
BIOL 49X0R Research Paper Guidelines Part I: **Revisions Checklist**

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Many of these components are based on the requirements detailed in the University of Georgia Biology Research Paper Requirements document:

<https://biosciences.uga.edu/sites/default/files/2019-01/BIOL%2049X0R%20Research%20guidelines.pdf>

A. Submission Guidelines:

A1. Does the paper meet all typesetting requirements?

Requirements: minimum 10 pages (excluding title, references, and figures), 12-point Times New Roman font, double-spaced, 1-inch margins.

A2. Is the submission contained in a single .pdf/.docx and named appropriately?

B. Title Page / Objective Statement / Abstract:

B1. Does the title page include the title, faculty mentor information, student information, semester/year, and course number?

B2. Does the chosen title function well and fulfill its purpose?

Purpose: convey the subject and scope of the study while stimulating reader interest.

See additional resources in 'Part II, Additional Resources' (below)

B3. Does the objective statement meet formatting specifications (1-3 sentences)?

B4. Does the objective statement function well and fulfill its purpose?

Purpose: state the purpose of the research project.

B5. Does the abstract meet formatting specifications (one paragraph, 200 words)?

B6. Does the abstract function well and fulfill its purpose?

Purpose: provide summary of research paper by ⁽¹⁾ stating purpose/significance of the paper, ⁽²⁾ summarizing methodologies, ⁽³⁾ summarizing results/stating major findings, and ⁽⁴⁾ stating major conclusions/implications.

See additional resources in 'Part II, Additional Resources' (below)

C. Introduction:

See additional resources on writing an effective introduction in 'Part II, Additional Resources' (below)

C1. Is the introduction of the correct length (2-5 paragraphs)?

C2. Is the introduction written using explicit language and in the present tense?

C3. Is the background appropriate for the intended audience? In other words, is the background of relevant science presented clearly, professionally, and at the right "level" (e.g., not too technical, but not overly simplified)? Are key terms clearly defined?

C4. Is the introduction well-organized? In other words, is the information presented in a logical order (e.g. broad to narrow and from what is known to what is not known)?

C5. Does the author clearly articulate why their research is important to the field (e.g., to address important gaps in knowledge)?

- C6. Does the introduction use other research to provide background and/or describe previous work on the topic? In other words, does the introduction include a literature review?
- C7. Does the introduction end with a hypothesis or specific question and an explanation of the author's approach to the research problem?
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D. Methods:

See additional resources on writing an effective methods section in 'Part II, Additional Resources' (below)

- D1. Are the methods written in past tense and as a narrative (as opposed to a list of directives)?
- D2. Do the methods give sufficient detail such that someone else could replicate the study?
- D3. Do the methods include the following details (when appropriate): ⁽¹⁾ materials used to conduct the study, ⁽²⁾ experimental conditions and ⁽³⁾ study subjects?
- D4. Are the methods well organized? If appropriate, has the author made use of subsections?
- D5. When appropriate, does the author provide rationale for protocols and methods used?
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E. Results:

See additional resources on writing an effective results section in 'Part II, Additional Resources' (below)

- E1. Is this section written in past tense?
- E2. Does the Results section start with a brief section that provides context, or does it go straight into a description of the tables, figures, etc.?
- E3. Does this section successfully summarize (but NOT interpret) the data, observations, & findings?
- E4. Do the tables and figures meet formatting specifications?
Specifications: ⁽¹⁾ Tables/figures must include a title, a number, and a brief description (Table 1, 2, etc.). ⁽²⁾ Tables/figures appear in the text just after (or soon after) they are mentioned. ⁽³⁾ Tables are identified by headings, which go above the tables, and figures are identified by captions, which go below the figures. ⁽⁴⁾ Figure titles should be a brief phrase stating the type of analysis or summarizing the major result seen in the figure. ⁽⁵⁾ All figures and tables should be referred to at least once in the body of the paper (i.e. "see Table 1") and need to be numbered in the order they are discussed in the paper.
- E5. Are statistical methods ⁽¹⁾ used (& explained) where necessary, & ⁽²⁾ appropriate for the analysis?
- E6. Is the Results section well organized? If appropriate, has the author made use of subsections?
- E7. Is the data presented as effectively as possible?
In other words, were graphs and tables used when appropriate, or were there instances where "better choices" could be made (e.g., text descriptions of data that would work better as a table, a table that would function better as a graph, a bar graph that would function better as a line graph)
- E8. Does the author give a higher-level summary of the results? In other words, does they only give obvious descriptions of the data anyone could gather by looking at the figures/tables, or do they take it a step further by highlighting important trends that emerge or significant data the reader should notice?
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F. Discussion:

See additional resources on writing an effective discussion section in 'Part II, Additional Resources' (below)

- F1. Is this section written in present tense?

- F2. Does the discussion section start by answering the question asked at the end of the introduction? In other words, does the author address whether their initial hypothesis was *supported* or *not supported* (never “proven” or “disproven”)?
- F3. Does the author successfully use the discussion section to *interpret* the results that were described in the Results section?
- F4. Does the author focus on claims that can be directly supported by the results of the study, or do they overstate the significance of their findings?
- F5. Does the author relate their findings to other research and address how their results fit in to the context of the topic literature?
- F6. Are the limitations of the research discussed?
- F7. Does the author give context, significance, and implications to their findings?
Do they give the big-picture implications of the research? Do they address the relevance of their findings beyond the experiment? Do they consider where future research might further develop these findings?
- F8. Is the Discussion section well-organized? In other words, is the information presented in a logical order (e.g. narrow to broad, in reverse order from the Introduction)?
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G. References:

See additional resources on referencing sources in ‘Part II, Additional Resources’ (below)

- G1. General formatting: Does the author ⁽¹⁾ start the References section on a new page ⁽²⁾ properly order their references (alphabetically by author) and ⁽³⁾ use hanging indentations?
- G2. Does the author use an accepted/standard reference format consistently across all citations?
- G3. Do all in-text citations have a corresponding entry in the References section? Are all entries in the reference section used at least once in the manuscript text?
- G4. Are in-text citations formatted correctly?
See Biology Research Paper Requirements document, (link at top of this section) for detailed instructions.
- G5. Is information properly referenced throughout, or are there statements that are not general knowledge but lack appropriate citation of their source?
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H. Writing Elements:

See additional resources on scientific and/or general academic writing style, mechanics, flow, etc. in ‘Part II, Additional Resources’ (below)

- H1. Mechanics: does the author use correct punctuation, spelling, capitalization, grammar etc.?
- H2. Local flow: are ideas connected at the sentence level? Does the language flow naturally, or are there structural/syntax errors detract from meaning?
- H3. Global flow: do the major elements (paragraphs, subsections, main sections) of the essay flow, or are there disconnects between paragraphs and/or lack of “guided transitions” from topic to topic? Is there a sense of completeness from start to finish?

BIOL 49X0R Research Paper Guidelines Part II: Additional Resources

B. Title Page / Objective Statement / Abstract:

B2. Additional resource on writing an effective title:

<https://library.sacredheart.edu/c.php?g=29803&p=185911>

B6. Additional resource on writing an effective abstract:

<https://writing.wisc.edu/handbook/assignments/writing-an-abstract-for-your-research-paper/>

<https://writingcenter.gmu.edu/guides/writing-an-abstract>

<https://www.uky.edu/academy/sites/www.uky.edu/academy/files/How%20to%20Write%20Research%20Abstract.pdf>

C. Introduction:

Additional resources on writing an effective introduction:

<https://library.sacredheart.edu/c.php?g=29803&p=185916>

<https://guides.lib.uci.edu/c.php?g=334338&p=2249903>

<https://uwc.ucla.edu/wp-content/uploads/2015/12/Writing-Research-Paper-Introductions.pdf>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4548565/>

D. Methods:

Additional resources on writing an effective materials and methods section:

<https://pubmed.ncbi.nlm.nih.gov/15447808/>

<https://cancer.dartmouth.edu/sites/default/files/2019-05/methods-section.pdf>

https://www.jmu.edu/uwc/files/link-library/empirical/method_section_overview.pdf

<https://plos.org/resource/how-to-write-your-methods/>

E. Results:

Additional resources on writing an effective results section:

<https://guides.lib.uci.edu/c.php?g=334338&p=2249906>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4548571/>

<https://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html>

<https://journals.plos.org/ploscompbiol/article?id=10.1371/journal.pcbi.1003833>

F. Discussion:

Additional resources on writing an effective discussion section:

<https://library.sacredheart.edu/c.php?g=29803&p=185933>

<https://plos.org/resource/how-to-write-conclusions/>

<https://academicguides.waldenu.edu/c.php?g=678599&p=4783261>

<https://www.springer.com/gp/authors-editors/authorandreviewertutorials/writing-a-journal-manuscript/discussion-and-conclusions/10285528>

G. References:

Additional resources on how to properly reference sources:

<https://guides.lib.unc.edu/citing-information>

<https://www.scientificstyleandformat.org/Tools/SSF-Citation-Quick-Guide.html>

<https://guides.skylinecollege.edu/science/citingsources>

<https://poorvucenter.yale.edu/undergraduates/using-sources/understanding-and-avoiding-plagiarism/warning-when-you-must-cite>

H. Writing Elements:

Additional resources on scientific and/or general academic writing style, mechanics, flow, etc.:

<https://writingcenter.unc.edu/tips-and-tools/sciences/>

<https://sites.middlebury.edu/middsciwriting/overview/>

https://owl.purdue.edu/site_map.html

<https://uwc.utexas.edu/services/resources/>

<https://www.unh.edu/writing/resources>