AP Biology 12 – **Investigation 13 – Enzyme Activity**  Assessed by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Bl:\_\_

***Assessment Criteria:*** *Please highlight evidence according to the performance standards below*

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| --- | --- | --- | --- | --- |
| ***Overall*** | **Beginning** | **Developing** | **Accomplished** | **Exemplary** |
| **Experimental Design** | * Introduction is missing
* Hypothesis is missing
* Most variables are missing and/or incorrectly identified
* There is no attempt at including appropriate controls and/or repetition
 | * Introduction is present but lacks depth and citations
* Hypothesis is stated but not appropriate
* Almost all variables identified correctly (dependent, independent, constants)
* There is an attempt at including appropriate controls and/or repetition, but they are incorrect
 | * Introduction provides some background for the research lacks citations
* Hypotheses is stated (if, then) but incomplete (no because)
* All variables identified correctly (dependent, independent, constants), but lacking in clarity
* Controls and repetition are included but and are almost appropriate to the experiment
 | * Detailed Introduction providing background for the research with citations
* Hypotheses is stated (if, then, because)
* All variables clearly and correctly identified (dependent, independent, constants)
* Appropriate controls and repetition correctly described
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| **Graph and data tables***Please refer to Appendix B in AP Investigative Lab Manual* | * Title is missing or incorrect
* X & Y axis are not properly placed (independent and dependant variables are switched)
* Data points are not plotted correctly
* Choice of bar graph and/or best fit line/curve is not appropriate for the data

* Graph is not neat or clear and/or space is not used effectively
 | * Title incorporates “Y vs X,” but missing units and/or relevant information
* X & Y axis
	+ Has independent/dependent variable labelled but is missing units
* Data points are *somewhat* correctly plotted with dot and circle
* Appropriate bar or best-fit line/curve graph type is chosen, however, best fit line/curve *does not* accurately depict the data plots (watch out for inappropriately including a “zero”)
* *Somewhat* neat and clear with ruler used; space is somewhat used effectively
 | * Title incorporates “Y vs X” and units, but missing other relevant information
* X & Y axis
	+ Has independent/dependent variable labelled with units, but interval scale is not completely uniform
* Data points *mostly* correctly plotted with dot and circle, clearly marked with standard error bars and legend if appropriate
* Appropriate bar or best-fit line/curve graph type is chosen, however, line/curve *almost* accurately depicts the data plots (watch out for inappropriately including a “zero”)
* *Mostly* neat and clear with ruler used; space is mostly used effectively
 | * Complete, clear, informative title that incorporates “Y vs X” and units
* X & Y axis
	+ Independent/Dependent variable
	+ Labelled with units
	+ Uniform interval scale
* Data points *correctly* plotted with dot and circle, clearly marked with standard error bars and legend if appropriate
* Appropriate graph type is chosen
	+ Bar for discreet data or best-fit line/curve graphs for continuous data
	+ Line/curve of best fit represents data plots
* Neat and clear with ruler used; space used effectively
 |
| **Conclusion** | * Hypothesis and/or results not referred to

* No sources of error
* Does not discuss relevance
 | * Refers to purpose, summarizes results without insight

* Sources of error not relevant
* Relevance inappropriate
 | * Answers purpose by summarizing results
* States 1-2 relevant sources of error
* Reveals relevance of results
 | * Answers purpose by comparing key results to objectives and predictions/hypothesis (supported/not supported/rejected)
* States 2 or more insightful sources of error and suggests improvements
* Connects to big picture (relevance)
* Asks new questions and suggests new experiments for the future
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| **Works Cited** | * Citations are not properly used in APA formatting
* Citations do not support the text in an appropriate way
* Works cited is not correctly formatted and in APA formatting
* Citations are missing altogether
 | * Some citations are properly used in APA formatting
* Some citations support the text in an appropriate way
* Works cited is not correctly formatted and in APA formatting
* Less than 2 different sources
 | * Most citations are properly used in APA formatting
* Most citations support the text in an appropriate way
* Works cited is not correctly formatted and in APA formatting
* Less than 3 different sources
 | * Citations are properly used in APA formatting
* Citations support the text in an appropriate way
* Works cited is correctly formatted and in APA formatting
* At least 3 different sources
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 Brady 2018 *adapted from* Wood 2014