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Embryonic.AI BETA ANALYSIS OF EMBRYONIC STATE
Deep Neural Networks trained on tens of thousands of pristine embryonic and differentiated cells and tissues

25. Germ Layers and Their Derivatives

Review of MEDICAL EMBRYOLOGY Book by BEN PANSKY, Ph.D, M.D.

24. Embryonic Period: Weeks 7 And 8 And External Embryo... PREV TABLE OF CONTENT NEXT 26. Embryonic Folding And Flexion Of The Embryo

I. The 3 germ layers - the ectoderm, the mesoderm, and the entoderm (endoderm): are in place at the end of gastrulation

A. THE ECTODERM gives rise to the central nervous system (the brain and spinal cord); the peripheral nervous system; the sensory epithelia of the eye, ear, and nose; the epidermis and its appendages (the nails and hair); the mammary glands; the hypophysis; the subcutaneous glands; and the enamel of the teeth

1. Ectodermal development is called neurulation in regard to nervous tissue

B. THE MESODERM gives rise to connective tissue, cartilage, and bone; striated and smooth muscles; the heart walls, blood and lymph vessels and cells; the kidneys; the gonads (ovaries and testes) and genital ducts; the serous membranes lining the body cavities; the spleen; and the suprarenal (adrenal) cortices

C. THE ENTODERM gives rise to the epithelial lining of the gastrointestinal and respiratory tracts; the parenchyma of the tonsils, the liver, the thymus, the thyroid, the parathyroids, and the pancreas; the epithelial lining of the urinary bladder and urethra; and the epithelial lining of the tympanic cavity, tympanic antrum, and auditory tube

1. The entoderm development is simpler than that of either mesoderm or ectoderm. It is a monocellular layer lining the yolk sac until cephalocaudal flexion of the embryo takes place
   a. Flexion takes the embryo from a flat disk to its basic embryonic body form. The primitive gut originates from entoderm at the time of its flexion
   b. The yolk sac constricts, thus the intraembryonic entoderm (future digestive tube) and the extraembryonic entoderm (forms the inner lining of the yolk sac) are delineated
2. Three major parts of the primitive gut are the foregut, the midgut, and the hindgut (including the cloaca)
3. The oropharyngeal (buccopharyngeal) and cloacal membranes temporarily close the 2 ends of the primitive gut
   a. In humans, the buccopharyngeal membrane disappears at the beginning of week 4
   b. The cloacal membrane lasts longer and at week 7, like the cloaca, it divides into an anterior urogenital membrane and posterior anal membrane, the latter being absorbed by week 9

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Related Organs

Brain

Ectoderm

Endoderm

Eye

Gut Tube

Head Mesenchyme

Kidney

Liver

Lower Urinary Tract

Lung

Lymph

Mesoderm

Neural Crest

Neural Tube

Pancreas

Peripheral Nervous System

Smooth Muscle

Spleen

Thyroid

Yolk Sac

Related Anatomical Compartments

Gut Tube > Gut Tube

Mesoderm > Mesoderm

Surface Ectoderm > Surface Ectoderm

Related Cells

Primitive Streak > Anterior Primitive Streak > Endoderm Progenitor Cells

Mesoderm > Mesoderm > Mesoderm Cells

Primitive Streak > Anterior Primitive Streak > Mesoderm Progenitor Cells

Primitive Streak > Posterior Primitive Streak > Mesoderm Progenitor Cells

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