Human Prenatal Development (HPD) – Final Exam
Teacher Assessment Alignment Guide

Purpose of this document
This document explains where and how the concepts assessed on the HPD Unit Final Assessment were introduced and reinforced during the *Unit*. It is intended to support teacher confidence, instructional transparency, and professional accountability.

Investigation 1: Foundations of Prenatal Development (Questions 1–4)

Key ideas assessed

- Mitosis as the mechanism of early growth
- Increase in cell number vs. cell size
- Importance of accurate genetic information
- Role of repeated cell division in development

Where these ideas were presented

- **Concept Slides**
  - Introduction to mitosis
  - Cell division as the basis of growth
  - DNA replication and genetic continuity
- **Lab Experience**
  - Modeling the role of cell division in early development
  - Visual/tactile modeling of increasing cell number
- **Background Reading**
  - Explanation of mitosis in prenatal development
  - Relationship between cell division and formation of tissues
- **Focus Questions**
  - How does growth occur during early prenatal development?
  - Why is accurate cell division important for development?

Investigation 2: Differentiation and Early Organ Formation (Questions 5–8)

Key ideas assessed

- Cell specialization (differentiation)
- Formation of tissues and organs
- Importance of timing during development
- Structure–function relationships

Where these ideas were presented

- **Concept Slides**
  - Differentiation and specialization
  - Structure and function in developing organs
  - Developmental sequencing
- **Lab Experience**
  - Activities emphasizing specialization and organization
  - Modeling how different cell types contribute to larger structures
- **Background Reading**
  - Explanation of tissues and organs
  - Timing and order in embryonic development
- **Focus Questions**
  - Why do cells need to specialize?
  - How are structure and function related during development?

Investigation 3: Growth, Coordination, and Increasing Complexity (Questions 9–12)

Key ideas assessed

- Coordination among body systems
- Increasing complexity during development
- Role of the nervous system
- Integration rather than isolated growth

Where these ideas were presented

- **Concept Slides**
  - Systems working together
  - Increasing coordination and complexity
  - Introduction to nervous system control

- **Lab Experience**
  - Activities emphasizing coordination and integration
  - Observations of how systems must function together
- **Background Reading**
  - Explanation of system integration
  - Nervous system as a coordinating system
- **Focus Questions**
  - Why must body systems work together?
  - What does increasing complexity indicate about development?

Investigation 4: Preparing for Birth – Late Fetal Development (Questions 13–16)

Key ideas assessed

- Refinement and strengthening vs. new structure formation
- Coordination and responsiveness
- Continued brain development
- Readiness for life after birth

Where these ideas were presented

- **Concept Slides**
  - Late prenatal development focus
  - Functional readiness for birth
  - Continued brain development
- **Lab Experience**
  - Preparing for Birth lab emphasizing function over formation
  - Models and observations highlighting readiness
- **Background Reading**
  - Late fetal development
  - Preparation for independent function
- **Focus Questions**
  - How does development change late in pregnancy?
  - How does prenatal development prepare the fetus for birth?

Lab-Based Questions
(Questions 17–20)

Purpose of this section
These questions assess student understanding of **how the lab experiences were designed** to demonstrate prenatal development concepts.

Question 17 – Use of Models

- **Lab Experience:** Use of physical and visual models
- **Concept Emphasized:** Modeling as a scientific tool
- **Focus Question Connection:** Why do scientists use models?

Question 18 – Development as a Process

- **Lab Experience:** Modeling the Miracle
- **Concept Emphasized:** Step-by-step developmental change
- **Focus Question Connection:** How does development occur over time?

Question 19 – Simplification in Labs

- **Lab Experience:** Simplified representations of complex systems
- **Concept Emphasized:** Focusing on key ideas
- **Focus Question Connection:** Why are models and simplifications useful in science?

Question 20 – Readiness for Birth

- **Lab Experience:** Preparing for Birth – Late Fetal Development
- **Concept Emphasized:** Function and coordination
- **Focus Question Connection:** What changes prepare the fetus for life after birth?

Summary for Teachers

- All exam questions are directly aligned with:
  - Concept instruction
  - Lab experiences
  - Background reading
  - Focus Questions
- No question assesses content that was not explicitly taught or experienced.
- The exam is designed to reward understanding of **process, coordination, and purpose**, not memorization.