

Fate of Germ Layers

Pander studied the chick embryo for less than two years (before becoming a paleontologist), but in those 15 months he discovered the germ layers—three distinct regions of the embryo that give rise to the differentiated cell and specific organ systems.

- The ectoderm generates the outer layer of the embryo. It produces the surface layer (epidermis) of the skin and forms the brain and nervous system.
- The endoderm becomes the innermost layer of the embryo and produces the epithelium of the digestive tube and its associated organs (including the lungs).
- The mesoderm becomes sandwiched between the ectoderm and endoderm. It generates the blood, heart, kidney, gonads, bones, muscles, and connective tissues.

These three layers are found in the embryos of all triploblastic ("three-layer") animals. Some phyla, such, the poriferans (sponges) and ctenophores (comb jellies) lack a true mesoderm and are considered diploblastic animals.

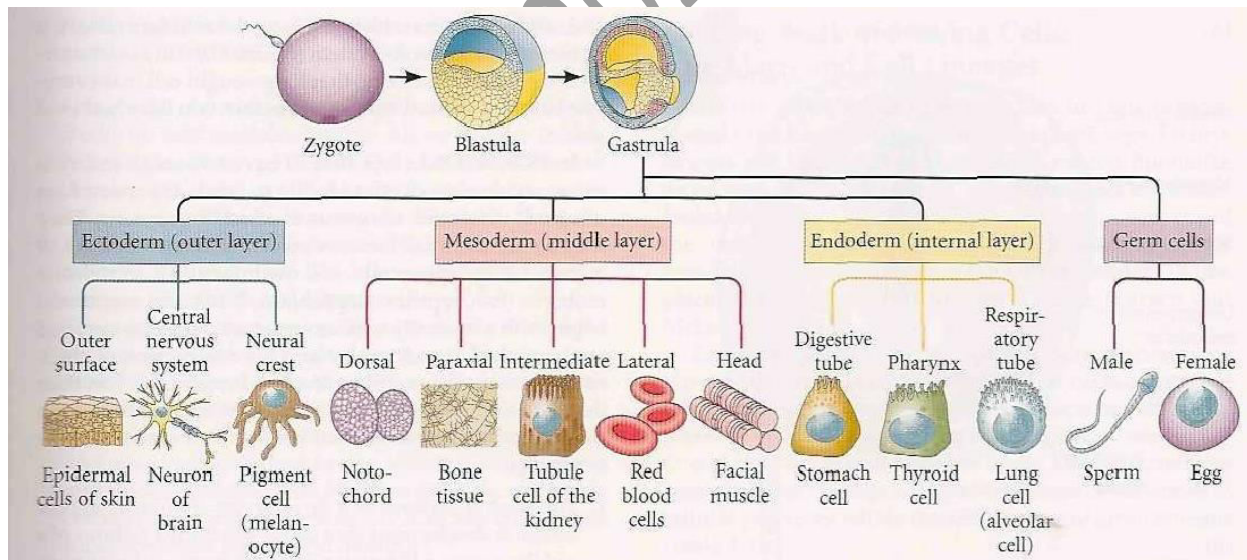


Fig: The dividing cells of the fertilized egg form three distinct embryonic germ layers. Each of the germ layers gives rise to myriad differentiated cell types (only a few representatives are shown here) and distinct organ systems. The germ cells (precursors of the sperm and egg) are set aside early in development and do not arise from any particular germ layer.