



# HHA 304: DEVELOPMENTAL ANATOMY AND GENETICS

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## COURSE DESCRIPTION

This is the study of a developmental process that represents an amazing integration of increasingly complex phenomena from a single cell to a baby at nine months. The study of these phenomena is called embryology, and the field includes investigations of the molecular, cellular, and structural factors contributing to formation of an organism.

## COURSE CONTENT

Introduction: History scope and significance.

Developmental periods: Prenatal and postnatal. Main features. Determinants and regulation.

Gametogenesis: Phases, events, determinants, timing, regulation and disorders of oogenesis and spermatogenesis. Ovarian and seminiferous tubule cycles.

Fertilization and early development: Phases, events, regulation and outcomes. In vitro fertilization.

Implantation and embryogenesis: Process of normal and abnormal implantation.

Embryomaternal interaction. Regulation of implantation. Main features, events, regulation.

Disorders of embryogenesis. Embryonic layer. Interactions and derivatives. Process, regulation, outcome and disorders of gastrulation.

Teratology: Causes and mechanism of birth defects.

Histogenesis: Sources, processes, events, defects of development of muscle, nervous, epithelial and supporting tissues. Regulation of development. Epithelial mesenchymal interactions and transition.

Organogenesis: Sources, histogenesis and morphogenesis of all body organs. Development of body systems.

Aging and degeneration: Histological and cellular changes that occur in body tissues and organs with advancing age. Determining factors. 2

Genetics: Definition, scope and significance. Patterns of inheritance. Mechanisms of sex determination. Genes and gene expression. Mutations and genetic disorders. Molecular evolution. The structure and functions of DNA and RNA. Structure of genes and coding for protein synthesis. Molecular biology in genetic studies and genetic diseases. Molecular biology in histogenesis and embryogenesis. Karyotyping and chromosomal abnormalities. Inheritance and role of genetics in embryogenesis.

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