



San Diego Unified School District
Science Department

Grade 5 – Living Systems
Life Science
Unit of Study



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**Science Vision for
San Diego Unified School District**
Science is an integral part of the intellectual development of a child. Interest in science begins with attitudes and values established in the earliest years through daily experiences. Students graduating from high school must have a foundation in scientific knowledge and evidence based reasoning.

Updated versions of this unit of study can be found online at www.sandi.net/science.



**Grade 5 – Living Systems
Module Overview**



Overview of the Unit

The Living Systems Module consists of three sequential investigations, each designed to introduce students to transport systems in multicellular organisms. Students use readings, videos, and investigations to study the circulatory, respiratory, digestive, and excretory systems in humans and the vascular system in plants. They conduct and analyze controlled experiments related to these systems and to the production of food by plants.

Grade 5 Life Science Conceptual Flow

Concept #1		
Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials.		
Subconcepts Investigation #1: Living Cells	Subconcepts Investigation #2: Vascular Plants	Subconcepts Investigation #3: Sugar and Cells
Cells require water, food, gases and waste removal to live.	Life happens in cells.	Chlorophyll absorbs sunlight.
In humans, the respiratory system transports oxygen to the blood and carbon dioxide from the blood.	Vascular plants have two transport systems, one to transport water and minerals from roots to leaves, and one to transport sugar from leaves to cells that need it.	Photosynthesis requires carbon dioxide, water, and light.
In the human circulatory system, blood transports resources to the cells and wastes from the cells.	In vascular plants, water and minerals are transported to cells in xylem tubes; sugar is transported to cell in phloem tubes.	Photosynthesis produces sugar and oxygen gas.
Cells use simple substances for energy and building blocks.	Vascular bundles are arranged in predictable patterns of veins in the leaves of vascular plants.	Plant and animal cells break down sugar and oxygen into carbon dioxide and water to obtain energy (cellular respiration).
The digestive system breaks down complex substances into simple substances, which move into the bloodstream.	Scientists classify objects and information by organizing them into groups with similar attributes.	Animals obtain six classes of nutrients from food: protein, carbohydrate, fat, minerals, vitamins, and water.
Kidneys filter wastes from blood and convert them into urine for excretion.		The volume of gas produced by yeast is proportional to the amount of sugar present.
The respiratory, circulatory, digestive, and excretory systems work together to ensure that cells receive the resources they need to live.		

5th Grade Science Content Standards Addressed in this Module

Life Sciences

LS2 Plants and animals have structures for respiration digestion, waste disposal, and transport of materials. As a basis for understanding this concept:

- LS2a Students know many multicellular organisms have specialized structures to support the transport of materials.
- LS2b Students know how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO₂) and oxygen (O₂) are exchanged in the lungs and tissues.
- LS2c Students know the sequential steps of digestion and the roles of teeth and the mouth, esophagus, stomach, small intestine, large intestine, and colon in the function of the digestive system.
- LS2d Students know the role of the kidney in removing cellular waste from blood and converting it into urine, which is stored in the bladder.
- LS2e Students know how sugar, water, and minerals are transported n a vascular plant.
- LS2f Students know plants use carbon dioxide (CO₂) and energy from sunlight to build molecules of sugar and release oxygen.
- LS2g Students know plant and animal cells break down sugar to obtain energy, a process resulting in carbon dioxide (CO₂) and water (respiration).

Investigation and Experimentation

- I&E6 Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
- I&E6a Classify objects (e.g., rocks, plants, leaves) in accordance with appropriate criteria..
 - I&E6c Plan and conduct a simple investigation based on a student-developed question and write instructions others can follow to carry out the procedure.
 - I&E6f Select appropriate tools (e.g., thermometers, meter sticks, balances, and graduated cylinders) and make quantitative observations.
 - I&E6g Record data by using appropriate graphic representations (including charts, graphs, and labeled diagrams) and make inferences based on those data.
 - I&E6h Draw conclusions from scientific evidence and indicate whether further information is needed to support a specific conclusion.
 - I&E6i Write a report of an investigation that includes conducting tests, collecting data or examining evidence, and drawing conclusions.

Pacing the Unit as a Whole

Pre-Test (Optional)				
Day 1 Start Inv. 1 Part 1 A/R	Day 2 A	Day 3 A/W	Day 4 Start Inv. 1 Part 2 A/R	Day 5 A
Day 6 A/W	Day 7 A/R	Day 8 I-Check 1	Day 9 Review	Day 10 Start Inv. 2 Part 1 A
Day 11 A	Day 12 R/W	Day 13 A	Day 14 Review	Day 15 Start Inv. 2 Part 2 A/W
Day 16 I-Check 2 R	Day 17 Review	Day 18 Start Inv. 3 Part 1 A/R	Day 19 A/W	Day 20 R
Day 21 Start Inv. 3 Part 2 A	Day 22 A/W	Day 23 R	Day 24 Start Inv. 3 Part 3 A/R	Day 25 I-Check 3
Day 26 Review	Day 27 R Benchmark Assessment	Day 28 Review A/R		

A – Active Investigation sessions include hands-on work with organisms, active thinking about the concrete experiences, small-group discussion, writing in science notebooks, learning new vocabulary in context, viewing a video, and completing the written embedded assessments to inform instruction. (Approximately 60 minutes)

W – Wrap-up sessions are teacher-directed vocabulary reinforcement and science content review. (Approximately 30 minutes)

R – Reading sessions (*Science Resources* book) include individual and interactive reading, answering review questions, and discussing the reading to ensure that students integrate the information. (Approximately 30 minutes)

I-Checks are short summative assessments. Students respond to written prompts. (Approximately 30 minutes)



Grade 5 – Living Systems
Pacing Guide – Investigation 1: Living Cells

Investigation Overview

<p>Investigation 1: Living Cells Concept: Plants and animals have structures for respiration digestion, waste disposal, and transport of materials. Students learn that the basic unit of life is the cell. They learn that all cells have basic needs: water, food, gas exchange, and waste disposal. Students learn how materials are transported to cells in multicellular organisms. They learn the structures and functions of the circulatory, respiratory, digestive, and excretory systems. Students identify the variables in an investigation on the digestive system.</p>		
<p>Part 1: Circulation</p>	<p>Part 2: Digestion</p>	<p>Part 3: Life Support</p>
<p><u>Summary</u> Students share their entry-level understandings of the needs of all living organisms. They learn that life happens in cells, so the needs of organisms coincide with the needs of cells. Students then start their investigation of the structures and systems used by multicellular organisms to provide the four essentials to their cells: water, gases, food and waste removal. Students read an article and watch a video about the circulatory and respiratory systems.</p>	<p><u>Summary</u> Students continue their investigation of living systems by reading an article and watching a systems by reading an article and watching a video about the digestive and excretory systems. The video presents an experiment with gastric juices in which students identify the variables in a scientific investigation.</p>	<p><u>Summary</u> Students use a quiz activity to reinforce the relationships between the structures and functions of the circulatory, respiratory, digestive, and excretory systems. They read a summary article and assess their learning so far.</p>
<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Life happens in cells. ▪ Cells require water, food, gases, and waste removal to live. ▪ In humans, the respiratory system transports oxygen to the blood and carbon dioxide from the blood. ▪ In the human circulatory system, blood transports resources to the cells and wastes from the cells. 	<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Cells use simple substances for energy and building blocks. ▪ The digestive system breaks down complex substances into simple substances. ▪ Simple substances move from the stomach and intestines into the bloodstream. ▪ Kidneys filter wastes from blood and convert them into urine for excretion. 	<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ The respiratory, circulatory, digestive, and excretory systems work together to ensure that cells receive the resources they need to live.
<p><u>Time Allocation</u> Active Investigation: 3 days Reading: 1 day</p>	<p><u>Time Allocation</u> Active Investigation: 4 days Reading: 1 day Video: 1 day Assessment: 2 days</p>	<p><u>Time Allocation</u> Active Investigation: 3 days Reading: 2 days Assessment: 2 days</p>
<p><u>CA Science Standards</u> LS2a, LS2b</p>	<p><u>CA Science Standards</u> LS2a, LS2c, LS2d, I&E6d</p>	<p><u>CA Science Standards</u> LS2a, LS2b, LS2c, LS2d</p>



Grade 5 – Living Systems
Pacing Guide – Investigation 1: Living Cells

Pacing Guide – Investigation 1: Living Cells

Day 1		Day 2		Day 3	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Read “Living Systems Overview” <i>TG p. 1-31</i> <input type="checkbox"/> Read “At a Glance” <i>TG p. 42-43</i> <input type="checkbox"/> Read “Background for the Teacher” <i>TG p. 44-49</i> <input type="checkbox"/> Read “Teaching Children About Complex Body Systems” <i>TG p. 50</i> <input type="checkbox"/> Watch Video demo of Inv. 1, Pt 1 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 51-53</i> <input type="checkbox"/> Administer FOSS pre-test TG. P.237-241	Guiding the Investigation <input type="checkbox"/> “Part 1: Circulation” Steps 1-9 <i>TG p. 55-57</i> Reading in Science Resources <input type="checkbox"/> Steps 6-7 <i>TG p. 57</i> Student Reading: Science Resources p. 85-90 <input type="checkbox"/> Body of Evidence Prompt #1 <i>TG p. 143</i>		Guiding the Investigation <input type="checkbox"/> “Part 1: Circulation” Steps 10-13 Student Video <i>TG p. 58</i>		Guiding the Investigation <input type="checkbox"/> “Part 1: Circulation; Wrapping up Part 1” Step 14-15 <i>TG p. 59</i>

Pacing Guide – Investigation 1: Living Cells (continued)

Day 4		Day 5		Day 6	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Watch Video demo of Inv. 1, Pt 2 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 60-61</i>	Guiding the Investigation <input type="checkbox"/> “Part 2: Digestion Steps 1-6 <i>TG p. 62-63</i> Reading in Science Resources <input type="checkbox"/> Steps 4-6 <i>TG p. 63</i> Student Reading: Science Resources p. 91-94 <input type="checkbox"/> Body of Evidence Prompt #2 <i>TG p. 144</i>		Guiding the Investigation <input type="checkbox"/> “Part 2: Digestion” Steps 7-9 Student Video <i>TG p. 63-64</i>		Guiding the Investigation <input type="checkbox"/> “Part 2: Digestion; Wrapping up Part 2” Step 10-11 <i>TG p. 65</i>
Day 7		Day 8		Day 9	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Watch Video demo of Inv. 1, Pt 3 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 66-67</i>	Guiding the Investigation <input type="checkbox"/> “Part 3: Life Support” Steps 1-5 <i>TG p. 68-69</i> Reading in Science Resources <input type="checkbox"/> Step 6-7 <i>TG p. 70</i> Student Reading: Science Resources p. 95-98		Concluding Investigation 1 <input type="checkbox"/> I-Check 1 Step 8 <i>TG p. 70</i>		<input type="checkbox"/> Review <input type="checkbox"/> Interdisciplinary Extensions <i>TG p. 71-73</i> Student Reading: Science Resources p. 99



Grade 5 – Living Systems
Pacing Guide – Investigation 2: Vascular Plants



Investigation Overview

<p>Investigation 2: Vascular Plants Concept: Plants and animals have structures for respiration digestion, waste disposal, and transport of materials. Students learn that the basic unit of life is the cell. They learn that vascular plants have specialized tissues for the transport of water, minerals, and sugar to cells. Students learn that xylem tubes carry water and minerals from the plant’s roots to all the cells in a one-way flow. They learn that phloem tubes carry sugar from the leaves to all the cells that need it. Students discover that leaves play an important role in the transport of water to cells in vascular plants. They classify leaves based on venation pattern. Students design, conduct, and analyze the results of an experiment to answer a question about the movement of water in celery. They write a report of a scientific investigation. Students use metric tools and make and record quantitative observations.</p>	
<p>Part 1: Looking at Celery</p>	<p>Part 2: Leaf Classification</p>
<p><u>Summary</u> Students are asked to design and conduct an experiment to find out about celery and water. They pose a question, design an experiment, set it up, and observe the results. They organize data in a table and analyze them. They also observe the results after celery stalks have been in red water for a day. They conclude that leaves play a role in the uptake and transportation of water in vascular plants.</p> <p>Students read about the two tissues that transport resources in vascular plants, the xylem that carries water and minerals from the roots to the leaf cells, and the phloem that conveys sugar from the leaves to all the cells that need food.</p> <p>Students watch a video to review what they have learned about the transport of water, minerals, and sugar in plants.</p>	<p><u>Summary</u> Students collect leaves and study the veins, which are vascular bundles organized in ways that are characteristic for each different kind of plant. They classify the leaves in their collection into: palmate, pinnate, and parallel.</p>
<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Life happens in cells. ▪ Vascular plants have two transport systems, one to transport water and minerals from roots to leaves, and one to transport sugar from leaves to cells that need it. ▪ In vascular plants, water and minerals are transported to cells in xylem tubes; sugar is transported to cells in phloem tubes. 	<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Scientists classify objects and information by organizing them into groups with similar attributes. ▪ Vascular bundles are arranged in predictable patterns of veins in the leaves of vascular plants.
<p><u>Time Allocation</u> Active Investigation: 3 days Reading: 1 day Video: 1 day Assessment: 2 days</p>	<p><u>Time Allocation</u> Active Investigation: 2 days Reading: 2 days Assessment: 2 days</p>
<p><u>CA Science Standards</u> LS2a, LS2e, I&E6b, I&E6c, I&E6f, I&E6g, I&E6h, I&E6i</p>	<p><u>CA Science Standards</u> LS2a, LS2e, I&E6a</p>



Grade 5 – Living Systems
Pacing Guide – Investigation 2: Vascular Plants



Pacing Guide – Investigation 2: Vascular Plants

Day 10		Day 11		Day 12	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Read “At a Glance” <i>TG p. 76-77</i> <input type="checkbox"/> Read “Background for the Teacher” <i>TG p. 78-81</i> <input type="checkbox"/> Read “Teaching Children About Vascular Plants” <i>TG p. 82</i> <input type="checkbox"/> Watch Video demo of Inv. 1, Pt 1 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 83-85</i>	Guiding the Investigation <input type="checkbox"/> “Part 1: Looking at Celery” Steps 1-9 <i>TG p. 86-89</i>		Guiding the Investigation <input type="checkbox"/> “Part 1: Looking at Celery” Steps 10-18 <i>TG p. 89-92</i> <input type="checkbox"/> Body of Evidence Prompt #3 <i>TG p. 146-147</i>		Reading in Science Resources <input type="checkbox"/> Step 19-20 <i>TG p. 93-94</i> Students Reading: Science Resources p. 100-104 Guiding the Investigation <input type="checkbox"/> “Part 1: Looking at Celery” Wrapping Up Part 1” Step 21-22 <i>TG p. 94</i>

Pacing Guide – Investigation 2: Vascular Plants (continued)

Day 13		Day 14		Day 15	
Prep	Instruction	Prep	Instruction	Prep	Instruction
	Guiding the Investigation <input type="checkbox"/> “Part 1: Looking at Celery” Student Video Steps 23-25 <i>TG p. 94-96</i> <input type="checkbox"/> Body of Evidence Prompt #4 <i>TG p. 148</i>		Guiding the Investigation <input type="checkbox"/> “Part 1: Looking at Celery; Assess Progress” Step 25 (continued) <i>TG p. 96</i>	<input type="checkbox"/> Watch Video demo of Inv. 2, Pt 2 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 97-98</i>	Guiding the Investigation <input type="checkbox"/> “Part 2: Leaf Classification; Wrapping Up Part 2” Steps 1-9 <i>TG p. 99-102</i>
Day 16		Day 17			
Prep	Instruction	Prep	Instruction		
	Reading in Science Resources <input type="checkbox"/> Steps 10-11 <i>TG. 103</i> Student Reading: Science Resources p. 105-109 Concluding Investigation 2 <input type="checkbox"/> Steps 12-15 <i>TG. 104</i> <input type="checkbox"/> I-Check 2 Step 15 <i>TG p. 104</i>		<input type="checkbox"/> Review <input type="checkbox"/> Interdisciplinary Extensions <i>TG p.105-106</i> Student Reading: Science Resources p. 110		



Grade 5 – Living Systems
Pacing Guide – Investigation 3: Sugar and Cells



Investigation Overview

Investigation 3: Sugar and Cells		
<p>Concept: Plants and animals have structures for respiration digestion, waste disposal, and transport of materials.</p> <p>Students learn that chlorophyll absorbs solar energy. They learn the green plant cells make sugar (food) from carbon dioxide and water in the presence of sunlight, and release oxygen. Students learn that plant and animal cells obtain energy by breaking down sugar into carbon dioxide and water (cellular respiration). They understand that plants make their own food by photosynthesis and that animals obtain food by eating other organisms. Students analyze data to determine what resources plants need in order to produce food. They learn that human food contains six classes of nutrients and can be organized into six food groups. Students design and conduct experiments and analyze results. They use metric tools and make and record quantitative observations and write a report of a scientific investigation.</p>		
Part 1: Making sugar	Part 2: Using sugar	Part 3: Testing cereals
<p><u>Summary</u> Students analyze an account of an experiment designed to determine the conditions under which plants produce food (increase in mass). They read an article about photosynthesis and learn the basic equation in which a molecule of sugar forms and oxygen is released when carbon dioxide and water react in the presence of light.</p>	<p><u>Summary</u> Students design an investigation to determine what conditions are needed to activate dry yeast. After determining that water and a cookie results in yeast activity, they conduct experiments to discover that it is the sugar in the cookie that activates the yeast. Students read an article about cellular respiration, the process used by plant and animal cells to obtain energy from food.</p>	<p>Students design and conduct an experiment to determine the sugar content of unknowns (breakfast cereals). They measure the volume of carbon dioxide gas produced by a standard mass of unknown and compare that volume to the volume of gas produced by a standard mass of pure sugar.</p> <p>Students read about human nutrition, including information about using the revised USDA food pyramid to plan a program of nutrition, and an article about sugar utilization by people and diabetes.</p>
<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Chlorophyll absorbs sunlight ▪ Photosynthesis requires carbon dioxide, water, and light. ▪ Photosynthesis produces sugar and oxygen gas. 	<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ Plant and animal cells break down sugar and oxygen into carbon dioxide and water to obtain energy (cellular respiration). ▪ Animals obtain six classes of nutrients from food: protein, carbohydrate, fat, minerals, vitamins, and water. 	<p><u>Subconcepts</u></p> <ul style="list-style-type: none"> ▪ The volume of gas produced by yeast is proportional to the amount of sugar present. ▪ Animals obtain six classes of nutrients from food: protein, carbohydrate, fat, minerals, vitamins, and water.
<p><u>Time Allocation</u> Active Investigation: 2 days Reading: 2 days Assessment: 1 day</p>	<p><u>Time Allocation</u> Active Investigation: 3 days Reading: 1 day Assessment: 1 day</p>	<p><u>Time Allocation</u> Active Investigation: 2 days Reading: 2 days Assessment: 4 days</p>
<p><u>CA Science Standards</u> LS2f, I&E6h</p>	<p><u>CA Science Standards</u> LS2g, I&E6f, I&E6h</p>	<p><u>CA Science Standards</u> LS2g, I&E6b, I&E6c, I&E6f, I&E6h, I&E6i</p>



Grade 5 – Living Systems
Pacing Guide – Investigation 3: Sugar and Cells



Pacing Guide – Investigation 3: Making Sugar

Day 18		Day 19		Day 20	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Read “At a Glance” <i>TG p. 108-109</i> <input type="checkbox"/> Read “Background for the Teacher” <i>TG p. 110-114</i> <input type="checkbox"/> Read “Teaching Children About Photosynthesis and Respiration” <i>TG p. 115</i> <input type="checkbox"/> Watch Video demo of Inv. 1, Pt 1 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 116-117</i>	Guiding the Investigation <input type="checkbox"/> “Part 1: Making Sugar” Steps 1-7 <i>TG p. 118-120</i> Reading in Science Resources <input type="checkbox"/> Step 4 <i>TG p. 119</i> Students Reading: Science Resources p. 111-114 <input type="checkbox"/> Body of Evidence Prompt # 5 <i>TG p. 149-150</i>		Guiding the Investigation <input type="checkbox"/> “Part 1: Making Sugar; Wrapping Up Part 1” Steps 8-11 <i>TG p. 120-122</i>		Reading in Science Resources <input type="checkbox"/> Step 12-13 <i>TG p. 123</i> Students Reading: Science Resources p. 115-118

Pacing Guide – Investigation 3: Making Sugar (continued)

Day 21		Day 22		Day 23	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Watch Video demo of Inv. 3, Pt 2 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 124-126</i>	Guiding the Investigation <input type="checkbox"/> “Part 2: Using Sugar” Steps 1-18 <i>TG p. 127-131</i>		Guiding the Investigation <input type="checkbox"/> “Part 2: Using Sugar; Wrapping Up Part 2” Steps 19-21 <i>TG p. 132</i> <input type="checkbox"/> Body of Evidence Prompt # 6 <i>TG p. 152</i>		Reading in Science Resources <input type="checkbox"/> Step 22-23 <i>TG p. 133</i> Students Reading: Science Resources p. 119-126
Day 24		Day 25		Day 26	
Prep	Instruction	Prep	Instruction	Prep	Instruction
<input type="checkbox"/> Watch Video demo of Inv. 3, Pt 3 <input type="checkbox"/> Review “Materials” and “Getting Ready” <i>TG p. 134-135</i>	Guiding the Investigation <input type="checkbox"/> “Part 3: Testing Cereals” Steps 1-9 <i>TG p. 136-137</i> Reading in Science Resources <input type="checkbox"/> Step 9 <i>TG p. 137</i> Student Reading: Science Resources p. 127-130		Concluding Investigation 3 <input type="checkbox"/> “Part 3: Testing Cereals; Assess Progress” <input type="checkbox"/> I-Check 3 Step 10 <i>TG p. 138</i>		Concluding Investigation 3 <input type="checkbox"/> “Part 3: Testing Cereals; Assess Progress” <input type="checkbox"/> Review I-Check 3 Step 10 (continued) <i>TG p. 138</i>

Pacing Guide – Investigation 3: Making Sugar (continued)

Day 27		Day 28	
Prep	Instruction	Prep	Instruction
	<p>Concluding Investigation 3 Reading in Science Resources</p> <p><input type="checkbox"/> Steps 11-12 <i>TG p. 139</i></p> <p>Student Reading: Science Resources p. 131-133</p> <p><input type="checkbox"/> Administer Grade 5 DISTRICT Life Science Benchmark Assessment</p>		<p><input type="checkbox"/> Review</p> <p><input type="checkbox"/> Interdisciplinary Extensions <i>TG p.140-142</i></p> <p>Student Reading: Science Resources p. 134-137</p>



San Diego Unified School District
Science Department

Grade 5 – Living Systems Recommended Body of Evidence



Overview

This guide is intended to support the collection of a Body of Evidence. A student's Body of Evidence should, at a minimum, include work from the listed prompts and in-class investigations that demonstrate a student's level of proficiency. The FOSS pre-assessment given at the beginning of the unit, the I-checks given after each investigation, and Grade 5 DISTRICT Life Science Benchmark Assessment given at the end of the unit (post-assessment) may also be included in the body of evidence. Download samples of proficient work at <https://eteams.sandi.net/sites/sbrc>

Recommended Body of Evidence – Grade 5 Life Science

Concept #1

Plants and animals have structures for respiration digestion, waste disposal, and transport of materials. (LS2a, LS2b, LS2c, LS2d, LS2e, LS2f, LS2g)

Prompt 1: FOSS: Living Systems: Investigation 1 -- Living Cells – Part 1: Circulation (TG p. 143; Circulatory System Review – No. 1 – Science Notebook)

1. What are the basic needs of all living cells? 2. How do the cells in multicellular organisms get the resources they need to stay alive? 3. What is the main function of the left side of the human heart? 4. What is the main function of the right side of the human heart? 5. What is the function of the red blood cells? 6. What are the main kinds of blood vessels and what functions do they perform? 7. Describe what happens when blood flows through the lungs. 8. Describe what happens when blood in capillaries flows past cells?

Prompt 2: FOSS: Living Systems: Investigation 1: Living Cells – Part 1: Circulation (TG p. 144; The Disassembly Line Review – No. 2 – Science Notebook)

1. Why do people eat food? 2. What happens to food in the digestive system? 3. Describe the path taken by food as it passes through the digestive system. 4. Explain what happens to food at each place in the digestive system. 5. How does digested food get to cells? 6. Why do people need kidneys? 7. Describe how kidneys work.

Prompt 3: FOSS: Living Systems: Investigation 2: Vascular Plants – Part 1: Looking at Celery (TG p. 146-147; Celery Experiment A; Celery Experiment B – No. 4 and No. 5 – Science Notebook)

Experimental Design: Design an experiment to get information about rootless celery and water. While you work on your experimental design, think about these three things: Leaves might affect how celery interacts with water. The mass of the celery might change. The volume of water in the vial might change.; Question; Plan; Data; Conclusions

Prompt 4: FOSS: Living Systems: Investigation 2: Vascular Plants – Part 1: Looking at Celery (I&E6b, I&E6c, I&E6f, I&E6g, I&E6h, I&E6i) (TG p. 148; Response Sheet – Vascular Plants – No. 6 – Science Notebook)

Alexa wrote in her science notebook, “Plants and people are a lot alike because they both have circulatory systems.” When Gary read that sentence, he said, “That’s not right, but I think I know what you mean.” What do you think Gary told Alexa about plants and people?

Recommended Body of Evidence – Grade 5 Life Science (continued)

Prompt 5: FOSS: Living Systems: Investigation 3: Sugar and Cells – Part 1: Making Sugar (I&E6h)

(TG p. 149-150; Making Food Experiment A; Making Food Experiment B – No. 7 and No. 8 – Science Notebook)

EXPERIMENT A: Question: Plants produce food. What is that food made of?; Experimental Design: Five-hundred grams of bean seeds were planted in each of six containers filled with 10,000 grams of sand. Record the conditions for each of the experiments in the table below. Data: After 3 weeks Pace and Eva collected, dried, and weighed the bean plants. They dried and weighed the sand. Record their data in the table below. EXPERIMENT B: Results: Do plants gain mass when they have no water? Do plants gain mass when they have no light? Do plants gain mass when they have no nitrogen? Do plants gain mass when they have no oxygen? Do plants gain mass when they have no carbon dioxide? Do plants gain mass from the sand they grow in? What variables must be present for plants to make food? Where does the mass of the produced food come from? Conclusions: Review the experiment question. Write a conclusion that provides an answer to the question. Use Paco and Eva's data and results to support your conclusions.

Prompt 6: FOSS: Living Systems: Investigation 3: Sugar and Cells – Part 2: Using Sugar (I&E6f, I&E6h)

(TG p. 152; Response Sheet – Sugar and Cells – No. 10 – Science Notebook)

Brian was reviewing how cells get energy. He wrote in his notebook, "Plant cells get energy from the Sun. Animal cells get energy from food." Elana said, "That's part of the story, but there's more." What do you think Elana would explain to Brian about how cells get energy?



**Grade 5 – Living Systems
Module Materials and Equipment**



Materials Provided

The FOSS kit comes with most of the supplies that are needed to teach the unit. The kits will be delivered to the school site prior to the start of the 12-week unit of instruction. At the end of the 12-weeks, the kit will be returned to the Science Resource Center where it will be refurbished and prepared for its next use. Please review the refurbishment calendar for kit drop-off and return dates. Kits must be returned according to the refurbishment calendar to ensure that all kits are checked and restocked with consumable materials.

Materials Supplied by the Teacher or School Site

Be aware that the classroom teacher or school site must supply a few items. These are indicated in the materials list for each part of the investigation with an asterisk (*). Here is a summary of those items.

Investigation 1: Living Cells <ul style="list-style-type: none">▪ Flip Chart▪ Marking Pen▪ VCR and Monitor	Investigation 2: Vascular Plants <ul style="list-style-type: none">▪ 4 Bunches of Celery with Leaves▪ 1 Jar▪ 1 Knife▪ 1 Plastic Bag▪ 1 VCR and Monitor	Investigation 3: Sugar and Cells <ul style="list-style-type: none">▪ 1 Box of Animals Crackers▪ Breakfast Cereal Samples▪ Flour-1 cup▪ 1 Ice Chest or Large Coffee Urn▪ Paper Towels▪ 4 Soda Bottles- 2-liter▪ Sugar-1 cup▪ Hot Water
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