**Monocot & Dicot (Eudicot) Seed Investigation**

**Objective:**

To visually examine monocot and dicot seeds and draw a biological drawing of each seed type.

**Materials:**

* iodine dropper bottles
* scalpel
* paper towel
* magnifying lens
* bean seed (soaked for 24 hours)
* corn seed (thawed frozen corn or canned corn works best)

**Instructions:**

1. Take one bean seed and one corn seed and, place on the paper towel.
2. Using the scalpel, carefully bisect each seed and place the seed in the spot plate.
3. Examine the internal structures of each seed and draw a biological drawing of each using the rules posted below.
* Draw what you see, not what you think should be there.
* Drawings are made in **pencil** to the **left of centre** of an unlined page. Save the **right for labels**.
* They should be as simple as possible and large enough to show all parts without crowding (at least half a page/size of your hand).
* Drawings are made with **clean-cut lines**. Do NOT sketch, shade or colour. If you wish to indicate a darker area, **stipple**.
* When one representative cell of a group is drawn, make sure you include the cell boundaries of surrounding cells.
* **Labels** should be **lined up** in an imaginary **column on the right**, and **printed** in lower case, at the end of a line, not on it. (Note: No arrowheads, no bends)
* Label lines are drawn with a **ruler**, **parallel** to each other and do not cross. They end on or in the structure being labelled.
* All drawings are titled. The **titles are printed, in upper case letters, and underlined on the upper left** above the drawing. Your **name, the course and the date go in the upper right**.
* Include a description, centred at the bottom of the page. It should include:
* How was it prepared? – e.g., preserved, living, wet mount
* What is it? – e.g., *Paramecium caudatum*
* How was it stained? – e.g., methylene blue, iodine, unstained
* How was it viewed and what power was it under? – e.g., high, medium, low power (400 X)
* *Example: This is a living human cheek cell, stained with iodine, viewed on high power (400 X)*
1. Label the following parts on your diagram following the rules indicated above:

**Dicot/Eudicot Seed (Bean):**

cotyledons, embryo, testa (seed coat)

**Monocot Seed (Corn):**

cotyledon, endosperm, testa (seed coat)

1. Place 1 - 3 drops of iodine on each seed. *Iodine turns dark blue or black in the presence of starch*.
2. Complete lab questions located below.

**Lab Questions:**

1. Fill in the blanks below:

 1. The monocot in this experiment was the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ seed. The dicot in this experiment was the \_\_\_\_\_\_\_\_\_\_\_ seed.

1. \_\_\_\_\_\_\_\_\_\_ was used to detect for the presence of starch.
2. The \_\_\_\_\_\_ seed contained more starch.
3. Where is the food stored if not in the endosperm? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. The starch turned \_\_\_\_\_\_ in the presence of iodine,
5. How does having more starch benefit a seed? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

B. Summary of Structures:

|  |  |
| --- | --- |
| **Embryo** | **Mature Plant part:** |
| 1. radicle |  |
| 2. epicotyl hypocotyls |  |
| 3. plumules |  |

C. Summary of Functions:

|  |  |
| --- | --- |
| **Structure** | **Function** |
| endosperm |  |
| cotyledon |  |
| seed coat |  |