

## PLTW Principles of Biomedical Science (9th grade) Proficiency Scales

<b>CAR-B.1 Describe the impact that biomedical science research and inventions have on society.</b>		
<b>Topic: Career Readiness</b>		
<b>Grade: 9th grade</b>		
<b>Score</b>		<b>Sample Activities</b>
<b>4.0</b>	<ul style="list-style-type: none"> <li>I can evaluate how major biomedical inventions have shaped society over time, including their effects on health care and lifestyle.</li> <li>I can analyze how biomedical research influences public health policies and societal attitudes.</li> <li>I can predict the potential future impacts of ongoing biomedical research, considering both potential benefits and challenges.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can describe how biomedical research and inventions have made a positive difference in people's health and lives.</li> <li>I can analyze the effects of specific biomedical discoveries on society, such as how a new drug or treatment impacts daily life.</li> <li>I can discuss both the benefits and possible drawbacks of biomedical advancements.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	

<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>• I can name a few biomedical inventions or research discoveries, like vaccines or medical imaging.</li> <li>• I can explain how one biomedical invention helps people or improves health.</li> <li>• I can ask for help if I'm unsure how a biomedical advance affects society.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>• I can name one or two biomedical inventions or discoveries, but I need help explaining how they impact people or society.</li> <li>• I struggle to connect biomedical research or inventions to changes in health care, lifestyle, or public health.</li> <li>• I have difficulty explaining how biomedical advancements benefit or affect people's daily lives, even with guidance.</li> <li>•</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>• I <b>cannot name or identify</b> any biomedical inventions or research discoveries.</li> <li>• I <b>cannot explain</b> how biomedical research or inventions impact people, society, or health care, even with help.</li> <li>• I show <b>little to no understanding</b> of how biomedical science has influenced society.</li> <li>•</li> </ul>	

<b>EXD-B.1 Demonstrates an ability to accurately follow a lab protocol.</b>		
<b>Topic: Experimental Design</b>		
<b>Grade: 9th grade</b>		
<b>Score</b>		<b>Sample Activities</b>
<b>4.0</b>	<ul style="list-style-type: none"> <li>• I am always prepared for the lab, having reviewed the protocol ahead of time and bringing all materials.</li> <li>• I consistently wear the correct PPE and ensure it's fitted properly throughout the lab.</li> <li>• I follow 100% of the instructions without help, completing all steps quickly and accurately.</li> <li>• I maintain a safe workspace, reminding others if necessary, and take responsibility for safety at all times.</li> <li>• I thoroughly clean up my area and assist others in organizing and cleaning their spaces.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>• I am prepared for the lab with materials ready and PPE worn correctly.</li> <li>• I follow most of the instructions (90-100%) accurately and on time, needing little to no help.</li> <li>• I practice safe lab behavior consistently and make sure to follow all safety rules with minimal reminders.</li> <li>• I fully clean up my workspace and store materials properly, finishing in a timely manner.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>• I am somewhat prepared, but may need to double-check materials or get reminders to wear PPE.</li> <li>• I follow about 75-90% of the instructions, but I may miss steps or need help staying on track.</li> <li>• I need occasional reminders to practice safe lab behavior or follow certain protocols.</li> </ul>	

	<ul style="list-style-type: none"> <li>• I complete some parts of clean-up but may need help organizing materials or finishing the process correctly.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>• I am often unprepared, forgetting materials or needing frequent reminders to wear PPE.</li> <li>• I struggle to follow the protocol, completing less than 75% of the steps correctly without significant help.</li> <li>• I need constant reminders to work safely and follow instructions.</li> <li>• My workspace is usually disorganized, and I need help cleaning up or putting materials away.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>• I <b>do not follow the lab protocol</b> or fail to complete the steps, often needing full assistance.</li> <li>• I <b>do not wear PPE</b> or ignore safety guidelines, creating unsafe conditions for myself and others.</li> <li>• I leave my workspace <b>unclean and disorganized</b>, and do not help with the clean-up process.</li> <li>• </li> </ul>	

<b>EXD-B.4 Draw logical conclusions from experimental data.</b>		
<b>Topic: Experimental Design</b>		
<b>Grade: 9th grade</b>		
<b>Score</b>		<b>Sample Activities</b>
<b>4.0</b>	<ul style="list-style-type: none"> <li>• I can accurately interpret 100% of the data and identify trends, patterns, or relationships on my own.</li> <li>• I consistently draw logical, well-supported conclusions that connect the data to the scientific concept or hypothesis.</li> <li>• I can explain my conclusions in detail and offer insights or extensions beyond the experiment's scope.</li> <li>• I regularly suggest ways to improve the experiment or consider alternative explanations for the data.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>• I interpret most of the data (90-100%) correctly, recognizing key trends or patterns.</li> <li>• I can draw logical conclusions based on the data, with minimal assistance or guidance.</li> <li>• I explain my conclusions clearly and connect them to the experiment's hypothesis or objectives.</li> <li>• I consider the accuracy of my data and results when drawing conclusions.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>• I interpret some of the data (75-90%) correctly, but I may miss key details or patterns.</li> <li>• I can draw conclusions, but they may be partially correct or need additional guidance to make them clear and logical.</li> <li>• I have trouble explaining how the data supports my conclusion and may need help connecting it to the hypothesis.</li> <li>• I may overlook data that doesn't fit or fail to consider potential errors.</li> </ul>	

1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>• I interpret less than 75% of the data correctly, and I often miss trends or patterns.</li> <li>• I need help from peers or staff to do my work.</li> <li>• My conclusions are unclear or illogical and don't clearly relate to the data or hypothesis.</li> <li>• I struggle to explain my reasoning and need significant help to make sense of the data.</li> <li>• I ignore important aspects of the data or fail to consider alternative explanations.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>• I am unable to interpret the data or <b>draw any logical conclusions</b> from it.</li> <li>• My conclusions do not connect to the data or the experiment's purpose.</li> <li>• I cannot explain my reasoning, even with assistance, and I fail to identify patterns or trends in the data.</li> <li>• I do not consider accuracy, errors, or potential improvements in my conclusions.</li> </ul>	

<b>CME-B.1 Collect, assess and interpret patient vital signs.</b>		
<b>Topic: Clinical Medicine</b>		
<b>Grade: 9th grade</b>		
<b>Score</b>		<b>Sample Activities</b>
<b>4.0</b>	<ul style="list-style-type: none"> <li>I can accurately collect, assess, and interpret patient vital signs in a variety of situations, recognizing abnormal values and explaining their possible causes. I can also suggest appropriate next steps based on my findings.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can correctly collect, assess, and interpret patient vital signs, recognizing when values are normal or abnormal and explaining what they mean.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I can collect and assess patient vital signs, but I sometimes need help interpreting what the values mean or recognizing when something is abnormal.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can collect patient vital signs, but I need help assessing or interpreting them correctly.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I am not able to collect, assess, or interpret patient vital signs, even with help.</li> </ul>	

<b>CME-C.4 Describe measures to prevent disease, disorder, or injury, such as regular doctor's visits and screening tests.</b>		
<b>Topic: Clinical Medicine</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can describe multiple ways to prevent disease, disorder, and injury, including regular check-ups and screening tests. I can also explain why these measures are important and suggest specific prevention strategies based on a person's age, lifestyle, or risk factors.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can describe ways to prevent disease, disorder, and injury, such as regular doctor's visits, screening tests, and healthy habits.</li> <li>I can identify and describe routine tests that take place during a doctor visit and how those tests may differ based on things like patient age.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I can describe some ways to prevent disease, disorder, or injury, but I may need help explaining why they are important or how they work.</li> <li>I know and understand the vocabulary associated with this standard.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	



<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can list one or two ways to prevent disease, disorder, or injury, but I need help understanding or explaining them.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I am not able to describe ways to prevent disease, disorder, or injury, even with help.</li> </ul>	

<b>CME.A.3 Demonstrate adherence to HIPAA guidelines to maintain patient privacy</b>		
<b>Topic: Clinical Medicine</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I consistently follow HIPAA guidelines to protect patient privacy in all situations. I can explain why these rules are important and apply them to real-world scenarios, even in challenging or unfamiliar situations.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can follow HIPAA guidelines to maintain patient privacy. I understand what information is protected and when and how it can be shared.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand key vocabulary related to HIPAA and patient privacy.</li> <li>I can explain some HIPAA guidelines but may need help applying them correctly in all situations.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	

<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I know that patient privacy is important and can recognize some HIPAA rules, but I need help understanding or following them correctly.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I do not understand HIPAA guidelines or how to protect patient privacy, even with help.</li> </ul>	

ERM-A.7 Weigh the ethical implications of biomedical science decisions.		
Topic: Ethical Reasoning and Mindset		
Grade: 9th grade		
Score 4.0	<ul style="list-style-type: none"> <li>I can explain multiple sides of a biomedical issue, compare different points of view, and give thoughtful reasons for what I think is the most ethical choice.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<ul style="list-style-type: none"> <li>I can describe the ethical issues in a biomedical decision and explain why a choice could be right or wrong using facts and reasoning.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
Score 2.0	<ul style="list-style-type: none"> <li>I understand important vocabulary like “ethics,” “consent,” “privacy,” and “bias,” and I can name some ethical concerns, but I need help explaining why they matter.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
Score 1.0	<ul style="list-style-type: none"> <li>I can talk about the ethical decision if someone helps me understand the situation or gives me questions to think about.</li> </ul>	

0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to identify or talk about ethical issues in biomedical science, even when I get help.</li> </ul>	

EXD-A.6 Select and use equipment appropriately to conduct experiments		
<b>Topic: Experimental Design</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can choose the right equipment, use it safely and accurately, and help others troubleshoot or improve how the experiment is done.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can select the correct equipment and use it the right way to complete an experiment safely and correctly.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	

<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand the names and basic uses of common lab tools (like graduated cylinder, thermometer, microscope, etc.), but I still need reminders about how or when to use them.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can use equipment safely and correctly if someone helps me or gives me step-by-step instructions.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I can't use lab equipment correctly or safely, even with help.</li> </ul>	

EXD-A.1 Develop a testable hypothesis and design an experimental protocol that evaluates its validity.		
Topic: Experimental Design		
Grade: 9th grade		
Score 4.0	<ul style="list-style-type: none"> <li>I can write a strong, testable hypothesis and design a detailed experiment that includes controls, multiple trials, and explains how I'll collect and analyze data to check if the hypothesis is valid.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<ul style="list-style-type: none"> <li>I can write a clear, testable hypothesis and design an experiment that can test if it's true using appropriate steps and materials.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
Score 2.0	<ul style="list-style-type: none"> <li>I understand the vocabulary like "hypothesis," "variable," and "procedure," and I can write a simple hypothesis and describe a basic experiment, but I miss some parts or steps.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
Score 1.0	<ul style="list-style-type: none"> <li>I can come up with a hypothesis or describe an experiment if someone gives me help, examples, or questions to guide me.</li> </ul>	

0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to write a hypothesis or design an experiment, even with help.</li> </ul>	



<b>ANP-A.1 Describe the anatomy and physiology of key human body systems as well as the organization and interaction of these systems.</b>		
<b>Topic: Anatomy and Physiology</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can explain how multiple body systems work together (like how the respiratory and circulatory systems work to deliver oxygen), and I can describe what happens when one system doesn't work properly.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can describe the main parts (anatomy) and functions (physiology) of key human body systems and how they are connected to each other.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand key vocabulary like "organ," "system," "function," and "interaction," and I can name some body parts and what they do, but I'm still learning how they all connect.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	

<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can name a few body parts or functions when someone helps me or gives me clues.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to describe body systems or what they do, even with help.</li> </ul>	

<b>CME-B.3 Interpret medical information and/or laboratory test results to draw conclusions.</b>		
<b>Topic: Clinical Medicine</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can analyze medical or lab data, spot patterns or unusual results, and explain what the results might mean for a person's health using clear reasoning and evidence.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can look at medical information or lab test results and draw a logical conclusion that matches the data.</li> </ul>	

2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand key terms like “normal range,” “diagnosis,” and “lab report,” and I can sometimes figure out what the data shows, but I make some mistakes or miss important details.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can read and talk about the medical data or lab results if someone helps me understand what to look for or what it means.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I’m not able to understand or explain medical information or lab results, even when I get help.</li> </ul>	

<b>CME-A.2 Maintain accurate patient records and demonstrate why this is important.</b>		
<b>Topic: Clinical Medicine</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can accurately complete patient records and explain in detail how errors or missing information can affect patient care, safety, and legal responsibility.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can correctly fill out patient records with accurate and complete information, and I can explain why keeping good records is important in healthcare.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand vocabulary like “patient chart,” “confidential,” and “accurate,” and I can fill out basic parts of a record, but I may leave things out or make small errors.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	

<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can fill in or talk about patient records if someone gives me step-by-step help or an example to follow.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to fill out or explain patient records, even with help.</li> </ul>	

CCP-C.1 Assess how design and innovation can help solve a problem in biomedical science.		
Topic: Critical and Creative Problem Solving		
Grade: 9th grade		
Score 4.0	<ul style="list-style-type: none"> <li>I can explain how a biomedical invention or design solves a problem, suggest ways to improve it, and connect it to real-world patient or healthcare needs.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
Score 3.0	<ul style="list-style-type: none"> <li>I can describe how a specific design or innovation helps solve a problem in biomedical science and explain why it works.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
Score 2.0	<ul style="list-style-type: none"> <li>I understand key terms like “innovation,” “prototype,” and “problem-solving,” and I can describe a design or invention, but I have trouble explaining how it solves a biomedical problem.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
Score 1.0	<ul style="list-style-type: none"> <li>I can talk about a design or idea related to biomedical science if someone helps me understand what problem it solves or how it works.</li> </ul>	

0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to explain how design or innovation can solve biomedical problems, even with help.</li> </ul>	

<b>MBG-B.1 Differentiate between mitosis and meiosis and model how these processes led to genetic diversity.</b>		
<b>Topic: Molecular biology and genetics</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can clearly explain the differences between mitosis and meiosis, accurately model each process, and describe how meiosis creates genetic diversity using examples like crossing over and independent assortment.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can describe the differences between mitosis and meiosis and explain how meiosis leads to genetic diversity.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand key vocabulary like “chromosome,” “division,” “genetic diversity,” and “meiosis,” and I can describe parts of each process, but I still mix up some steps or get confused about how diversity happens.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	



<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can describe one or both processes if someone helps me with the steps or reminds me of the vocabulary.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to explain mitosis or meiosis or how they relate to genetic diversity, even with help.</li> </ul>	

<b>MBG-A.1 Describe the structure and function of nucleic acids and the relationship among genes, alleles, chromosomes, proteins, and traits.</b>		
<b>Topic: Molecular biology and genetics</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can explain the structure and role of DNA and RNA, and clearly describe how genes, alleles, chromosomes, proteins, and traits are connected, using examples to show how changes in one affect the others.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can describe the basic structure and function of nucleic acids and explain how genes, alleles, chromosomes, proteins, and traits relate to each other.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand key terms like “DNA,” “gene,” “allele,” “chromosome,” “protein,” and “trait,” and I can describe some relationships, but I’m still working on putting everything together clearly.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	

<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can name some parts or explain a few relationships if someone helps me with definitions or examples.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to describe nucleic acids or explain the connections between genes, chromosomes, proteins, and traits, even with help.</li> </ul>	

<b>MBG-B.2 Analyze Karyotypes to diagnose chromosomal abnormalities.</b>		
<b>Topic: Molecular biology and genetics</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can accurately analyze complex karyotypes, identify different types of chromosomal abnormalities, explain their possible effects on health, and suggest how they might happen.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can analyze karyotypes correctly to identify common chromosomal abnormalities like extra or missing chromosomes and explain what these might mean.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand important vocabulary like “chromosome,” “karyotype,” “abnormality,” and “trisomy,” and I can identify some abnormalities but may make mistakes or miss details.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	

<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>• I can recognize chromosome pictures or describe abnormalities if someone helps me with clues or examples.</li> </ul>	
0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>• I'm not able to analyze karyotypes or identify chromosome problems, even with help.</li> </ul>	

GLP-B.5 Demonstrate proper use of a microscope to view biological samples.		
<b>Topic: general laboratory practices</b>		
<b>Grade: 9th grade</b>		
<b>Score 4.0</b>	<ul style="list-style-type: none"> <li>I can set up and use a microscope correctly and safely, focus on samples at different magnifications, and help others improve their technique.</li> </ul>	
3.5	In addition to score 3.0 performance, in-depth inferences and applications with partial success.	
<b>Score 3.0</b>	<ul style="list-style-type: none"> <li>I can use a microscope properly to view biological samples, including adjusting focus and changing magnification.</li> </ul>	
2.5	No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content.	
<b>Score 2.0</b>	<ul style="list-style-type: none"> <li>I understand microscope parts and terms like “focus,” “objective lens,” and “slide,” and I can use the microscope with some help but still have trouble adjusting focus or changing lenses smoothly.</li> </ul>	
1.5	Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content.	
<b>Score 1.0</b>	<ul style="list-style-type: none"> <li>I can use the microscope if someone gives me step-by-step instructions or helps me focus.</li> </ul>	

0.5	With help, a partial understanding of the 2.0 content, but not the 3.0 content.	
<b>Score 0.0</b>	<ul style="list-style-type: none"> <li>I'm not able to use a microscope properly, even with help.</li> </ul>	