

General Embryology- Assistant prof. Eman Ali Hashim

Lecture 1/ objective: Definitions- medical embryology, teratology

Somatic cells & germ cells

Gametes & gametogenesis

Medical Embryology : Science which deals with the formation and development of the embryo , from a single cell to nine months. It includes the normal and abnormal developments in regard to molecular , cellular & structural factors.

Values & significances of studying medical Embryology

1-It is necessary for proper understanding of anatomy. It explains certain relations which are seen in the body of adult person.

2-It is also important for the study of histology. It explains how different tissues and organs develop from a single cell (zygote) , after cell differentiation.

3-It is also important for the study of pathology, sometime, result of embryonic development leads to the formation of congenital abnormalities.

Teratology : means the study of embryonic origins & causes for birth defects.

Embryonic development starts after the formation of zygote , that results from the union of ovum and sperm.

Cells after fertilization, will undergo four processes, during embryonic development

1.Cell division

2.Cell migration

3.Cell differentiation

4.Cell growth

Somatic and germ cells

Somatic cells : these cells have diploid number of chromosomes (23) pairs .

Somatic cells reproduce by mitosis. They have 2N (DNA) amount in the form of 46 chromosomes.

Germ cells: these cells that create germ cells.

Germ cells have diploid number of chromosomes (23) pairs.

Gametes: are specialized haploid reproductive cells, possessing 1N in the form of 22 autosomal & 1 sex chromosome.

Gametogenesis

Conversion of germ cells into male and female gametes (oocytes & sperms)

Gametes are derived from primordial germ cells (PGCS) that formed in the epiblast during the second week of development .

Primordial germ cells move to the wall of yolk sac , migrate to the developing gonads at the fourth week and reach the developing gonads at the end of the fifth week of development.

PGCs and teratomas

Tumors may arise from primordial germ cells or from epiblast cells.

These are pluripotent cells.

Tissues within tumors include derivatives of all three germ layers , may have gut, bone, skin , teeth , etc.