Name: April Maitner
Lesson Title: Inherited Traits  Lesson Length: 1 90 min class
SSI Topic: Pompe Predicament  Grade Level(s): 7th

Appropriateness for Middle/High School Students
Our students learn most effectively when they are able to attach vocabulary and concepts to a physical item. Students in this lesson will learn about inherited traits via a hands on activity, learn and apply appropriate grade level vocabulary while deepening their understanding of the concept.

Background
The high school standards expect students to understand inherited traits well enough to understand the concept of how it impacts development.
Prior to this lesson students were introduced to inheritance through the concept of plants and haven’t discussed it since 4 grade or generally 3 years prior.

Florida State Standards (NGSSS)
- SC.7.L.16.1 Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity
- LACC.68.RST.1.3 Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
- LACC.68.RST.3.7 Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).

Performance Objectives
Understand how traits are inherited.
Understand how are the patterns of inheritance are studied
Students will write and draw to illustrate their learning.

Materials List and Student Handouts
- Ladder (SH in Pink and Blue)
- Scissors
- Puff balls in 2 sizes a big and small of 7 different colors
- Glue
- Construction paper
- Notebook paper
- Key
- Poster Paper
- Markers
- List of related words and definitions.
## 5E Lesson Template

### ENGAGE

**Overview**
During this phase students will explore their prior knowledge and uncover misconceptions about how traits are passed and expressed.

<table>
<thead>
<tr>
<th>Activities (Teacher or Student Actions)</th>
<th>Probing Questions</th>
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</thead>
<tbody>
<tr>
<td>Teacher will draw a bubble that looks like a Facebook status update containing the essential questions on poster paper. Students will then go around the room making comments on the statuses with their knowledge of the subject. They will be required to write one thing they know and a question they have about the status.</td>
<td>How are traits inherited? How are the patterns of inheritance studied?</td>
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### EXPLORE

**Overview**
Students will begin to explore the idea by constructing a representation of a small part of DNA with representation of traits glued on. During this process students will be primarily kept in the dark as to what they are constructing.

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<td>Teacher will monitor students as they construct their DNA chains. Students will glue any combination of big and small puffs on each side of a ladder looking strand of &quot;DNA&quot;. They will have a new color for each rung and the pink one will have an extra set that the blue one does not have. Students will cut down the center of the ladder. They will also label one side of each A and B.</td>
<td>What does this structure remind you of? What do you do with these items? How do you think this relates to our status questions?</td>
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### EXPLAIN

**Overview**
Students will now be provided a key that tells them what each of the puff balls mean. That the larger puff balls indicate a dominate trait and the little a recessive. Then students will be asked to draw and describe the members of their “family”.

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The key will indicate what traits are associated with what color. They will also see that if there is a big puff that is the seen gene. Students will then use this information to draw a mother and a father. They will then take half from the mother and half from the father and create a “child”. They will then draw and describe their child.

What is with the weird extra rung on the pink one?
What are you noticing about your people in your family?
What does this make you think about you and your family?

### ELABORATE

**Overview**

Students will extend their understanding of the inherited traits by analyzing the possible children that the parents can make.

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<td>Students will be asked to choose one trait to watch as they create 4 children from this mom and dad. AA, AB, BA, BB with the first letter being mom the second being dad. They will be asked to write down what they have noticed in their observations.</td>
<td>What are you seeing about the offspring made by these two parents?</td>
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<td>Next students will be invited to trade one of their parents with another student. They can then repeat the process and note what they see.</td>
<td>What changed when you changed the parents?</td>
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### EVALUATE

**Overview**

Students will see if they can apply definitions to the concepts they experienced in the activity. They will also demonstrate how their thinking has changed through the process.

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<td>Students will be assessed in two ways. They will be given a list of vocabulary words with definitions that they will need to use to label their work based on the definitions.</td>
<td>What did you learn through this process?</td>
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<td>Students will also be asked to return to their status updates and make a new comment reflecting what they have learned. They will be required to use this new applied vocabulary they have recently attached to an idea.</td>
<td>How has your thinking about inherited traits changed?</td>
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<td></td>
<td>How are traits inherited?</td>
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<td>How are the patterns of inheritance studied?</td>
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