Mr. BalmerName: Pd:

**What Happened to My Eye? Oh My!**

*Lab Safety and Experimental Design*

**Purpose/Question:** Pick one independent variable to change and write a testable scientific question about how it will affect the egg white. Possible independent variables include type of acid, type of chemical, chemical exposure time on “eye”, concentration of chemical, amount of chemical, etc.

**Prelab Questions:** RTQ—Restate questions as part of the answer.

Use proper format for definitions:

An **acid** is (a/an)\_\_\_ that/who (is, has, does)\_\_\_.

1. What is an acid? (Use 3 different sources). If you will be using a different type of chemical like an alcohol, peroxide, salt, etc. you want to define those terms as well.
2. Egg whites are a mixture of water and albumin. Albumin is a protein. How are proteins affected by changes in acidity (pH)? Cite your source.
3. Fill out the experimental design chart on the next page for your specific experiment.

**The purpose/question and prelab and must be complete before the lab work may begin.**

**Materials:** 6 molar sulfuric acid (6M H2SO4), 6 molar hydrochloric acid (6M HCl), 6 molar nitric acid (6M HNO3), 30% hydrogen peroxide (H2O2), ethanol (C2H5OH), granulated salt (NaCl), granulated sugar (C12H22O11), vinegar (5% acetic acid), egg white to model the protein in an eye, stopwatch, well plate, pipet, distilled water rinse bottle, glass beads, hot plate. Other materials available upon request

**Hazards**: Acids are extremely corrosive. You must have goggles and an apron on at all times during the experiment, even while cleaning. If any acid spills you must notify the teacher immediately. If you get it on yourself, you must wash it off immediately. **You may not use more than 5 drops of chemical or egg white in any trial. You may not mix any of the acids together.**

**Purpose/**

**Title:**

**Question:**

**Hypothesis:**

**Independent Variable:**

**Variations (at least three):**

**Control:**

**Dependent Variable:**

**Constants:**

**Improvements: After talking with Mr. Balmer. (Describe 2)**

**Total # of Trials (at least 3):**

|  |  |
| --- | --- |
| **Procedure** | **Results (quantitative and qualitative)** |
| Don’t forget to take pictures of your procedure. | Don’t forget to take pictures of the results. |

☺Clean your lab station and put your materials away☺

**Discussion Questions: RTQ—Restate the question as part of the answer**

1. About how long does it take to get back to the eyewash station?
2. How long should you rinse your eyes if you get a chemical in them?
3. What is the best way to prevent damage to the eyes?
4. A scientific model is a representation of a system or object. Models are often used to represent very large (solar system or globe), very small (cells or DNA), or very complex systems and objects. Describe your use of a scientific model in this experiment. What were its strengths and weaknesses?
5. The data in this experiment was based mainly on qualitative observations. How could you modify the experiment so that the damage to the egg included quantitative measurements?

**Draw and label** a picture of your experiment.

**Molecular Model**: Draw a picture of what you think the atoms and molecules were doing during the lab. Explain how your picture demonstrates any changes you saw during the experiment.

**Conclusion:** Tell me something “NU”

**New**: What new modifications would you make to the experiment to study new independent variables or some other real-life application of this experiment? **Be specific.** Adding more repeated trials doesn’t count as a modification. You cannot say you wouldn’t make any changes. Don’t use the words **change**, **different, etc**. If you want to use different materials, give me some **specific** examples.

**Uncertain**: What concepts from the lab are you still uncertain about? In other words, what questions do you still have after completing the lab? You cannot say that you are uncertain about nothing. If you have no uncertainties, then ask me a challenging question related to the lab.