**Genes Are the Codes for Polypeptides Biology Grade:** 9-10 **Standard** #B.5.2

**Title of Investigation:** Understanding Gene Location and Function

**Authors:** Rose Calhoun, Shelly Gregory, Marcus Jones, Laurie Simmons

**Science Standard:**

B.5.2 Describe how hereditary information passed from parents to offspring is encoded in the regions of DNA molecules called genes.

**Leading Questions:**

What are genes? Where are genes? What is the function of a gene?

**Summary of the Investigation:**

Students fill-in preconceived notions of genes through guiding pictures and a white boarding session.

**Equipment Used:**

White boards, markers, pictures for groups of students

**Description of Procedures, notes (teacher manual):**

1. Begin by having students sketch a gene individually in journals and develop two or three questions that they have about their gene.
2. Students get into groups of 4 students and develop white boards with a sketch and 2-3 questions.
3. Class discusses sketches and questions in a “board meeting.”
4. Teacher provides each group with a picture of DNA as it relates to a gene. An example is given below.
5. Have the students modify their pictures of a gene as necessary and develop two or three new questions.



[http://regentsprep.org/regents/biology/units/heredity/genechromosomeidea1.gif&imgrefurl](http://regentsprep.org/regents/biology/units/heredity/genechromosomeidea1.gif%26imgrefurl)

1. Class discusses new sketches and question in a “board meeting.”
2. Teacher provides each group with a picture of a chromosome with a gene labeled. An example is provided at the top of the next page.



<http://www.d.umn.edu/cla/faculty/troufs/anth1602/images/dna_0308_500.jpg>

1. Students label their pictures. Students ask any final questions.
2. Ask the students to white board the answer to the questions, “What is the function of a gene? What do genes do?”
3. Have the students refine the answers to their questions by showing them a picture of a gene coding for a protein. An example is provided below.



<http://www.accessexcellence.org/AE/AEPC/NIH/images/rna-transcription.gif>

**Follow-up Questions:**

Are all genes the same?

Are they the same length?

Are all peoples’ genes the same?

Do all organisms have the same number of genes?

Are all of your genes the same as a dog’s? a cat’s? a fish’s? a tree’s?

Are any of your genes the same as a dog’s? a cat’s? a fish’s? a tree’s?