18 HR

STRUCTURE	FORERUNNER	IMMEDIATE FORERUNNER	IMMEDIATE FATE	ADULT FATE	EMBRYONIC FUNCTION	ADULT FUNCTION
I. Level of the Notochord or Head Process						
Notochord	Epiblast cells migrating through Hensen's node	Mesodermal rod	Persists until replaced	Pulpy nucleus	Induces development of the neural plate	Support
Neural Plate	Neural ectoderm	Neuroectodermal cells	Neural fold	Central nervous system	Precursor of the neural folds; allows the formation of the latter	Integrating sensory information and coordinating body
Epiblast	Blastoderm	Bilamninar embryonic disc	Embryonic ectoderm, mesoderm, and endoderm	All somatic cells/ somatoplasm	Precursor of all cells except for the germ cells; allows the formation of	Forms different organs and organ systems
Mesoderm	Epiblast	Epiblast cells	Epimere Mesomere Hypomere	Muscles, bones, connective tissue, urogenital system,	Acts as precursor of connective tissue, muscles, bones, and the	Movement, Excretion, Protection, Support
Hypoblast	hypoblast) Area opaca endoderm (secondary hypoblast)	Bilamninar embryonic disc	Extra-embryonic membranes and primordial germ	Disappears	Assists in the migration of epiblast cells in gastrulation;	-
Yolk	Disorganized macromolecules	Disorganized macromolecules from oocyte (product of vitellogenesis)	Persists in reduced amount	Disappears	Nourishment of embryo	-
II. Level of the Hensen's Node						
Hensen's node	Epiblast	Epiblast	Prechordal mesoderm, notochord and somites	Pulpy nucleus, connective tissue, muscle	Acts as the organizer	Facilitates secretion of cellular signals essential to neural differentiation; vertebral column
Neural Plate	Epiblast	Neural ectoderm	Neural fold	CNS	Mainly acts as a precursor to the neural folds	Integrating sensory information and coordinating body function

Neural Fold	Nueral ectoderm	Neural plate	Neural tube	CNS	Mainly acts as a precursor to the neural tube	Integrating sensory information and coordinating body function
Neural Groove	Epiblast	Neural ectoderm	Neurocoel	CNS	Allows infolding of the neural folds	Integrating sensory information and coordinating body function
III. Level of the Primitive Pit						
Primitive Pit	Epiblast	Epiblast	notochordal canal, which quickly becomes the neurenteric canal	pulpy nucleus	Allows migration of prospective pharyngeal endoderm, prechordal plate mesoderm and chordamesoderm cells	-
Primitve Ridge	Epiblast	Epiblast	mesoderm (segmental zone, lateral plate, and intermediate)	connective tissue, muscles	Acts as a key component in the migration of epiblast cells into the mesodermal and endodermal regions	-
IV. Level of the Primitive Groove						
Primitive Gut	Blastoderm cells (absorb fluid from albumin)	Subgerminal Space	Foregut, Midgut, Hindgut	Alimentary Canal (Pharynx and esophagus)	Precursor Allows the formation of the alimentary canal	the passageway of food
Area Pellucida	Blastoderm	Peripheral ring of blastoderm sans deep cells	Epiblast	Somatoplasm	Precursor of the epiblast; allows the formation of the somatoplasm	Holds internal structure of cell
Area Opaca	Blastoderm	Peripheral ring of blastoderm cells with deep cells	Area Vasculosa and Vitellina	Yolk Sac	Facilitates pulling and stretching of blastoderm; Nourishment of embryo	Nourishment
***Whole Mount**						
Primitive Streak	Blastoderm	Condensation of cells in the posterior part of the epiblast	Cephalic end begins to regress	-	Establishes long axis of future embryonic body; Passageway for cells	-
Primitive Plate	Blastoderm	epiblast	Regresses	-	Where primitive streak rests	-

Head Process	Regressing cephalic end of primitive streak	Anteriorward migration of cells from Hensen's node	Notochord	Pulpy nucleus	Initiates start of disappearance of primitive streak	Support
Proamnion	Blastoderm	ectoderm and endoderm	Invaded with mesoderm; Decreases in size	-	Rate of decrease in size gives idea of rate of growth of mesoderm	-
Head Fold	Ectoderm and endoderm	Blastoderm anterior to notochord	Becomes more prominent and U-shaped; head of embryo	Head	Establishes anterior extent of embryo and initiates heart, brain and foregut development	Encases organs, support, protection
Somites	Paraxial mesoderm	Somitomeres	Sclerotome, Dermatome, Myotome, Syndotome and endothelial cells	Dermis, Skeletal Muscles, Tendons, Vertebrae	Determine migratory paths of neural crest cells and of the axons of spina nerves	Protection, Support and Movement
Head ectoderm	Epiblast	Ectoderm	Placodes	Sensory organs (eyes, ears, nose), PNS	Change in cell shape and migrates	Sensory reception
Blood Islands	splanchnic mesoderm of yolk sac (lateral plate mesoderm)	Hemangioblasts	primitive blood vessels and blood cells	blood vessels and blood cells	Aid in providing nourishment to the developing embryo	Circulation of blood (Circulatory System)
Area Opaca Vasculosa	Posterior half of blastoderm	Splanchnopleuric cells and endoderm	Where blood islands form; Extends until it eventually surrounds the entire yolk mass; Yolk Sac	Absorbed	Represents extent of lateral mesodermal migration/Site of embryonic circulation	Nourishment
Area Opaca Vitellina	Blastoderm	Area Opaca	Invaded by mesoderm and becomes area vasculosa	-	Nourishment of Embryo/ Developmental Circulatory System of embryo	-

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