Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_

Photosynthesis Lab AP Biology

**The Effects of Temperature and Wavelength** (λ) **on the Rate of Photosynthesis**

*(Measuring the rate of photosynthesis using the rising leaf-disc method)*



**Abstract:**

 Purpose: To measure, record, calculate and compare the rate of photosynthesis at various temperatures.

**Introduction: Word Bank:**

autotroph/autotrophic nutrition photosynthesis light/photons

chloroplast/chlorophyll/NADP thylakoid/grana guard cells

light-dependent reaction chemiosmosis photophosphorylation

leaf / stomates spongy mesophyll palisade mesophyll

enzymes temperature/avg. kinetic energy denaturation

light / color / wavelength Photosystem I and II action spectrum

absorption spectrum

**Methods**:

 

**Data/Results**:

**Table 1.** **Time for Leaf Discs to Rise in Cold Temperatures ( \_\_\_\_oC)**

|  |  |
| --- | --- |
|  | **Time for Leaf Discs to Rise** (min) |
| **Group** | #1 | #2 | #3 | #4 | #5 |
| **1** |   |   |   |   |   |
| **2** |   |   |   |   |   |
| **3** |   |   |   |   |   |
| **4** |   |   |   |   |   |
| **5** |   |   |   |   |   |
| **6** |   |   |   |   |   |
| **Avg.** |   |   |   |   |   |

**Table 2.** **Time for Leaf Discs to Rise at Room Temperatures ( \_\_\_\_oC)**

|  |  |
| --- | --- |
|  | **Time for Leaf Discs to Rise** (min) |
| **Group** | #1 | #2 | #3 | #4 | #5 |
| **1** |   |   |   |   |   |
| **2** |   |   |   |   |   |
| **3** |   |   |   |   |   |
| **4** |   |   |   |   |   |
| **5** |   |   |   |   |   |
| **6** |   |   |   |   |   |
| **Avg.** |   |   |   |   |   |

**Table 3.** **Time for Leaf Discs to Rise in Warm Temperatures ( \_\_\_\_oC)**

|  |  |
| --- | --- |
|  | **Time for Leaf Discs to Rise** (min) |
| **Group** | #1 | #2 | #3 | #4 | #5 |
| **1** |   |   |   |   |   |
| **2** |   |   |   |   |   |
| **3** |   |   |   |   |   |
| **4** |   |   |   |   |   |
| **5** |   |   |   |   |   |
| **6** |   |   |   |   |   |
| **Avg.** |   |   |   |   |   |

**Table 4. Time for Leaf Discs to Rise at Various Temperatures**

|  |  |
| --- | --- |
|  | **Avg. Time for Leaf Discs to Rise** (min) |
| **Temp.** | #1 | #2 | #3 | #4 | #5 | **Avg.** |
| **Cold** (2oC) |  |  |  |  |  |  |
| **Room Temp** (22oC) |  |  |  |  |  |  |
| **Warm** (32oC) |  |  |  |  |  |  |

**Table 5.** **Time for Leaf Discs to Rise under Various Colors** (λ)

|  |  |
| --- | --- |
|  | **Avg. Time for Leaf Discs to Rise** (min) |
| **Color** | #1 | #2 | #3 | #4 | #5 | **Avg.** |
| **White** |  |  |  |  |  |  |
| **Blue** |  |  |  |  |  |  |
| **Green** |  |  |  |  |  |  |
| **Red** |  |  |  |  |  |  |

**Possible Graph(s):**

