Eye Safety Demonstration:

Materials:

Egg (or egg whites)

Petri dish

Permanent marker

Overhead projector

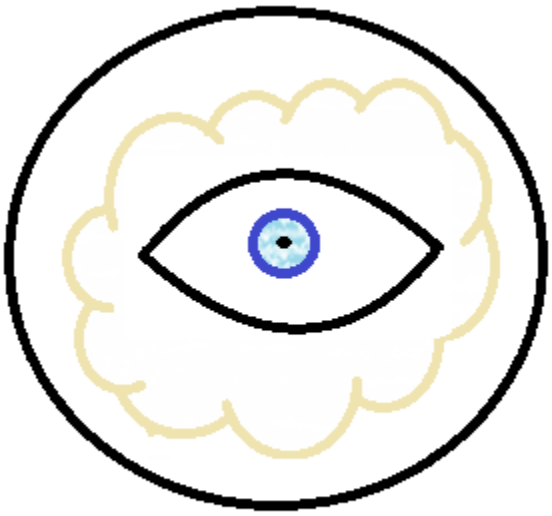
Acid (hydrochloric, sulfuric, or nitric acid 6M or stronger)

Droppers

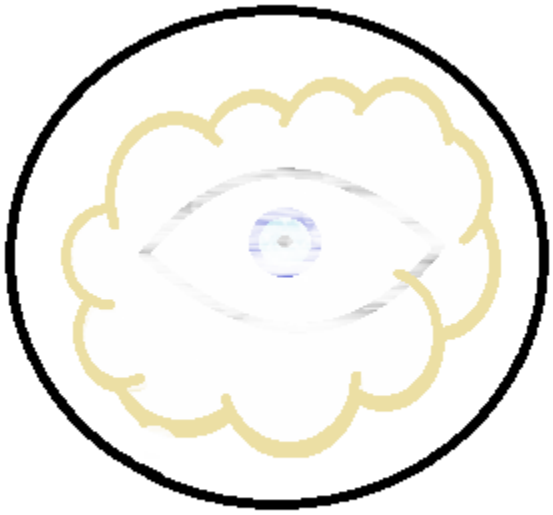
Water

Baking soda solution (optional)

*Remember these chemicals are acids and can cause damage to exposed eyes and skin please use caution when handling them.



Clear egg whites over eye



Cloudy egg whites over eye

Draw an eye on the bottom of the Petri dish. Crack open the egg and separate the egg whites and the yolk. Place the egg whites on the Petri dish. Place the Petri dish on the overhead projector so the students can see the eye. Explain to the students that the proteins that make up the egg whites are similar to what is found in the vitreous humor of the eye. Now place drops of acid onto the egg whites. Try to reverse the damage by rinsing the eye with water and or the baking soda solution.

What is happening?

The acid will react with the egg whites causing it to become cloudy. Specifically, the acids are reacting with the proteins that are found within the egg whites and denaturazation is occurring. Denaturization is the changing of the proteins natural shape. Once a protein has been denatured it can no longer function and it cannot be returned to its normal shape. Explain to the students that once they get a chemical in their eye the damage has been done and eye will not return to normal. When the egg was flushed with water and sodium bicarbonate the egg does not become clear again. Explain to students the importance of wearing appropriate personal protective equipment such as goggles, gloves, and a lab coat.

Links:

Eye Safety demonstration:

http://www.flinnsci.com/Documents/demoPDFs/Safety/SF10062.pdf

http://stem.browardschools.com/wp-content/uploads/2012/09/Acid-in-the-Eye-Safety-Demo.pdf

http://www.chemistry.mtu.edu/~kmsmith/SYP/Instructors/Monday/Acid+Eye.pdf

Eye protection

https://www.youtube.com/watch?v=mfyP1gbdzAM

Zombie college 5 rules of lab

https://www.youtube.com/watch?v=S6WARqVdWrE

Lab safety video

https://www.youtube.com/watch?v=s6lOQ5_Vlok