



Unit 6: CTE Alignment Matrix

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Executive Summary

Sponsored by Genentech, Futurelab+ brought together a coalition of partners to develop an innovative, modular, 2-year biotechnology curriculum, along with instructional materials, to expose students and educators to the breadth of education and career pathways across biotechnology. To increase adoption and access to such curricula in California and beyond, the modular curriculum was designed to align with the [California Career Technical Education \(CTE\) Model Curriculum Standards for Biotechnology](#), meet at least 1 year of the [University of California science \(D\) subject requirement](#), and incorporate some of the three-dimensional learning innovations of the [Next Generation Science Standards](#). The 2-year biotechnology curriculum has four core units per year; each core unit has nine lessons and a lab that each take approximately 1 week to complete (9–10 weeks for the full unit). In total, the biotechnology curriculum has 72 lessons and eight labs that span 2 full instructional years. Because the Futurelab+ biotechnology curriculum is modular, teachers can select specific units and materials to design biotechnology courses that are relevant and appropriate for their students and teaching environments.

The purpose of this report is to provide teachers an independent review of which California CTE biotechnology standards are addressed within the curriculum and where they are addressed. The matrices that follow indicate the assignments and/or activities in which students demonstrate their understanding of a particular standard.

This review was completed on materials received May 16, 2022, and has not been updated to reflect any revisions made to materials since then. Only the standards met within Unit 6 are included in the matrices.

Anchor Standards

Standard	Description	Assessed (all student sections)
2.0 Communications: <i>Acquire and accurately use Health Science and Medical Technology sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats. (Direct alignment with LS 9–10, 11–12.6)</i>		
2.2	Identify barriers to accurate and appropriate communication.	Lesson 8, Day 1 <i>Stakeholder Contact List</i> <i>Discussion</i> —assessment at teacher discretion <i>Interview Questions</i> —capture sheet Lesson 8, Day 2 <i>Script Template for Emails</i> <i>Discussion</i> —strategy, assessment at teacher discretion Lesson 8, Day 3 <i>Project Notebook</i> Lesson 8, Day 4 <i>Project Notebook</i>
2.3	Interpret verbal and nonverbal communications and respond appropriately.	Lesson 8, Day 3 <i>Interview Summaries</i> —capture sheet
2.4	Demonstrate elements of written and electronic communication such as accurate spelling, grammar, and format.	Lesson 8, Day 2 <i>Script Template for Emails</i> <i>Discussion</i> —strategy, assessment at teacher discretion Lesson 8, Day 3 <i>Project Notebook</i>
2.5	Communicate information and ideas effectively to multiple audiences using a variety of media and formats.	Lesson 8, Day 1 <i>Stakeholder Contact List</i> <i>Discussion</i> —assessment at teacher discretion <i>Interview Questions</i> —capture sheet Lesson 8, Day 2 <i>Script Template for Emails</i> <i>Discussion</i> —strategy, assessment at teacher discretion Lesson 8, Day 3 <i>Project Notebook</i> <i>Interview Summaries</i> —capture sheet Lesson 8, Day 4 <i>Project Notebook</i> Lesson 10, Day 1 <i>Discussion</i> —strategy, assessment at teacher discretion <i>Survey Analysis</i> —capture sheet

Standard	Description	Assessed (all student sections)
		<p>Lesson 10, Day 2 <i>Discussion</i>—strategy, assessment at teacher discretion <i>Project Notebook</i></p> <p>Lesson 10, Day 3 <i>Peer Feedback</i>—assessment at teacher discretion</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion <i>Project Notebook</i></p>
<p>3.0 Career Planning and Management: <i>Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans. (Direct alignment with SLS 11–12.2)</i></p>		
3.4	<p>Research the scope of career opportunities available and the requirements for education, training, certification, and licensure.</p>	<p>Lesson 4, Day 2 <i>Careers Highlight</i>—capture sheet <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 4, Day 3 <i>Recap Assessment</i>—capture sheet <i>Manufacturing and Commercialization Flowchart</i>—capture sheet</p> <p>Lesson 4, Day 4 <i>Analysis of Other Group Work, Rounds 1–4</i>—capture sheet <i>Golden Rice Case Study</i>—rubric</p>
<p>4.0 Technology: <i>Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Health Science and Medical Technology sector workplace environment. (Direct alignment with WS 11–12.6)</i></p>		
4.1	<p>Use electronic reference materials to gather information and produce products and services.</p>	<p>Lesson 4, Day 1 <i>Discover Golden Rice</i>—capture sheet</p> <p>Lesson 4, Day 2 <i>Careers Highlight</i>—capture sheet <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 4, Day 3 <i>Manufacturing and Commercialization Flowchart</i>—capture sheet</p> <p>Lesson 4, Day 4 <i>Golden Rice Case Study</i>—rubric</p> <p>Lesson 7, Day 1 <i>Anchoring GE Product Brainstorm</i>—capture sheet</p> <p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>

Standard	Description	Assessed (all student sections)
4.3	Use information and communication technologies to synthesize, summarize, compare, and contrast information from multiple sources.	<p>Lesson 6, Day 2 <i>Think Pair Share</i>—strategy, assessment at teacher discretion <i>Notice, Think, Wonder</i>—capture sheet <i>Industry Packet Resources, Medical Industry</i>—capture sheet <i>Industry Packet Resources, Farming Industry</i>—capture sheet <i>Industry Packet Resources, Nutrition Industry</i>—capture sheet <i>Industry Packet Resources, Food Retail Industry</i>—capture sheet <i>Project Notebook</i></p> <p>Lesson 6, Day 3 <i>Career Exploration</i>—capture sheet</p> <p>Lesson 6, Day 4 <i>Community Challenges</i>—capture sheet</p> <p>Lesson 6, Day 5 <i>Community Challenges</i>—capture sheet <i>Concept Map</i>—capture sheet</p> <p>Lesson 10, Day 1 <i>Survey Analysis</i>—capture sheet</p> <p>Lesson 10, Day 2 <i>Discussion</i>—strategy, assessment at teacher discretion <i>Project Notebook</i></p> <p>Lesson 10, Day 3 <i>Peer Feedback</i>—assessment at teacher discretion</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion <i>Project Notebook</i></p>
<p>5.0 Problem Solving and Critical Thinking: <i>Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Health Science and Medical Technology sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques. (Direct alignment with WS 11–12.7)</i></p>		
5.1	Identify and ask significant questions that clarify various points of view to solve problems.	<p>Lesson 6, Day 2 <i>Think-Pair-Share</i>—strategy, assessment at teacher discretion <i>Notice, Think, Wonder</i>—capture sheet <i>Industry Packet Resources, Medical Industry</i>—capture sheet <i>Industry Packet Resources, Farming Industry</i>—capture sheet <i>Industry Packet Resources, Nutrition Industry</i>—capture sheet</p>

Standard	Description	Assessed (all student sections)
		Industry Packet Resources, Food Retail Industry—capture sheet Project Notebook Lesson 6, Day 4 Community Challenges—capture sheet Lesson 6, Day 5 Community Challenges—capture sheet Concept Map—capture sheet Lesson 7, Day 1 Brainstorm—capture sheet Lesson 7, Day 1 Anchoring GE Product Brainstorm—capture sheet Lesson 7, Day 2 Novel GE Product Proposal—capture sheet Lesson 7, Day 4 Project Notebook
5.3	Use systems thinking to analyze how various components interact with each other to produce outcomes in a complex work environment.	Lesson 9, Day 1 <i>Discussion</i> —strategy, assessment at teacher discretion <i>Manufacturing of GMOs Webquest</i> —capture sheet <i>Exit Ticket</i> —strategy, assessment at teacher discretion Lesson 9, Day 2 <i>Manufacturing Research Guide</i> —capture sheet Lesson 9, Day 3 <i>Project Notebook</i> Lesson 9, Day 4 <i>Project Notebook</i> <i>Exit Ticket</i> —strategy, assessment at teacher discretion
5.4	Interpret information and draw conclusions, based on the best analysis, to make informed decisions.	Lesson 1, Day 1 <i>GMO Card Sort Reflection, Parts 1–3</i> —capture sheet <i>Discussion</i> —strategy, assessment at teacher discretion Lesson 1, Day 2 <i>GMO Notes</i> —capture sheet Lesson 1, Day 6 <i>CER Draft</i> —capture sheet Lesson 1, Day 7 <i>CER Final</i> —capture sheet Lesson 7, Day 1 <i>Anchoring GE Product Brainstorm</i> —capture sheet <i>Product Life Cycle Analysis</i> —capture sheet

Standard	Description	Assessed (all student sections)
		<p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 3 <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>
5.6	Read, interpret, and extract information from documents.	<p>Lesson 6, Day 2 <i>Think-Pair-Share</i>—strategy, assessment at teacher discretion <i>Notice, Think, Wonder</i>—capture sheet <i>Industry Packet Resources, Medical Industry</i>—capture sheet <i>Industry Packet Resources, Farming Industry</i>—capture sheet <i>Industry Packet Resources, Nutrition Industry</i>—capture sheet <i>Industry Packet Resources, Food Retail Industry</i>—capture sheet <i>Project Notebook</i></p> <p>Lesson 6, Day 3 <i>Career Exploration</i>—capture sheet</p> <p>Lesson 6, Day 4 <i>Community Challenges</i>—capture sheet</p> <p>Lesson 6, Day 5 <i>Community Challenges</i>—capture sheet <i>Concept Map</i>—capture sheet</p>
<p>6.0 Health and Safety: <i>Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Health Science and Medical Technology sector workplace environment. (Direct alignment with RSTS 9-10, 11-12.4)</i></p>		
6.2	Interpret policies, procedures, and regulations for the workplace environment, including employer and employee responsibilities.	<p>Lesson 9, Day 1 <i>Manufacturing of GMOs Webquest</i>—capture sheet</p> <p>Lesson 9, Day 2 <i>Manufacturing Research Guide</i>—capture sheet</p> <p>Lesson 9, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 4 <i>Project Notebook</i> <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p>

Standard	Description	Assessed (all student sections)
7.0 Responsibility and Flexibility: <i>Initiate and participate in a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Health Science and Medical Technology sector workplace environment and community settings. (Direct alignment with SLS 9–10, 11–12.1)</i>		
7.3	Understand the need to adapt to changing and varied roles and responsibilities.	Lesson 7, Day 1 <i>Product Life Cycle Analysis—capture sheet</i> Lesson 7, Day 3 <i>Exit Ticket—strategy, assessment at teacher discretion</i> Lesson 7, Day 4 <i>Project Notebook</i>
7.4	Practice time management and efficiency to fulfill responsibilities.	Lesson 7, Day 3 <i>Exit Ticket—strategy, assessment at teacher discretion</i> Lesson 7, Day 4 <i>Project Notebook</i>
7.5	Apply high–quality techniques to product or presentation design and development	Lesson 9, Day 3 <i>Project Notebook</i>
7.8	Explore issues of global significance and document the impact on the Health Science and Medical Technology sector.	Lesson 5, Day 3 <i>Position Statement—capture sheet</i> <i>Counterclaim—capture sheet</i> Lesson 5, Day 4 <i>Individual Reflection—capture sheet</i>

Pathway Standards

Standard	Description	Assessed
A1.0: Define and assess biotechnology and recognize the diverse applications and impact on society.		
A1.1	Use data to explain how biotechnology fields such as pharmaceuticals, agriculture, diagnostics, industrial products, instrumentation, and research and development are impacting human life.	<p>Lesson 4, Day 1 <i>Discover Golden Rice</i>—capture sheet <i>Exit Ticket</i>—assessment at teacher discretion</p> <p>Lesson 4, Day 2 <i>Careers Highlight</i>—capture sheet <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 4, Day 3 <i>Recap Assessment</i>—capture sheet <i>Manufacturing and Commercialization Flowchart</i>—capture sheet</p> <p>Lesson 4, Day 4 <i>Analysis of Other Group Work, Rounds 1–4</i>—capture sheet <i>Golden Rice Case Study</i>—rubric</p> <p>Lesson 4, Day 4 <i>Golden Rice Case Study</i>—rubric</p> <p>Lesson 7, Day 1 <i>Brainstorm</i>—capture sheet <i>Anchoring GE Product Brainstorm</i>—capture sheet</p> <p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>
A1.2	Describe the use of model organisms in biotechnology research and manufacturing.	<p>Lesson 7, Day 1 <i>Product Life Cycle Analysis</i>—capture sheet</p> <p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>
A1.4	Research and identify public misunderstandings related to biotechnology and discern the source of these misunderstandings	<p>Lesson 1, Day 2 <i>GMO Notes</i>—capture sheet</p> <p>Lesson 5, Day 1 <i>Discussion</i>—strategy, assessment at teacher discretion</p> <p>Lesson 5, Day 3 <i>Position Statement</i>—capture sheet <i>Counterclaim</i>—capture sheet</p>

Standard	Description	Assessed
		<p>Lesson 5, Day 4 <i>Individual Reflection</i>—capture sheet <i>Project Notebook</i></p> <p>Lesson 8, Day 1 <i>Interview Questions</i>—capture sheet</p> <p>Lesson 8, Day 3 <i>Project Notebook</i></p> <p>Lesson 8, Day 4 <i>Project Notebook</i></p>
A1.5	Evaluate the impact of biotechnological applications on both developing and industrial societies, including legal and judicial practices.	<p>Lesson 7, Day 1 <i>Brainstorm</i>—capture sheet <i>Anchoring GE Product Brainstorm</i>—capture sheet</p> <p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>
A1.6	Explore and outline the various science and non-science fields and careers associated with biotechnology.	<p>Lesson 4, Day 2 <i>Careers Highlight</i>—capture sheet <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 4, Day 3 <i>Recap Assessment</i>—capture sheet <i>Manufacturing and Commercialization Flowchart</i>—capture sheet</p> <p>Lesson 4, Day 4 <i>Golden Rice Case Study</i>—rubric</p>
<p>A2.0: Understand the ethical, moral, legal, and cultural issues related to the use of biotechnology research and product development.</p>		
A2.1	Know the relationship between morality and ethics in the development of biotechnology health care products.	<p>Lesson 5, Day 3 <i>Position Statement</i>—capture sheet <i>Counterclaim</i>—capture sheet</p> <p>Lesson 5, Day 4 <i>Individual Reflection</i>—capture sheet</p> <p>Lesson 8, Day 1 <i>Interview Questions</i>—capture sheet</p> <p>Lesson 8, Day 3 <i>Project Notebook</i></p>
A2.4	Understand the critical need for ethical policies and procedures for	<p>Lesson 4, Day 1 <i>Discover Golden Rice</i>—capture sheet</p>

Standard	Description	Assessed
	institutions engaged in biotechnology research and product development.	<p>Lesson 4, Day 2 <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 5, Day 3 <i>Position Statement</i>—capture sheet <i>Counterclaim</i>—capture sheet</p> <p>Lesson 5, Day 4 <i>Individual Reflection</i>—capture sheet</p> <p>Lesson 8, Day 1 <i>Interview Questions</i>—capture sheet</p> <p>Lesson 8, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 1 <i>Manufacturing of GMOs Webquest</i>—capture sheet</p> <p>Lesson 9, Day 2 <i>Manufacturing Research Guide</i>—capture sheet</p> <p>Lesson 9, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 4 <i>Project Notebook</i> <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 10, Day 1 <i>Interview Notes</i>—capture sheet</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion <i>Project Notebook</i></p>
A2.6	Prepare a presentation comparing the benefits and harm that can be the result of biotechnology innovations in both the research and application phases and which course of action will result in the best outcomes.	<p>Lesson 9, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 4 <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 10, Day 1 <i>Interview Notes</i>—capture sheet <i>Survey Analysis</i>—capture sheet</p> <p>Lesson 10, Day 2 <i>Project Notebook</i></p> <p>Lesson 10, Day 3 <i>Peer Feedback</i>—assessment at teacher discretion</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion <i>Project Notebook</i></p>

Standard	Description	Assessed
A3.0: <i>Demonstrate competencies in the fundamentals of molecular cell biology, including deoxyribonucleic acid (DNA) and proteins and standard techniques for their purification and manipulation.</i>		
A3.1	Define and describe the structure and function of DNA ribonucleic acid (RNA) and proteins, explain the consequences of DNA mutations on proteins.	<p>Lesson 3, Day 1 <i>GE Product Analysis</i>—capture sheet <i>Protein Slide</i>—capture sheet and rubric <i>Exit Ticket</i>—assessment at teacher discretion</p> <p>Lesson 3, Day 2 <i>Exploring Genetic Engineering Methods</i>—capture sheet <i>GE Product Profile</i>—capture sheet</p> <p>Lesson 3, Day 3 <i>Exit Ticket</i>—assessment at teacher discretion</p> <p>Lesson 3, Day 4 <i>Project Notebook</i>—assessment at teacher discretion</p>
A3.3	Employ standard techniques of DNA extraction, purification, restriction digests, bacterial cell culture, and agarose gel electrophoresis and document and evaluate results.	<p>Lesson 2, Day 1 <i>Student Protocol, Part 1: DNA Extraction and PCR</i>—capture sheet <i>Vocabulary Tool</i>—capture sheet</p> <p>Lesson 2, Day 2 <i>Student Protocol, Part 1: DNA Extraction and PCR</i>—capture sheet <i>What Is Polymerase Chain Reaction (PCR)</i>—background reading and questions <i>Vocabulary Tool</i>—strategy <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 2, Day 3 <i>Student Protocol, Part 2: Gel Electrophoresis</i>—capture sheet <i>Analyzing PCR and Lateral Flow Results</i>—background reading and questions</p> <p>Lesson 2, Day 4 <i>Student Protocol, Part 3: Lateral Flow</i>—capture sheet <i>Student Guide, Part 3: Data Analysis</i>—capture sheet</p>
A3.5	Predict outcomes of DNA and protein separation protocols.	<p>Lesson 2, Day 1 <i>Student Guide, Part 1, Pre-Lab</i>—capture sheet</p> <p>Lesson 2, Day 2 <i>Vocabulary Tool</i>—strategy</p> <p>Lesson 2, Day 3 <i>Analyzing PCR and Lateral Flow Results</i>—background reading and questions <i>Student Guide, Part 2: Lab</i>—capture sheet</p>

Standard	Description	Assessed
		Student Guide, Part 3: Data Analysis—capture sheet Lesson 2, Day 4 Discussion—strategy, assessment at teacher discretion Student Guide, Part 2: Lab—capture sheet Student Guide, Part 3: Data Analysis—capture sheet Lesson 2, Day 5 Student Guide, Part 1: Pre-Lab—capture sheet Student Guide, Part 3: Data Analysis—capture sheet
A5.0: Integrate computer skills into program components.		
A5.1	Use the Internet and World Wide Web to collect and share scientific information.	Lesson 3, Day 1 <i>Protein Slide</i> —capture sheet and rubric Lesson 3, Day 2 <i>Exploring Genetic Engineering Methods</i> —capture sheet <i>GE Product Profile</i> —capture sheet Lesson 3, Day 4 <i>PSA Ad</i> —rubric Lesson 4, Day 1 <i>Discover Golden Rice</i> —capture sheet Lesson 4, Day 2 <i>Careers Highlight</i> —capture sheet <i>Knowledge Profiles</i> —capture sheet Lesson 4, Day 3 <i>Manufacturing and Commercialization Flowchart</i> —capture sheet Lesson 4, Day 4 <i>Golden Rice Case Study</i> —rubric Lesson 7, Day 1 <i>Anchoring GE Product Brainstorm</i> —capture sheet Lesson 7, Day 2 <i>Novel GE Product Proposal</i> —capture sheet Lesson 7, Day 3 <i>Exit Ticket</i> —strategy, assessment at teacher discretion Lesson 7, Day 4 <i>Project Notebook</i>
A5.2	Use a variety of methods, including literature searches in libraries, computer databases, and online for gathering background information,	Lesson 7, Day 1 <i>Anchoring GE Product Brainstorm</i> —capture sheet Lesson 7, Day 2 <i>Novel GE Product Proposal</i> —capture sheet

Standard	Description	Assessed
	making observations, and collecting and organizing data.	Lesson 7, Day 4 <i>Project Notebook</i>
A8.0: <i>Follow sustainable and safe practices with high regard for quality control.</i>		
A8.1	Follow written protocols and oral directions to perform a variety of laboratory and technical tasks.	Lesson 2, Day 1 <i>Student Protocol, Part 1: DNA Extraction and PCR—capture sheet</i> Lesson 2, Day 2 <i>Student Protocol, Part 1: DNA Extraction and PCR—capture sheet</i> Lesson 2, Day 3 <i>Student Protocol, Part 2: Gel Electrophoresis—capture sheet</i> <i>Analyzing PCR and Lateral Flow Results—background reading and questions</i> Lesson 2, Day 4 <i>Student Protocol, Part 3: Lateral Flow—capture sheet</i> Lesson 2, Day 5 <i>Student Guide, Part 3: Data Analysis—capture sheet</i> <i>Student Guide, Part 4: Constructing a Scientific Model—capture sheet</i> Lesson 3, Day 1 <i>GE Product Analysis—capture sheet</i> <i>Exit Ticket—assessment at teacher discretion</i>
A8.6	Properly and safely use and monitor a variety of scientific equipment, including pH meters, microscopes, spectrophotometers, pipettes, micropipettes, and balances.	Lesson 2, Day 1 <i>Student Protocol, Part 1: DNA Extraction and PCR—capture sheet</i> Lesson 2, Day 2 <i>Student Protocol, Part 1: DNA Extraction and PCR—capture sheet</i> Lesson 2, Day 3 <i>Student Protocol, Part 2: Gel Electrophoresis—capture sheet</i> <i>Analyzing PCR and Lateral Flow Results—background reading and questions</i> Lesson 2, Day 4 <i>Student Protocol, Part 3: Lateral Flow—capture sheet</i>

Standard	Description	Assessed
A8.7	Determine which equipment is appropriate to use for a given task and the units of measurement used.	<p>Lesson 2, Day 1 <i>Student Protocol, Part 1: DNA Extraction and PCR</i>—capture sheet</p> <p>Lesson 2, Day 2 <i>Student Protocol, Part 1: DNA Extraction and PCR</i>—capture sheet</p> <p>Lesson 2, Day 3 <i>Student Protocol, Part 2: Gel Electrophoresis</i>—capture sheet</p> <p>Lesson 2, Day 4 <i>Student Protocol, Part 3: Lateral Flow</i>—capture sheet</p>
A9.0: Understand that manufacturing represents inter-connectedness between science and production.		
A9.1	Describe the major steps of a product’s move through a company’s product pipeline.	<p>Lesson 4, Day 1 <i>Discover Golden Rice</i>—capture sheet <i>Exit Ticket</i>—assessment at teacher discretion</p> <p>Lesson 4, Day 2 <i>Discussion</i>—strategy, assessment at teacher discretion <i>Careers Highlight</i>—capture sheet <i>Knowledge Profiles</i>—capture sheet</p> <p>Lesson 4, Day 3 <i>Manufacturing and Commercialization Flowchart</i>—capture sheet</p> <p>Lesson 4, Day 4 <i>Analysis of Other Group Work, Rounds 1–4</i>—capture sheet <i>Golden Rice Case Study</i>—rubric</p> <p>Lesson 7, Day 1 <i>Product Life Cycle Analysis</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p> <p>Lesson 9, Day 1 <i>Manufacturing of GMOs Webquest</i>—capture sheet</p> <p>Lesson 9, Day 2 <i>Manufacturing Research Guide</i>—capture sheet</p> <p>Lesson 9, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 4 <i>Project Notebook</i> <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion</p>

Standard	Description	Assessed
A9.2	Identify several products obtained through recombinant DNA technology.	<p><i>Project Notebook</i></p> <p>Lesson 1, Day 1 <i>GMO Card Sort Reflection, Parts 1–3—capture sheet</i> <i>Discussion—strategy, assessment at teacher discretion</i></p> <p>Lesson 1, Day 1 (optional activity) <i>Homework—assessment at teacher discretion</i></p> <p>Lesson 1, Day 2 <i>GMO Notes—capture sheet</i></p> <p>Lesson 1, Day 6 <i>CER Draft—capture sheet</i></p> <p>Lesson 1, Day 7 <i>CER Final—capture sheet</i></p> <p>Lesson 3, Day 1 <i>Protein Slide—capture sheet and rubric</i> <i>Exit Ticket—assessment at teacher discretion</i></p> <p>Lesson 3, Day 2 <i>Exploring Genetic Engineering Methods—capture sheet</i> <i>GE Product Profile—capture sheet</i></p> <p>Lesson 3, Day 4 <i>Alternative Protein Speed Dating Protocol—capture sheet</i> <i>PSA Ad—rubric</i></p> <p>Lesson 3, Day 4 <i>Project Notebook—assessment at teacher discretion</i></p> <p>Lesson 6, Day 2 <i>Think-Pair-Share—strategy, assessment at teacher discretion</i> <i>Notice, Think, Wonder—capture sheet</i> <i>Industry Packet Resources, Medical Industry—capture sheet</i> <i>Industry Packet Resources, Farming Industry—capture sheet</i> <i>Industry Packet Resources, Nutrition Industry—capture sheet</i> <i>Industry Packet Resources, Food Retail Industry—capture sheet</i></p> <p><i>Project Notebook</i></p> <p>Lesson 6, Day 4 <i>Community Challenges—capture sheet</i></p> <p>Lesson 6, Day 5 <i>Community Challenges—capture sheet</i> <i>Concept Map—capture sheet</i></p>

Standard	Description	Assessed
		<p>Lesson 7, Day 1 <i>Brainstorm</i>—capture sheet <i>Anchoring GE Product Brainstorm</i>—capture sheet <i>Product Life Cycle Analysis</i>—capture sheet</p> <p>Lesson 7, Day 2 <i>Novel GE Product Proposal</i>—capture sheet</p> <p>Lesson 7, Day 4 <i>Project Notebook</i></p>
A9.3	Outline the steps in production and delivery of a product made through recombinant DNA technology.	<p>Lesson 3, Day 2 <i>Exploring Genetic Engineering Methods</i>—capture sheet <i>GE Product Profile</i>—capture sheet</p> <p>Lesson 3, Day 3 <i>Exit Ticket</i>—assessment at teacher discretion</p> <p>Lesson 3, Day 4 <i>PSA Ad</i>—rubric <i>Project Notebook</i>—assessment at teacher discretion</p> <p>Lesson 9, Day 1 <i>Discussion</i>—strategy, assessment at teacher discretion</p> <p>Lesson 9, Day 2 <i>Manufacturing Research Guide</i>—capture sheet Lesson 9, Day 3 <i>Project Notebook</i></p> <p>Lesson 9, Day 4 <i>Project Notebook</i> <i>Exit Ticket</i>—strategy, assessment at teacher discretion</p> <p>Lesson 10, Day 6 <i>Peer Review</i>—assessment at teacher discretion <i>Project Notebook</i></p>



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