



Syllabus

Term: 2026/27/1 **Subject name:** Basic Developmental Biology **Subject code:** ENBIOB0701

Unit (Unit code) (BIOLOGIA)

Lecturer responsible for the course: Dr. VÖLGYI Béla

Requirement: Exam

Classes per week : 2/0/0

Classes per term: 26/0/0

Purpose of education:

Basic course that designed to provide the students with knowledge related to reproduction and embryogenesis of animals. The knowledge of this course is needed for to study Developmental biology.

Contents:

Short description:

An introduction to animal development: Development among the unicellular eukaryotes. The origins of sexual reproduction. Evolution of reproductive organs.

Structure of gametes (sperm and egg). Spermiogenesis and ovogenesis.

Fertilization: beginning a new organism. Recognition of egg and sperm. Gamete fusion and prevention of polyspermy. Activation of egg metabolism.

Cleavage: creating multicellularity. Patterns of embryonic cleavage. Radial holoblastic cleavage. Spiral holoblastic cleavage. Bilateral holoblastic cleavage. Rotational holoblastic cleavage. The cell surface and the mechanism of compaction. Escape from zona pellucida. Meroblastic cleavage: discoidal and superficial cleavage. Mechanism of cleavage.

Gastrulation: reorganizing the embryonic cells. See urchin gastrulation: formation of the archenteron, and ingression of primary mesenchyme. Amphibian gastrulation: cell movements during gastrulation and positioning the blastopore. The construction of the archenteron. Migration of the involuting mesoderm. Epiboly of the ectoderm. Mechanism of Avian gastrulation. Formation of extraembryonic membranes. Gastrulation in mammals. Modifications



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for development within another organism. Formation of extraembryonic membranes.

Early vertebrate development: Neurulation and ectoderm. Mesoderm and endoderm. Formation and differentiation of dorsal and lateral plate mesoderm. The digestive tube and its derivatives.

Specification of cell fate by progressive cell-cell interactions during embryonic development.

System of examining and valuation:

Terminal examination (written or oral). Students must pass two interim written tests during the semester in order to be admitted to the terminal examination.

Bibliography:

SLACK, Jonathan MW. Essential developmental biology. John Wiley & Sons, 2012.

Bibliography: