

Genetics Lab Report Rubric (for exploratory science or hypothesis-driven research)

Modified 2/28/2018

Criteria	Specific Objectives	Level of Achievement			
		Excellent	Acceptable	Needs work	Absent
	Each specific objective is worth 2–4 points for <i>excellent</i> work, half that value for <i>needs work</i> , and 0 points if <i>absent</i> .				
(1) <i>Title of lab report (2 points)</i>	(a) Title is specific and clearly conveys a summary of the lab report findings.				
(2) <i>Abstract (9 points)</i> The abstract helps the reader to understand the larger document by acting as a summary or “pre-reading” of the key points. The abstract describes the question your experiment is designed to address and its scientific merit. The abstract is concise yet complete: ≤ 300 word paragraph summary. 1-2 well-developed sentences articulate each objective listed.	(a) Links purpose or motivation for experiment to concepts and “big picture.” (b) States particular question/objective or (alternative) hypothesis addressed in experiment. (c) Briefly summarizes experimental approach. (d) Describes major findings and interpretations. (e) Findings are linked back to question or hypothesis. (f) Describes importance & significant implications of experiment.				
(3) <i>Introduction (12 points)</i> What does the reader need to know to understand your questions? Background might include a review of the general genetics topic under study and/or why the study system is appropriate to address your question.	(a) Provides background specific to your question. (b) Links purpose or motivation for experiment to concepts and “big picture.” (c) Ends with a statement of hypothesis or goals.				
(4) <i>Methods (10 points)</i> How will you address your question? What data will you collect and how? How will you analyze and interpret this data? What do you expect to find and what evidence would be needed to support your hypothesis?	(a) Begins with 1-2 sentences describing the overall experimental design, including the purpose of the experiment. (b) Describes specific data collection with appropriate detail so the experiment could be replicated, noting any changes to published protocols. (c) Describes analysis and interpretation procedures, e.g., statistical test, appropriate for the data & question. (d) Describes evidence needed to address question or support/reject hypothesis (e) Includes appropriate controls.				
(5) <i>Results (9 points)</i> What did you find? (See also Figures & tables)	(a) Begins with 1-2 sentences describing the overall findings of the lab. (b) Reports only findings from the data analysis, without making explanations or conclusions about the data. (c) Findings correspond to data and reported results in lab notebook.				

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<p>(6) <i>Discussion (15 points)</i> What do your findings mean? Interpret your results with regard to your hypothesis.</p>	<p>(a) Begins with a statement relating the overall results to the question or hypothesis. (b) Uses specific data as evidence to decide how the question is addressed or whether hypothesis is supported. (c) Uses scientific concepts accurately and convincingly to explain how the question is addressed or whether the data support the hypothesis. (d) Connects back to ideas in the introduction. (e) Describes importance & significant implications of experiment. <i>Addresses other issues as appropriate, e.g., problems that occurred; sources of uncertainty in the lab procedure or findings; comparison of findings to others' findings and explanation for differences; improvements or extensions of the experiment.</i></p>				
<p>(7) <i>Figures & tables (10 points)</i> Graphs; drawings, diagrams, tables.</p>	<p>(a) Appropriate visuals for the type of data. (b) Uses correct format (axis labels, graph components such as legend). (c) Caption describes the result in sentence form below figure or as title above table. (d) Discusses and clearly references visuals in text (e) Displays visuals at the end of the report.</p>				
<p>(8) <i>Literature Cited (8 points)</i> List of all published literature cited in the lab report, formatted in the style of the journal <i>Genetics</i>.</p>	<p>(a) Cites at least <i>five</i> appropriate peer-reviewed scientific papers in addition to all other resources necessary to the writing (4 points) (b) Avoids citing websites unless appropriate for this particular subject. (c) Formats in-text and literature cited (at end) in the style of the journal <i>Genetics</i>. (d) Includes in-text citations with the concept they reference, not shuffled to the end of a paragraph.</p>				
<p>(9) <i>Writing and ideas (15 points)</i> Grammar; spelling; clarity and conciseness of sentences; flow of ideas; use of technical terminology.</p>	<p>(a) Avoids grammatical and spelling errors. (b) Sentences are clear and to the point. (c) Flow of ideas is cohesive and logical. (d) Use of technical terminology is appropriate (e) Words are abbreviated or italicized consistently and as appropriate (e.g. species names, gene and allele names)</p>				
<p>(10) <i>Format of report (10 points)</i> Organization; page formatting; font style</p>	<p>(a) No separate title page or page breaks between sections (b) Report is written entirely in sentences organized as paragraphs (not bulleted list), with appropriate paragraph breaks between ideas. (c) Abstract limited to 300 words (d) Report is organized into sections (i.e., abstract, methods, etc.) with headings that are bold. (e) Page format: Times New Roman 12 pt font (even for headings); 1 inch margins; single-spaced; pages are numbered as needed.</p>				