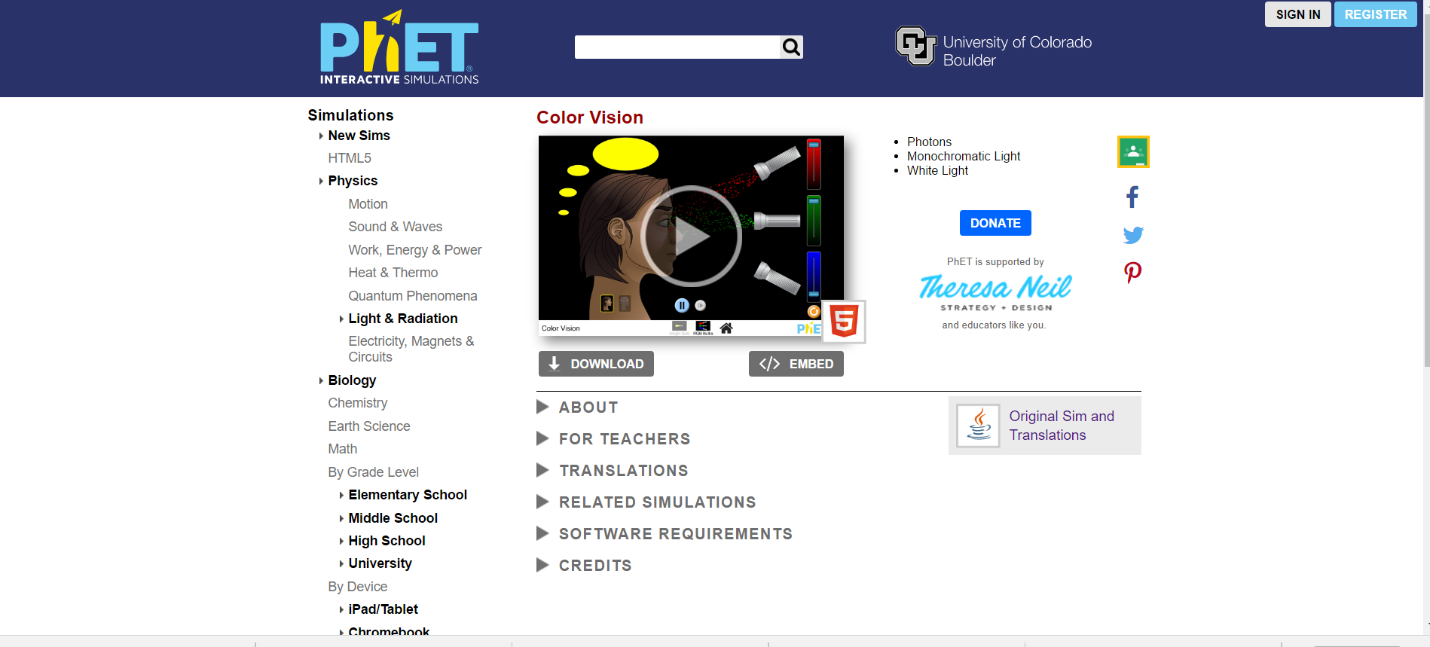
**Title: Color Vision**

**Important Questions:**

1. How do we perceive specific color combinations?
2. What are the primary colors of light?
3. How is white light created?

**Instructions:**

In this activity, we will be using the deflection of RGB bulbs to determine what color a person sees when different combinations of lights are used.

1. [](https://phet.colorado.edu/en/simulation/color-vision)Click the embedded photo below to go the simulation:

**Exploration Phase:**

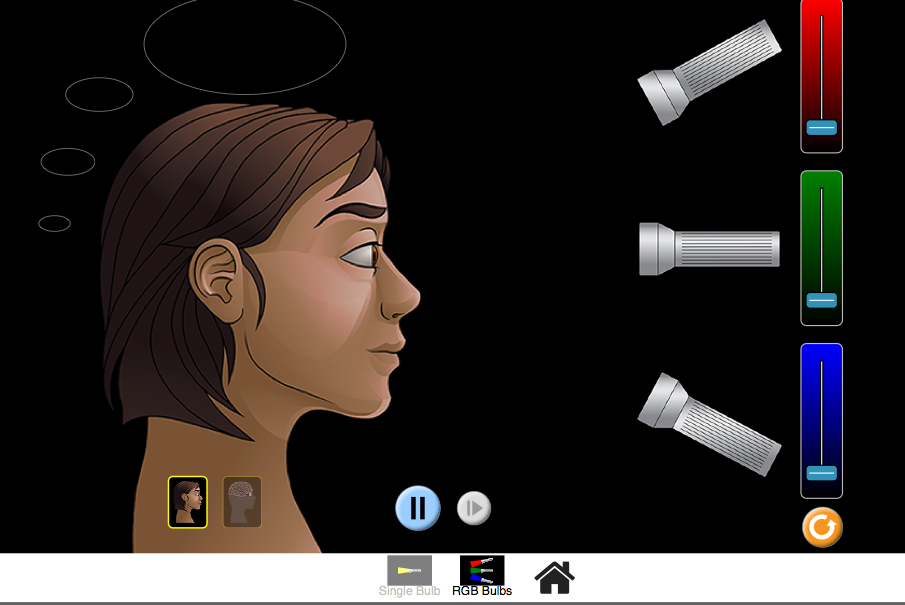
1. Briefly explore this simulation.
2. Click on “RGB Bulbs”.
3. Explore applying different combinations of each light.

*Questions:*

1. What color does the person see when no color is applied?
2. What color does the person see when one color is raised to the maximum level?
3. What color does the person see when all three colors are at the maximum level?

**Explanation Phase:**

Aim: Create a rule that explains what primary light bulbs are needed for a person to see specific colors.



When different amounts of light are applied, a person will see a specific color.

Predict the secondary color a person will see when two primary colors are raised. Make sure that both colors are at the maximum deflection.

|  |  |  |
| --- | --- | --- |
| **Primary Color** | **Primary Color Added** | **Predicted Perceived Color (Secondary Color)** |
| **Red** | **Green** |  |
| **Green** | **Blue** |  |
| **Blue** | **Red** |  |

Test your predictions.

|  |  |  |
| --- | --- | --- |
| **Primary Color** | **Primary Color Added** | **Perceived Color**  **(Secondary Color)** |
| **Red** | **Green** |  |
| **Green** | **Blue** |  |
| **Blue** | **Red** |  |

What colors went into the eye and what color was seen?

How were your predictions similar or different to your actual results?

**Application Phase:**

What primary color and secondary color make white? These color combinations are known as *complementary* colors.

|  |  |  |
| --- | --- | --- |
| **Secondary Color** | **Complementary Color Added** | **Perceived Color** |
| **Cyan** |  | White |
| **Yellow** |  | White |
| **Magenta** |  | White |

Create a rule that explains what happens using the words: secondary and complementary color.