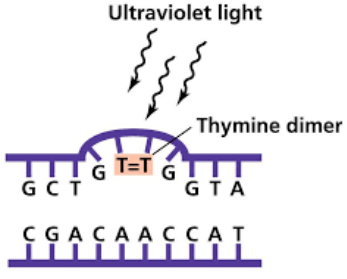
Name _____ Date _____ Period _____

# Lab: UV Light and Skin Cancer

HONORS BIOLOGY: UNIT 4


**Background:** Exposure to the **ultraviolet (UV) radiation** in sunlight can lead to skin cancer caused by mutations in the DNA of skin cells. The most common type of damage from UV light is the formation of thymine dimers, or pairs of thymine bases bonded together. These mutations interfere with both replication and transcription. Sunscreens receive ratings based on the amount of protection from UV radiation they provide. The higher the **sun protection factor (SPF)**, the more radiation the lotion blocks. In this lab you will be using Ultraviolet (UV) detecting beads containing pigments that change color when exposed to ultraviolet light from the sun or certain other UV sources.





With your group, brainstorm and make a list of at least 10 possible research questions about sunscreen. (For example-What is enough sunscreen? Do more expensive sunscreens work better? Does the age of the sunscreen make a difference?, Are sunscreens really waterproof? )

1._____

2._____

3._____

4._____

5._____

6._____

7._____

8._____

9._____

10._____

Next, choose <u>one</u> of the above research questions you would like to investigate and develop a testable hypothesis for the question. This should be in an *if/then/because* format.

**Hypothesis:**

- Identify the dependent and independent variables:

  Dependent variable:

  Independent variable:

- Identify a minimum of 4 controlled variables:

- What is the control in your experiment (explain)?

**Materials List:**

- White UV beads
- Petri Dishes
- Sunscreen (to be obtained by students as appropriate for your experiment)


**General Procedure:**

1. Form groups or 2-3 students
2. Place 5-7 UV beads into each of their Petri dishes
3. Apply a thin, even layer of sunscreen (as appropriate based on individual hypotheses) to the outside of the Petri dish.
4. Students then should place the Petri dishes outside in sunny (or shaded) locations as appropriate based on hypotheses for approximately 15-20 minutes.
5. Specific procedures will vary depending on the hypothesis your group will be testing.

**Designing Lab:** Using this general procedure, your group must design a lab that tests your hypothesis.

- Design your own **procedure**. (List steps so that someone else can reproduce your experiment. This experiment needs to be repeatable)
- You must also include a **blank data table** with columns and rows labeled for collecting data during the course of the experiment. You will use this data table to collect your raw data. Be sure to record your observations as accurately and in as much detail as possible.
- Once you have designed your lab, have the teacher check it off before you begin your controlled experiment.

  Teacher stamp _____

- When you have completed your experiement you will preparing a formal lab write-up with your group. (review the guidelines for completing a formal lab write-up)

Procedure and Data Table