

Embryology

This is the study of the development of the human body from two gametes (sex cells), fertilisation and development of the embryo to a fetus. Embryology is a complex yet crucial topic to mastering high level anatomy. Understanding how the organs of the body organise themselves and develop from different types of cell.

Gamete

Fertilisation

Development

Birth

Primary Source of Information

A human begins life as a fertilised ovum. This single cell gives rise to the millions of cells that form the human body. In the first few days following fertilisation, the developing embryo consists of a ball of cells called a blastocyst. This implants on the wall of the uterus and begins to grow further, supported by nutrients and blood from the mother.

As the developing embryo grows in the first few weeks, there is increasing complexity from differentiation of the cells into specialised tissues to form specific organs. This differentiation is directed by genetic factors inherited via the chromosomes from both mother and father. Most organs are formed between 5 and 8 weeks of life. After that, there is continued growth and development to the time of delivery of the baby, which typically occurs following 38 to 42 weeks of gestation in uterus.

The three major embryologic categories of cells, called the germ cell layers, are:

- Ectoderm: forms the epithelium that covers the body, and gives rise to cells in the nervous system as well as vital eye structures
- Endoderm: forms the gastrointestinal tract and associated structures involved in digestion as well as the lining of the bladder, urethra and reproductive system
- Mesoderm: forms the connective tissues and "soft" tissues such as bone, muscle, and fat as well as the circulatory system

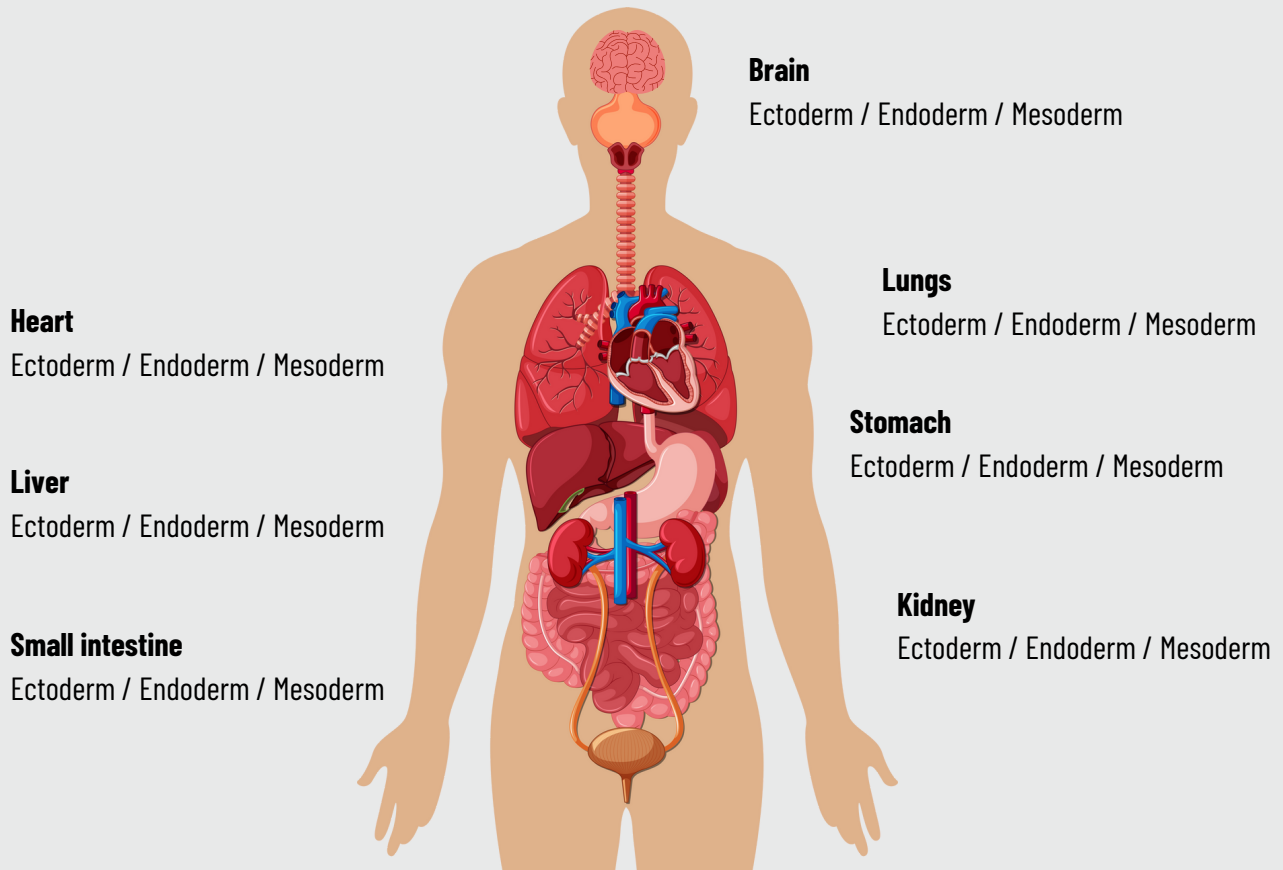
All organ structures form from these germ layers. It is important to know this as disease states, presentation of pain is usually associated with the cell germ layer which makes knowledge of this crucial when diagnosing disease.

After birth, some cells within the body continue to proliferate (copy & divide), while others do not and remain or are lost in the aging process. Aging results from the inability of cells to maintain themselves or replace themselves.

The genes that control cellular proliferation and development in embryologic life are "turned off" or suppressed once appropriate growth has been achieved.

The Respiratory System

Which kind of embryonic cells do the below organs form from?



TEST YOUR KNOWLEDGE

In your exercise book, or using lined paper construct an answer to the below question, you should use the primary source of information given overleaf and the use 2 other sources that you have found yourself to help you construct your answer.

The human body develops from two gametes (sex cells) the egg and sperm. Outline the development of human organs during fetal development



Take a picture of your answer and TAG @thepmlanatomylab on INSTAGRAM for feedback on your answer! We will read & feedback on as many as we can!