Course Philosophy

Embryology is a vast field of study that is still evolving as a science. While there is much we know about the development of the embryo, there are still many unsolved problems. The science of embryology is an active, dynamic field with new findings arising every day. The study of embryology encompasses the anatomy of development, the genetic factors associated with development, cellular aspects of development, and the chemical and hormonal compounds that play important roles in inducing specific events during development. While all of these are important in the overall developmental process, the anatomy of development is probably the best understood of these varied aspects of embryology. The genetic, cellular, and chemical factors of development are areas of focus in most of the current research. My interest in embryology is the anatomy. This course is designed to help you see how developmental anatomy, which emerges during the embryonic stage, establishes distinct anatomical patterns that help to clarify adult anatomy. These developmental patterns simplify the detail of anatomy, answer the “why” questions, explain the variation, and clarify the structural relationships. Therefore, this is an embryology course for anatomists.

Learning Objectives

• Developmental Processes
  Explain how developmental processes, stages, and patterns account for the structure-function relationships of the human (mammalian) body.

• Evolutionary Relationships
  Explain how the shared embryonic vertebrate body plan can be molded by selection into a variety of vertebrate forms.

• Structure and Function
  Describe how plasticity and malformations in adult anatomy arise as a consequence of developmental variations or problems, as well as explain why adult anatomy has the relationships and structure we observe.

• Transmission, Flow, and Interpretation of Anatomical Information
  Utilize the language of embryology to explain the important structural relationships and functional significance of the development in biological and medical contexts.

• Body Systems
  Explain the origins of the hierarchical organization of the human form, from cells, to tissues, to organs, to body systems and how this accounts for the structural features at all levels of organization in the human body.

• Ability to Apply Scientific Reasoning
  Apply critical thinking skills using the problem solving skills of science to diagnose and solve developmental problems related to the structure and function of the human body.

• Real World Application
  Describe the anomalies that arise during development to impact health.
HAPS CONTINUING EDUCATION COURSE
Autumn 2022
Course Materials

MANUAL AND POWERPOINT PRESENTATIONS
Access to Keynote and PowerPoint Presentations of each lecture
PDF Lecture Manual that accompanies each presentation for note taking.

LECTURE MOVIES
1) Establishing the Vertebrate Body Plan - Weeks One and Two
2) Establishing the Vertebrate Body Plan - Weeks Three and Four
3) Placentation
4) Musculoskeletal Morphogenesis – Trunk Skeleton
5) Musculoskeletal Morphogenesis – Trunk Musculature
6) Musculoskeletal Morphogenesis – Limb Anatomy
7) Musculoskeletal Morphogenesis – Head Skeleton
8) Musculoskeletal Morphogenesis – Head Musculature
9) Gut Tube Morphogenesis – Pharynx and Respiratory System
10) Gut Tube Morphogenesis – Digestive System I
11) Gut Tube Morphogenesis – Digestive System II
12) Coelomic Partitioning and the Mediastinum
13) Urogenital Morphogenesis – Urinary System
14) Urogenital Morphogenesis – Genital Systems I
15) Urogenital Morphogenesis – Genital Systems II
16) Cardiovascular Morphogenesis – Heart
17) Cardiovascular Morphogenesis – Arteries
18) Cardiovascular Morphogenesis – Veins
19) Nervous Morphogenesis – Peripheral Nervous System
20) Nervous Morphogenesis – Central Nervous System
21) Nervous Morphogenesis – Special Senses
# HAPS CONTINUING EDUCATION COURSE

**Autumn 2022**

## Course Schedule

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