**Genetics Inquiry Lab**

**Objectives** – Students will:

* Determine and use measurements, graphs and mathematical analyses to describe and investigate natural systems in a life science context;
* Design an investigation and form a hypothesis to test a human trait passed on through Mendelian genetics;
* Carry out the investigation by random sampling;
* Recognize that prior expectations may create bias when conducting scientific investigations;
* Generate a scientific conclusion from an investigation, clearly distinguishing between results (evidence) and conclusions (explanation); and
* Evaluate explanations proposed by others by looking at evidence, identifying faulty reasoning, and suggesting alternative explanations.

**Basic Steps:**

1. Come up with a genetic trait/question/problem you’d like to investigate. Choose a genetic trait that is easy to ask people about. Your team will be gathering data from at least 50 people per group member to test your hypothesis.
2. Research your trait and the prevalence in humans. You may want to test the prevalence of a trait against gender or race. Write a paragraph of background information about your question.
3. Form a hypothesis statement.
4. Design your experiment by identifying variables and laying out a procedure for surveying people in an unbiased way. Construct a table to collect the data you collect from your sample people.
5. After surveying/recording your data in a table, compile your information into a graph.
6. Analyze your results and write a conclusion.
7. Report/Share your results in class.

**Experimental Design Details:**

***Question/Problem*:** What is it that you are trying to investigate? (Ex. Can more females roll their tongue than males?)

***Background Information***: This is one paragraph to introduce what you know about this human trait. You should explain the trait you are investigating; which allele is dominant and which is recessive? How commonly do we see each allele expressed in the general population? Is there anything else we should know about this trait from your research?

***Hypothesis***: What you think is going to happen? (Ex. More females will be able to roll their tongue than men because…)

***Variables***: Please list the other relevant variables that you will need to be certain remain the same throughout the testing process. What are you testing? What data are you recording? What do you need to control (number of people surveyed, male vs female, age, etc.).

***Materials List***: Make a list of all the materials that you will use for your project (graph paper, data sheet, pencils, etc.)

***Procedure***: Write a simple procedure describing how you will investigate the question you have selected (you need to question at least 50 people each). Things to remember when asking people for information: Be polite, not pushy. Let them know why you are asking them a random question. Ask for permission – “May I ask you a quick question for my science project?”

***Data Table***: Create a data table that you will input your data into. You will need to record at least a first name for each person as well as any other relevant information (race, gender, age, etc.).

After sampling is complete:

Write-up a lab report as we have completed in the past.