, or governing office.		
b. Describe the animals in the study (species, strain, sex, age, source of animals, genetic modification status, housing, diet, and Research Resource Identifiers (RRIDs), if available.		
c. Describe the controls used in the study (littermate, purchased, identical conditions, contemporaneous, historical, etc.)		
d. Include precise details of all procedures (drug formulation and dose, route and frequency of administration, anesthesia and analgesia used and methods for monitoring of anesthetic/ analgesic depth, method of euthanasia, etc.)		
e. Describe steps taken to minimize subjective bias in the design (e.g., randomization, blinding)		
f. Describe how adequacy of sample sizes was determined.		
2. HUMAN STUDIES		
a. Include a statement that the protocol was approved, or declared exempt, by an institutional review board or the protocol was performed under a license obtained from such a committee, board, or governing office.		
b. Include an explicit statement that, when required by the Institutional Review Board (IRB), written informed consent was received from every participant or legal guardian.		

c. Report the sex and/or gender, age range, and ethnicity/race of participants.		
d. If the study is a clinical trial, as defined by NIH guidelines, include the trial number and a statement of registration dated prior to recruitment of the first subject.		
e. For samples taken relating to a disease state, provide a Table of the clinical-pathological characteristics of the study group.		
f. Report steps taken to minimize subjective bias in the design (e.g., randomization, blinding).		
3. CELLS		
a. Describe source of cells utilized in detail, including species, sex, strain, ethnicity/race, age of donor, whether primary or established. If available, provide RRIDs for each cell type or line reported in the manuscript.		
b. Declare whether cell line authentication was performed and by what method (e.g., short tandem repeat profiling).		
4. ANTIBODIES		
a. Report source of both primary and secondary antibodies (company name, catalog #, distributor or developer, and/or RRIDs)		
b. Provide evidence that validates the specificity of the primary antibody (for example: see Editorial). If data already exist, reference the published article.		
c. Report dilutions used for primary and secondary antibodies for all experiments.		
d. For Western blots, describe how the samples were prepared for Western blotting and how the data were quantified.		
5. REAGENTS AND UNIQUE MATERIALS		
a. Describe source and specificity of reagents and any unique materials (Company name and catalog #, distributor or developer and/or RRIDs)		
6. MICROSCOPY EXPERIMENTS		
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b. State imaging conditions (confocal, widefield, etc.) and microscope setup and settings for obtaining images (microscope; objective lens; temperature; filters; camera and/or software for image capture and image analysis etc.)		
c. Describe how images were processed and whether changes were made to intensity and/or contrast.		
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e. For immunohistochemistry, provide a reference or statement regarding antibody validation.		
7. COMPUTER SIMULATION EXPERIMENTS		
a. Provide, for reviewers, a link to or copy of a working version of the software and code used via a public repository, such as GitHub.		

If your results are:		
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a. Use a format that shows the range of data points in relation to the mean value and significance (scatter dot plots or, where there are large numbers of datapoints, box-and-whisker plots) rather than formats that may mask the variability (i.e., bar graphs, line graphs). When possible, the individual data points should be included on bar graphs and, if possible, on line graphs.		
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c. If data were normalized, please explain how this was done.		
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a. Digital captures of data should not be edited to move, remove, introduce, obscure or enhance any specific feature within an image including artifacts.		
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e. On microscopy images, include a scale bar.		
f. For immunohistochemistry experiments, present a primary control and a secondary control image along with the experimental group images.		
10. FIGURE AND FIGURE LEGENDS		
a. Report all statistical tests used and report exact p values, when possible. This also applies to p-values provided in the manuscript body.		
b. Report n value for each condition in every panel. Indicate number of technical and biological replicates.		
c. Report sex or gender, if not stated as only one sex or gender in the Methods		
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