

## ALTERNATIVE LESSON PLANS FOR DISTANCE LEARNING

These alternative lesson plans condense what is taught and suggest ways to support students learning at home. We acknowledge that every situation is unique and strive to provide plans that can be used online or as printed packets. Focus on fewer scientific principles. Use print and audio readings. Share the videos that you can. Discuss if you can.

<b>UNIT TITLE</b>	<b>LS3</b>
<b>DRIVING QUESTION</b>	Why Do Organisms Look the Way They Do?

<b>Lesson 1 (3 days)</b>	<b>The Same and Different You and Me</b>
Activity 1.1	<p>What Traits Do Humans Have?</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>1. Trout and Lamprey</li> <li>2. Fish and Plants</li> <li>3. Desert Plant and Rainforest Plant</li> <li>4. Birds</li> </ol> <p>Share the human trait chart form TE after survey traits if needed.</p>
Activity 1.2	<p>Traits of You and Me</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>1. Inherited Traits</li> <li>2. Class Data Table</li> </ol> <p>You will need to collect and share class data</p>
Activity 1.3	<p>Baby, Where Did You Get Those Eyes?</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>1. Human Cheek Cells</li> <li>2. From Cell to DNA</li> </ol> <p>share DQB - consider using the example in the TE at the end of Lesson 1</p>
Reading 1	<i>Where Did You Get Those Eyes?</i>

<b>Lesson 2 (3 days)</b>	<b>What Traits Get Passed On?</b>
Activity 2.1	<p>Are Traits Connected?</p> <p>Teachers could poll students regarding their dislike of the taste of brussel sprouts as part of engagement with the activity, can solicit from students who can and cannot roll their tongue and the ability to tongue roll within their family if possible.</p> <p>Share Projected Image</p> <ol style="list-style-type: none"> <li>1. Data Table for Comparing Two Traits</li> </ol>
Reading 1	<i>Do the Traits I Inherited Affect My Sense of Taste or Smell?</i>

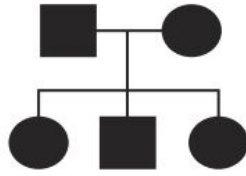
Activity 2.2	<p>How Do Plants Reproduce?</p> <p>Share Projected Image:</p> <ol style="list-style-type: none"> <li>Flower Parts</li> </ol>
Reading 2	<i>What Is the Buzz About?</i>
Activity 2.3	<p>Is There a Pattern to How Traits Get Passed On?</p> <p>Share Projected Image:</p> <ol style="list-style-type: none"> <li>Fast Plants</li> </ol> <p>Search for a video of Wisconsin Fast plant germination and life cycle or use these..</p> <p><a href="https://youtu.be/Woeg2FqN70o">https://youtu.be/Woeg2FqN70o</a></p> <p><a href="https://youtu.be/JumEfAbjBjk">https://youtu.be/JumEfAbjBjk</a></p> <p>Discuss predictions with students regarding how generations pass on their traits, that it is a combination of both parents traits.</p>

<b>Lesson 3 (2 days)</b>	<b>Can We Determine Patterns in Traits?</b>
Activity 3.1	<p>What Are the Patterns in How Traits Are Inherited?</p> <p>Share the simple pedigree of Ralph the dog from the TE, discuss components of a pedigree. See TE for discussion prompts.</p> <p>Share these charts with students. They are found in both the print and IDE versions of LS3, but not in the TE. Students use these charts to complete the data tables. Students may be assigned an individual pedigree or all of them to complete</p> <div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;"><b>What Are the Patterns in How Traits Are Inherited?</b> <b>Pedigree Set A1</b></p> <div style="border: 1px dashed black; padding: 5px; margin-bottom: 10px;"> <p><b>KEY</b></p> <p>FEMALE:  MALE: </p> <p>INSTRUCTIONS for Non-Tasting PTC:  INSTRUCTIONS for Tasting PTC: </p> </div> <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center; margin: 5px;"> <p>Case 1</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 2</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 3</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 4</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 5</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 6</p> </div> <div style="text-align: center; margin: 5px;"> <p>Case 7</p> </div> </div> </div>

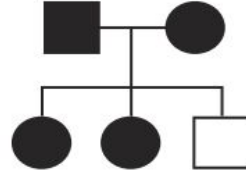
What Are the Patterns in How Traits Are Inherited?  
Pedigree Set B2

<b>KEY</b>	<b>FEMALE</b> ○	<b>MALE</b> □	<b>INSTRUCTIONS FOR Non-Tongue Rolling</b> □	<b>INSTRUCTIONS FOR Tongue Rolling</b> ■
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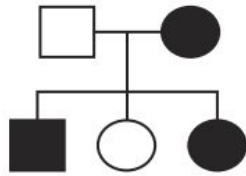
Case 8



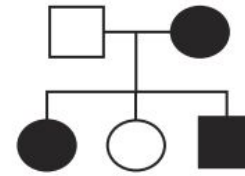
Case 9



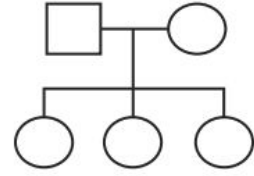
Case 10



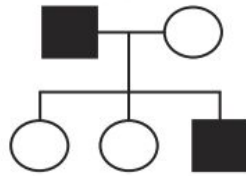
Case 11



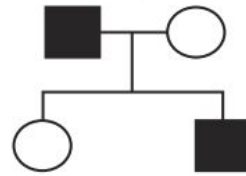
Case 12



Case 13



Case 14



**What Are the Patterns in How Traits Are Inherited?**  
Pedigree Set A2

**KEY**

FEMALE: ○      MALE: □

INSTRUCTIONS FOR Non-Tasting PTC: □

INSTRUCTIONS FOR Tasting PTC: ■

Reading 1      *Heredity Patterns— A Key to Diagnosis*

<b>Lesson 4 (2 days)</b>	<b>Do Traits Show Patterns over Multiple Generations?</b>
Activity 4.1	<p>How Do Traits Get Passed On?</p> <p>Share Projected Image:</p> <ol style="list-style-type: none"> <li>Predictions of Variation in Human Traits</li> </ol> <p>Teachers may also want to share a complete student answer sheet after the activity and discuss. Teachers may also want to share the completed Pattern and Evidence Chart at the end of Lesson 4 at this time and discuss.</p>
Reading 1	<i>Why Are Patterns Important?</i>

<b>Lesson 5 (2 days)</b>	<b>How Do Instructions from Our Parents Get inside Us?</b>
Activity 5.1	<p>How Do I Get New Cells?</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>1. From Cell to DNA</li> <li>2. Karyotypes</li> <li>3. Cell Division</li> <li>4. Sperm and Egg Cells (optional)</li> <li>5. Gene</li> <li>6. Gene for Stem Color</li> <li>7. Mitosis and Meiosis</li> </ol> <p>Students may want to take notes during discussion if you are able to conduct a virtual session. Otherwise use discussion prompts for student note taking.</p>
Activity 5.2	<p>How Can Parents Produce Offspring with Different Traits?</p> <p>Teachers may want to share completed student sheet and discuss</p>
Reading 1	<i>Discovering the Source</i>

<b>Lesson 6 (2 days)</b>	<b>Constructing a Model of Inheritance</b>
Activity 6.1	<p>Constructing a Model of Inheritance</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>1. Gene for Stem Color</li> <li>2. Genotype/Phenotype</li> </ol> <p>Teachers may choose to share the completed Genotype/Phenotype table for TE and with students and discuss</p>
Activity 6.2	<p>Testing the Model</p> <p>Share Projected Images:</p> <ol style="list-style-type: none"> <li>3. Gene for Stem Color</li> <li>4. Genotype/Phenotype</li> </ol>
Reading 1	<i>Using Models to Decide between Possible Explanations</i>

<b>Lesson 7 (2 days)</b>	<b>Extending and Applying the Model of Inheritance</b>
Activity 7.1	<p>Extending and Applying the Model of Inheritance</p> <p>Share Projected Images</p> <ol style="list-style-type: none"> <li>1. Predictions of Variations in Human Trait • PI:</li> <li>2. Model Chart (from Lesson 6)</li> <li>3. Sample Pedigree 1</li> <li>4. Sample Pedigree 2</li> </ol>
Activity 7.2	<p>Albinism</p> <p>Share Projected Images</p> <ol style="list-style-type: none"> <li>1. Picture of Brother and Sister</li> <li>2.</li> </ol> <p>Teachers may want to use discussion prompt and provide the completed Genotype/Phenotype table in the TE</p>
Reading 1	<i>Reading One: Which Instructions Get Followed?</i>

<b>Lesson 8 (3 days)</b>	<b>Variations, Variations, and More Variations</b>
Activity 8.1	<p>What Do I Do with All This Data? Share Projected Image</p> <ol style="list-style-type: none"> <li>1. Line of People</li> </ol> <p>Teachers may want to provide examples of different types of graphs as presented in the TE and lead a discussion regarding types and uses for different graphs. Teachers may want to also provide students with a pre populated data table with student heights and names</p>
Activity 8.2	<p>How Can We Show Ranges of Variation? Share Projected Image</p> <ol style="list-style-type: none"> <li>1. Line of People</li> <li>2. Living Histogram</li> </ol> <p>Teachers may want to provide example of class histogram and discuss rather than students trying to construct from a provided data table or focus on using only the Lincoln Middle School 8th Grade Height data to discuss histograms and answer making sense questions</p>
Activity 8.3	<p>Variation Everywhere, So What? Share Projected Images</p> <ol style="list-style-type: none"> <li>1. Monarch Butterfly Larvae</li> <li>2. Snails:</li> <li>3. Guppies:</li> <li>4. Orchids</li> <li>5. Blood Type Graph</li> </ol>
Reading 1	<i>Height— Unraveling a Genetic Puzzle</i>

<b>Lesson 9 ( 3 days)</b>	<b>Do Variations between Individuals Matter?</b>
Activity 9.1	The Case of the Peppered Moth
Activity 9.2	How Does Variation Matter?
Reading 1	<i>How Does Variation Matter?</i>
Activity 9.3	<p>Explaining the Change in the Peppered Moth Population Students should be able to write independent CER regarding how peppered moths changed over time.</p>

<b>Lesson 10 (1-5 days)</b>	<b>The Finch Investigation - <i>Optional if internet is available</i></b>
Activity 10.1 - Activity 10.5	<p>Background to the Mystery <i>This activity requires internet access and may not be feasible for some of your students. All that is needed for these activities is an Internet browser such as Safari or Firefox. Nothing needs to be installed on the computers students will use.</i> <i>The website can be found at <a href="http://bguile.northwestern.edu">http://bguile.northwestern.edu</a></i></p>
Reading 1	<i>Where Did the Data Come From?</i>

<b>Lesson 11 (2 days)</b>	<b>Constructing a General Model of Population Change</b>
Activity 11.1	Constructing a General Model of How Populations Can Change Students should be able to complete Part 1 independently.  Teachers may want to share the completed consensus model for discussion purposes using the student answer page in the TE- for both Part 1 and 2 depending on your students.
Reading 1	<i>Does Selection Always Occur Naturally?</i>
Activity 11.2	Does the Consensus Model Work? Teachers may want to share the completed Activity 11.2 student sheet and discuss with students

<b>Appendix 1 (1 day)</b>	<b>Evidence of Evolution</b>
Reading 1	<i>How Do Scientists Know What They Know about Evolution?</i>

<b>Appendix 2 (1 day)</b>	<b>Evidence of Evolution</b>
Reading 1	<i>Darwin's Theory of Evolution by Natural Selection</i>

<b>Appendix 3 (1 day)</b>	<b>Evidence of Evolution</b>
Reading 1	<i>How Are GMOs Useful?</i>

**SUMMATIVE ASSESSMENT:** Students should be able to write a scientific explanation for the Driving Question: Why Do Organisms Look the Way They Do?

Students might create a poster or storyboard regarding a trait. For each trait, students will indicate which of the four concepts influenced the trait— is this a species characteristic? Environmental influence on individuals? Hereditary trait? Both heredity and environment? Environmental influence on the population? Students might choose to answer a simple question such as “Why do I look more like my cousin than my sister?”

*You might choose to emphasize only a portion of this as a final assessment, given what you are able to teach and what students are actually able to do during this remotely taught unit.*