Vocabulary: Embryo Development

Vocabulary

- Blastula – a hollow ball of cells that forms during embryogenesis.
  - The blastula consists of a single, spherical layer of cells surrounding an open cavity.
  - A smaller ball of cells, the *inner cell mass*, is found inside at one end.
- Carnegie stages – a standardized system of 23 stages used to identify the developmental stage of a vertebrate embryo.
  - The stages are identified by the presence common structures (such as limb buds or a heart), not by size of the embryo or time from conception.
  - Carnegie stages are most often used to classify human development.
  - Other organisms may use different systems, such as the Hamburger–Hamilton stages for chick embryos.
- Differentiation – the process by which less specialized cells change to become more specialized cells that perform a different function than before.
  - Different cells will turn on or off different subsets of genes to allow them to perform different functions.
- Ectoderm – one of the three germ layers in the early embryo that will eventually form cells in the skin and nervous system.
- Embryo – the unborn offspring of a multicellular organism in the early stages of development.
  - A human offspring is referred to as an embryo through the 8th week of pregnancy, after which it is referred to as a fetus.
- Embryology – the branch of biology that studies embryo development.
- Embryonic stem cells – Undifferentiated cells that have the potential to develop into any cell in the adult organism.
  - Embryonic stem cells are usually derived from the *inner cell mass* in the blastula.
- Endoderm – one of the three germ layers in the early embryo that will eventually form structures including the lining of the digestive and respiratory tracts.
- Fetus - the unborn offspring of a mammal in the later stages of development.
  - A human offspring is referred to as a fetus after the 8th week of pregnancy.

- Gastrula – a stage in development when the embryo consists of three layers of cells.
    - The three germ layers (endoderm, mesoderm and ectoderm) will become all of the structures in the adult organism.
- Inner cell mass – group of cells inside the blastula that will eventually become the organism, amniotic cavity, and primitive yolk sac.
- Mesoderm – one of the three germ layers in the early embryo that will eventually form structures including connective tissue, bones, and muscles.
- Morula – an early-stage embryo consisting of a solid ball of cells.
- Neurula – a stage in development when the three germ layers of the embryo change shape. The ectoderm folds inward creating a neural tube.
    - The nervous system begins to form at this stage.
- Primitive streak – an elongated band of cells that forms along the axis of the developing embryo during gastrulation.
    - Epiblast cells migrate into and down below the primitive streak to establish the three germ layers.
    - The primitive streak is the precursor to the neural tube and central nervous system.
- Trilaminar disk – a structure that consists of three layers of cells in the gastrula.
    - The three germ layers in the trilaminar disk are the endoderm, mesoderm and ectoderm.
- Zygote – a cell formed after fertilization of an egg cell.
    - The zygote is the very first structure development.
    - Two haploid gametes (a sperm and egg) fuse to form the zygote.