IMRaD Format Laboratory Report Worksheet

Student Name: _____ **Date:** _____

Lab Section: _____ **Station Data Completed:** □ 1 □ 2 □ 3 □ 4

INTRODUCTION

Provide background information and state the purpose of the laboratory investigation. Explain why plant embryogenesis is important and what specific aspects you will be examining.

Background Context: Describe the biological significance of plant embryogenesis and seed development in the plant life cycle.

Purpose Statement: Clearly state what this laboratory investigation aims to accomplish.

Key Concepts: Identify the main biological concepts you will be exploring (embryo development stages, monocot/dicot differences, seed anatomy, germination).

METHODS

Describe the virtual methods used to collect data at each station. Explain how you analyzed the provided materials (micrographs, diagrams, datasets).

Station 1 - Embryo Development Series: Describe how you analyzed the Capsella embryo micrographs and determined the developmental sequence.

Station 2 - Monocot vs. Dicot Comparison: Explain your approach to comparing bean and corn embryo structures.

Station 3 - Seed Dissection & Anatomy: Describe how you examined seed internal structures and interpreted the starch test results.

Station 4 - Seed Germination Analysis: Explain your method for analyzing the germination time-lapse and growth measurements.

RESULTS

Present your findings from all four stations. Describe what you observed without interpretation. Reference your lab notebook entries.

Station 1 Findings: Describe the sequence of embryo development stages and key morphological changes observed.

Station 2 Findings: Present your comparative analysis of monocot and dicot embryo structures.

Station 3 Findings: Describe the internal anatomy of bean and corn seeds and starch test results.

Station 4 Findings: Present your observations of germination stages and growth pattern analysis.

DISCUSSION

Interpret your results, explain their significance, and connect them to broader biological concepts. Address any limitations or questions that arose.

Interpretation of Embryo Development: What do the developmental stages reveal about how the plant body plan is established?

Evolutionary Significance: How do the differences between monocot and dicot embryos reflect evolutionary adaptations?

Seed Structure and Function: How do the anatomical features you observed relate to seed function in protection, nutrition, and dormancy?

Germination Process: What does the germination sequence reveal about the reactivation of embryonic development?

Broader Implications: How does understanding plant embryogenesis contribute to fields like agriculture, conservation, or biotechnology?

CONCLUSION

Summarize the main findings and their significance. Restate how the investigation addressed the original purpose.

Summary of Key Findings: Briefly restate the most important results from your investigation.

Significance: Explain why these findings matter in the context of plant biology and development.

Submission Instructions: *Use this worksheet to organize your thoughts and draft your formal laboratory report. Submit a printed copy of your completed report during our next face-to-face class session.*

GBIO 100 - Developmental Biology Laboratory

Laboratory Exercise No. 4: Plant Embryogenesis & Seed Development - IMRaD Report Worksheet