Lesson Title	Genetics
Length of Lesson	One (50 minute) class period
Created By	Charlotte Buehler
Subject	General Science
Grade Level	7th grade
State Standards	7th: Inquiry (1d, h), Life Science (3d)
DOK Level	DOK 3
DOK Application	Hypothesize, Draw Conclusions
National Standards	5-8: Inquiry (A), Life Science (C)
Graduate Research Element	Heredity information is contained in genes. Individuals inherit traits from genes which are passed down from one generation to another. Australian pine (Casuarina) is a plant species which has varying subgroups. Each subgroup has genes that have been passed down over generation to produce different Casuarina species.

Student Learning Goal:
MS 7th Grade:
Inquiry- (1c) Collect and display data using simple tools and resources to compare information (resources), (1h) Make relationships between evidence and explanations
Life Science- (3d) Compare and contract reproduction in terms of the passing of genetic information (DNA) from parent to offspring (Reproduction that account for evolutional adaptability of species).

National Science Education Standards of Content 5-8:
Inquiry (A)—Develop descriptions, explanations, predictions, and models using evidence
Life Science (C)—Reproduction and Heredity

Materials Needed (supplies, hand-outs, resources):
- Pencil, Markers
- Handouts (INSPIRE_Buehler_HO_InventoryGraph, INSPIRE_Buehler_HO_ InventoryDataTable, INSPIRE_Buehler_HO_ InventoryGraph)

Lesson Performance Task/Assessment:
In this lesson students will learn about genetics. Heredity information is contained in genes, located in the chromosomes of each cell. Each gene carries a single unit of information. An inherited trait of an individual can be determined by one or many genes

and a human cell contains many thousands of different genes. Student will work in groups with 5 people in each group and will each respond to the survey (INSPIRE_Buehler_HO_InventoryGraph). After 5 minutes the groups will reconvene and tally up their survey responses. The final step will ask the students to graph their results from the group data.

Lesson Relevance to Performance Task and Students:
When students understand how heredity works, they can connect why they exhibit traits which resemble other family members. Traits not only relate to humans, but also plants. The integration of plant biology also helps demonstrate to students the same heredity principle.

Anticipatory Set/Capture Interest:
The instructor will show a short video (http://learn.genetics.utah.edu/content/variation/sources/) to introduce the students to genetics. The instructor will then pose a series of questions to the class from the handout (INSPIRE_Buehler_HO_traitsreference) about traits. One example the instructor will ask "who has freckles and who does not" or "who has a straight hair line and who has a widow's peak." The questions should draw the students into the discussion about heredity and why they have the traits that they do.

Guided Practice:
The lesson does not incorporate guided practice, instead, after the introduction, the students work in groups.

Independent Practice:
The students will work together in groups of 5. Each student should take the trait survey, tally the results, and making her/her own graphs. The group may work together but each student should turn in their own graph.

Remediation and/or Enrichment:
Remediation- Individual IEP; work with the whole class to get them started on the survey. Provide examples of how to make a graph on the board.
Enrichment – Have the students use another species (beside a human) to determine what traits are inheritable. A good example might be linking to plants.

Check(s) for Understanding:
Can the students define what a trait is? Do the students understand why and how they have the traits that they do?

Closure:
Question 1: Compare and contrast plant traits and human traits. How does the environment play a role in traits?

Question 2: Why might studying genetics and traits be useful?

Possible Alternate Subject Integrations:
Medicine, Biology

Teacher Notes:

References for lesson from:
http://teach.genetics.utah.edu/content/heredity/html/inventory.html