

**Project rubric**

	Not there yet (1–2)	Meets the standard (3–4)	Exceeds the standard (5–6)
Forming purpose and hypothesis	<ul style="list-style-type: none"> <li>The purpose of the investigation has no scientific relevance.</li> <li>Background information is incorrect or is not related to the investigation.</li> <li>The hypothesis does not make a prediction or cannot be tested or is not supported by the background information.</li> <li>No citations are provided.</li> </ul>	<ul style="list-style-type: none"> <li>The purpose has scientific relevance.</li> <li>Background information contains scientific facts and relates to the investigation.</li> <li>The hypothesis makes a prediction and is testable and background information leads directly to the hypothesis.</li> <li>Citations are included.</li> </ul>	<ul style="list-style-type: none"> <li>The purpose is scientifically relevant and relates to a real-world concern.</li> <li>The background information is clear and concise and uses scientific facts to explain the importance of the investigation.</li> <li>The hypothesis makes a prediction, is testable, is backed by facts from the research, and points toward scientific relationships (variables are clearly identifiable).</li> <li>Both parenthetical and resource citations are included.</li> </ul>
Designing an investigation	<ul style="list-style-type: none"> <li>The plan does not use scientific knowledge, does not include safety procedures, or lacks ethical considerations for animal experimentation. Note: The plan must gain approval of the Institutional Animal Care and Use Committee (IACUC) before experimentation may proceed.</li> <li>The plan is impractical and likely to produce flawed data.</li> <li>The plan does not identify the variables or is incomplete.</li> </ul>	<ul style="list-style-type: none"> <li>The plan includes safety procedures and follows ethical principles for animal experimentation. The plan meets IACUC regulations.</li> <li>The plan provides collection of data that will answer the purpose and test the hypothesis.</li> <li>The plan identifies variables, includes some methods to control variables, and is practical and easy to follow.</li> </ul>	<ul style="list-style-type: none"> <li>The plan includes precise and safe procedures following current ethical standards for animal experimentation (the plan meets IACUC regulations) and includes public education components about the animal. The plan is well written to provide data of sufficient quality and quantity to answer the purpose and test the hypothesis.</li> <li>The plan identifies variables, includes methods for controlling variables, is detailed, and can be replicated.</li> </ul>
Collecting and presenting data	<ul style="list-style-type: none"> <li>The data collected do not match planned procedures or, upon inspection, animals are not receiving proper care—if at any time the latter is the case, the experiment will be terminated.</li> <li>Transformation of data is incomplete.</li> <li>Display of data is inaccurate, unorganized, or incomplete.</li> </ul>	<ul style="list-style-type: none"> <li>Measurements and observations are recorded carefully in a data table according to procedures. Adjustments may not be made to ensure accuracy of data, but safe, ethical procedures for handling the animals are maintained as observed by spot inspection.</li> <li>Data are transformed into a graph that is complete and somewhat useful for analysis.</li> <li>Data are organized in a summary or graph that includes proper units and titles.</li> </ul>	<ul style="list-style-type: none"> <li>Data are accurately obtained and recorded following planned procedures. Adjustments are made to the procedures to ensure accuracy of data, and safe, ethical practices while handling the animals are observed by spot inspection.</li> <li>Data are transformed to highlight the patterns and relationships that help answer the purpose.</li> <li>Data display is logical and organized and gives the visual picture that answers the purpose.</li> </ul>
Analyzing and interpreting results	<ul style="list-style-type: none"> <li>No attempt is made at interpreting results, or interpretation shows errors in the understanding of the results.</li> <li>The review of the investigation does not take into consideration errors and limitations.</li> <li>Conclusions are not supported by the results or are not related to the purpose or hypothesis.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific understanding is used to identify patterns in the results and an explanation of results is proposed.</li> <li>The investigation's design has been reviewed and sources of limitations and errors are identified.</li> <li>The results of the investigation are used to draw conclusions that relate to the purpose and hypothesis.</li> </ul>	<ul style="list-style-type: none"> <li>Scientific knowledge from the background information is used to correctly report results and discuss the relationships found in the results.</li> <li>The investigation's design and results have been reviewed to identify important limitations and errors, and an error analysis has been conducted</li> <li>There is a description of how the results support the conclusion and address the purpose and hypothesis.</li> </ul>
Displaying and presenting project	<ul style="list-style-type: none"> <li>The display is disorganized and does not support the project.</li> <li>The presentation does not fall within the 3–5-minute time limit.</li> <li>Speakers are inaudible and expressionless or do not make eye contact with the audience.</li> <li>Some components of the project are missing.</li> </ul>	<ul style="list-style-type: none"> <li>The display supports the presentation and is neat and organized.</li> <li>The presentation falls within the 3–5-minute time limit.</li> <li>Speakers are audible, use expressions, and make eye contact with the audience.</li> <li>All components of the project are presented.</li> </ul>	<ul style="list-style-type: none"> <li>The display is creative and organized and supports the presentation.</li> <li>Presentation time is used effectively, and the presentation falls within the 3–5-minute time limit.</li> <li>Speakers are audible, use of expression shows excitement for the topic, and eye contact is established throughout presentation.</li> <li>All components of the project are presented and discussed with the audience.</li> </ul>