

**Rubric For Evaluating Written Research Papers (Adapted from Batzli, J. and M. Harris. 2007.)**

	<b>Level 0 = inadequate</b>	<b>Level 1 = below average</b>	<b>Level 2 = average</b>	<b>Level 3 = above average</b>	<b>Level 4 = excellent</b>
<b>Title</b>	Objective of experiment cannot be determined by title	Title is not concise, point of experiment is difficult to determine by title, most key information is missing.	Title conveys the main objective of experiment, but could be more concise; some key components are missing	Title is concise and conveys main objective of experiment but a key component is missing.	Title is concise, conveys objective of experiment, and include these key components: study system, variables, result, and direction.
<b>Abstract</b>	Abstract is missing or, if present, provides no relevant information.	Many key components missing; those stated are unclear and/or are not stated concisely.	Presents most key components but could be stated more clearly and/or concisely.	Concisely and clearly presents all but one key component OR clearly presents all key components but could be a little more concise and/or clear.	Concisely and clearly presents all key components in 200 words or less: biological rationale, hypothesis, approach, result direction, and conclusions
<b>Introduction</b>  <i><b>BIG PICTURE: Did Intro. Convey why experiment was performed and what it was designed to test?</b></i>	Introduction provides little to no relevant information. (This often results in a hypothesis that “comes out of nowhere.”	Many key components are very weak or missing; those stated are unclear and/or are not stated concisely. Weak/missing components make it difficult to understand the rest of the paper.  e.g., background information is not focused on a specific question and minimal biological rationale is presented such that the hypothesis is not entirely logical	Most key components presented but could be done much more logically, clearly, and/or concisely.  e.g., biological rationale not fully developed but still supports hypothesis. Remaining components are done reasonably well, though there is still room for improvement.  Includes information that is extraneous and detracting from the main ideas.	Concisely and clearly presents all but one key component (w/ exception of rationale; see left) <b>OR</b> clearly presents all key components but could be a little more concise and/or clear.  e.g., has done a reasonably good job with the Intro but fails to state the approach <b>OR</b> has done a good job with Intro but has also included some irrelevant background information.	Clearly, concisely, and logically present all key components; relevant and correctly cited background information, question, biological rationale, hypothesis, and approach.
<b>Methods</b>  <i><b>BIG PICTURE: Did</b></i>	So little information is presented that reader could not possible	Procedures are presented such that a reader could replicate	Procedure is presented such that a reader could replicate	Concisely, clearly, and chronologically describes procedures	Concisely, clearly, and chronologically describes procedures

<p><i>Methods clearly describe how hypothesis was tested?</i></p>	<p>replicate experiment <b>OR</b> methods are entirely inappropriate to test hypothesis</p>	<p>experiment <b>but</b> methods are largely inappropriate to test hypothesis <b>OR</b> methods are presented such that a reader could replicate experiment only after learning several more key details.</p>	<p>experiment only after learning a few more key details <b>OR</b> methods used are reasonably appropriate for study, though a more straight-forward approach could have been taken.</p>	<p>used so that reader could replicate <i>most</i> of the experiment with the exception of a few relatively minor details. Methods used are appropriate for study. Minor problems with organization <b>OR</b> some irrelevant/superfluous information.</p>	<p>used so that knowledgeable reader could replicate experiment. Methods used are appropriate for study. Clearly defines controls and their relevance to testing the hypothesis.</p>
<p><b>Results</b></p> <p><i><b>BIG PICTURE:</b> Did the Results clearly and effectively display/present relevant data?</i></p>	<p>Major problems that leave reader uninformed; narrative text is lacking entirely, tables and figures contain unclear and/or irrelevant information, each table and figure not explained in narrative text.</p> <p>e.g., “Results” contain no text, raw data are in a table, legend does not explain figure/table contents.</p>	<p>Has many problems comparable to the following: narrative text and tables/figures are minimal and mostly uninformative, some relevant data are present but are missed in with much unnecessary information, trends are not immediately apparent in figures and are not explicitly stated in text, tables and figures lack descriptive legends, variation around mean values is not indicated in either text or figures/tables, conclusions from the results are emphasized.</p>	<p>Presents findings with a reasonably good narrative text and informative tables/figures, but has some problems comparable to the following: most relevant data are present but are mixed in with some unnecessary information, trends are shown in figures but are not explicitly stated in text, tables and figures have very brief legends that leave out key details, variation around mean values is not indicated in figures/tables, conclusions about results are briefly made.</p>	<p>Presents both a concise, narrative text and informative tables/figures without biological interpretation, but has made a few minor omissions or has other relatively small problems.</p> <p>e.g., relevant data and trends are summarized well and without biological interpretation, but tables and figures have very brief legends that leave out some key details.</p>	<p>Contains a concise, well-organized narrative text and tables/figures that highlight key trends/patterns/output from statistical tests without biological interpretation. Tables and figures have appropriate legends/labels and can be understood on their own without reading the narrative text.</p> <p>If there were problems collecting valid data, then states what the problem was that makes the data invalid.</p>
<p><b>Discussion</b></p> <p><i><b>BIG PICTURE:</b></i></p>	<p>Most key components are missing or very weakly done.</p>	<p>Many key components are very weak or missing; those stated</p>	<p>Presents most key components but could be done much more</p>	<p>Concisely, clearly, and logically presents all but one or two key</p>	<p>Concisely, clearly, and logically presents all components: supports</p>

<p><b><i>Did the Discussion present conclusions that made sense based on the data?</i></b></p>	<p>e.g., illogical conclusions made based on data, not ties to biological rationale are made, no literature cited, little to no evaluation of experimental design/data.</p>	<p>are unclear and/or are not concise.  e.g., fails to explicitly reject or support hypothesis and so conclusions are vague and incompletely tied to rationale, literature is minimally cited and used to explain results, presents unranked laundry list of problems instead of logical evaluation of design and data, suggests new experiments that would not clearly shed light on current question.</p>	<p>logically, clearly, and/or concisely.  e.g., clearly states that hypothesis is rejected or supported and develops a good argument that refers to biological rationale, but fails to logically and objectively evaluate the experimental design and data reliability. Remaining components are done reasonably well, though there is still room for improvement.</p>	<p>components <b>OR</b> clearly presents all key components but could be a little more concise and/or clear.  e.g., has done a reasonably good job with the Discussion but fails to clearly tie biological rationale from the Intro. Into the conclusions made <b>OR</b> has done a nice job with the Discussion but also included an extensive laundry list of experimental problems without discussing their impact on the conclusions.</p>	<p>or rejects hypothesis*, formulates argument for conclusions referring back to biological rationale and by comparing with relevant findings in literature, evaluates experimental design, evaluates reliability of data, states implications of results, suggests next investigation steps, and ends paper with final conclusion.  *If you believe error occurred, describe what you believe happened and discuss how this impacted your ability to make conclusions regarding your hypothesis.</p>
<p><b>Literature Cited</b></p>	<p>Background information is presented but is consistently not cited; final citation list is missing <b>OR</b> no references are primary references.</p>	<p>Very few references are cited in text of paper; final citation list is largely incomplete and/or is not formatted properly.</p>	<p>References within body of paper and in final citation list are done appropriately for the most part, but that are consistent exceptions  e.g., citations are used sparingly throughout the paper when background information is presented <b>OR</b> there are consistent formatting</p>	<p>References within body of paper are cited appropriately; references in final citation list are formatted correctly and listed alphabetically by author, but there are one or two exceptions.  e.g., citations are done well except that one or two references listed in text do not appear in the final list <b>OR</b> there</p>	<p>References within body of paper are cited appropriately; references in final citation list are formatted correctly and listed alphabetically.</p>

			errors in text and final citation list.	are a few minor formatting errors in the final citation list.	
<b>Overall, grammar, organization, wording</b>	All poorly organized, interrupted flow to ideas leading to lack of clarity, can not follow thought progression, many grammatical/typographical errors	Problematic organization of some sections resulting in significant loss of clarity; awkward wording at times; some grammatical /typographical errors.	Organization somewhat problematic but can still follow thought progression  e.g., explanation of methods in the results section; wording awkward at times, some grammatical / typographical errors	Organization good with few to no problems, wording awkward in a few places, a few grammatical/typographical errors	Excellent organization and flow of paper content, appropriate word choice, one or tow or no grammatical/typographical errors.