

# Prenatal Development Timeline

- |   |  |  |  |
|---|--|--|--|
| <span style="color: blue;">■</span> Nervous           | <span style="color: red;">■</span> Cardiovascular      | <span style="color: darkred;">■</span> Muscular        | <span style="color: teal;">■</span> Early Events   |
| <span style="color: yellow;">■</span> Special Senses  | <span style="color: orange;">■</span> Respiratory      | <span style="color: grey;">■</span> Skeletal           | <span style="color: gold;">■</span> Growth Parameters  |
| <span style="color: magenta;">■</span> Blood & Immune | <span style="color: purple;">■</span> Gastrointestinal | <span style="color: cyan;">■</span> Endocrine          | <span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> General |
| <span style="color: pink;">■</span> Skin/Integument   | <span style="color: green;">■</span> Renal/Urinary     | <span style="color: lightgreen;">■</span> Reproductive | <span style="color: limegreen;">■</span> Movement  |

Unit 1: The First Week	
Day 0	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Embryonic period begins</li> <li><span style="color: teal;">■</span> Fertilization resulting in zygote formation</li> </ul>
Day 1	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Embryo is spherically shaped and called a morula comprised of 12 to 16 blastomeres</li> </ul>
Day 2	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Early pregnancy factor (EPF)</li> <li><span style="color: teal;">■</span> Activation of the genome</li> <li><span style="color: teal;">■</span> Blastomeres begin rapidly dividing</li> </ul>
Day 3	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Compaction</li> </ul>
Day 4	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Embryonic disc</li> <li><span style="color: teal;">■</span> Hypoblast &amp; epiblast</li> <li><span style="color: teal;">■</span> Inner cell mass</li> <li><span style="color: teal;">■</span> See where the back and chest will be</li> </ul>
Day 5	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Hatching blastocyst</li> </ul>
Day 6	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Embryo attaches to wall of uterus</li> <li><span style="color: teal;">■</span> Solid syncytiotrophoblast &amp; cytotrophoblast</li> </ul>
1 week	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Chorion</li> <li><span style="color: teal;">■</span> Chorionic cavity</li> <li><span style="color: teal;">■</span> Extra-embryonic mesoderm (or mesoblast)</li> <li><span style="color: teal;">■</span> Placenta begins to form</li> </ul>
Unit 2: 1 to 2 Weeks	
1 week, 1 day	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Amnioblasts present; amnion and amniotic cavity formation begins</li> <li><span style="color: teal;">■</span> Bilaminar embryonic disc</li> <li><span style="color: teal;">■</span> Positive pregnancy test</li> </ul>
1 week, 2 days	<ul style="list-style-type: none"> <li><span style="color: cyan;">■</span> Corpus luteum of pregnancy</li> <li><span style="color: teal;">■</span> Cells in womb engorged with nutrients</li> <li><span style="color: teal;">■</span> Exocoelomic membrane</li> <li><span style="color: teal;">■</span> Isolated trophoblastic lacunae</li> <li><span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Embryonic disc 0.1 mm diameter</li> </ul>
1 week, 4 days	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Intercommunicating lacunae network</li> <li><span style="color: teal;">■</span> Longitudinal axis</li> <li><span style="color: teal;">■</span> Prechordal plate</li> <li><span style="color: teal;">■</span> Trophoblastic vascular circle</li> </ul>
1 week, 5 days	<ul style="list-style-type: none"> <li><span style="color: teal;">■</span> Implantation complete</li> <li><span style="border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> Embryonic disc diameter: 0.15 to 0.20 mm</li> </ul>
1 week, 6 days	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Blood islands in umbilical vesicle</li> <li><span style="color: red;">■</span> Angiogenesis in chorionic mesoblast</li> <li><span style="color: red;">■</span> Blood vessels in villi</li> </ul>

	Connecting stalk
	Primordial blood vessels
	Amnion with single cell layer
	Chorionic villi
<b>2 weeks</b>	Embryonic epiblast gives rise to primitive streak and primitive node and
	Yolk sac
	Yolk sac

**Unit 3: 2 to 3 Weeks**








































<b>2 weeks, 1 day</b>	3 germ layers
	Cloacal membrane
	Primitive groove
	Rostral-caudal orientation
<b>2 weeks, 2 days</b>	Erythroblasts in yolk sac
	Three types of blood-forming cells in yolk sac
	Primordial germ cells
	Allantoic diverticulum
	Allantoic diverticulum
	Amnion with two cell layers
	Notochordal process
	Secondary villi
<b>2 weeks, 4 days</b>	Foregut, midgut, and hindgut
	Uteroplacental circulation well established
	Prechordal plate with 1 retinal field
	Brain is first organ to appear
	Caudal eminence
	Neural ectoderm
	Neural groove and neural folds
	Notochordal and neurenteric canals
	Notochordal plate
	Connecting stalk
	Primitive pit (or notochordal pit)
<b>2 weeks, 5 days</b>	Prechordal plate with 2 retinal fields
<b>2 weeks, 6 days</b>	Numerous blood islands in umbilical vesicle
	Septum transversum (primitive diaphragm)
	Foregut
	Oropharyngeal membrane
	Pharyngeal pouch 1
	Stomodeum forming
	Blood vessels emerge simultaneously in umbilical vesicle, embryo proper, amnion, and connecting stalk
	Common umbilical artery
	Dorsal aortae (paired)
	First pair of aortic arches

	Heart: Cardiogenic plate, cardiac jelly, myocardial mantle, and endocardial plexus
	Left ventricle, right ventricle, conotruncus
	Paired pericardial cavities
	Paired tubular heart
	Hindbrain with four rhombomeres
	Isthmus rhombencephali demarcates midbrain and hindbrain
	Mesencephalon (or midbrain)
	Neural cord within caudal eminence
	Neural groove deepens substantially
	Primary neuromeres
	Three main divisions of brain
	Cephalic and caudal folds
	Neural crest: Rostral and facial
	Primitive streak reaches neurenteric canal
	Somites with central somitocoels: Pairs 1 through 3

**Unit 4: 3 to 4 Weeks**

<b>3 weeks, 1 day</b>	Thyroid primordium emerges from floor of pharynx
	Nephrogenic cord emerges (at 10 somites)
	Cloaca
	Common coelomic cavity divides into peritoneal, pericardial, and pleural cavities
	Liver: Hepatic plate (endoderm)
	Midgut emerging
	Pharyngeal arches 1 and 2
	Pharyngeal cleft 1
	Second pharyngeal cleft and pouch
	Pharyngeal groove and ridge with laryngotracheal sulcus
	Respiratory outgrowth
	Atria (right and left) far apart
	Bulbis cordis
	Endocardial tubes fuse forming tubular heart
	Heart begins beating
	Pericardial sac
	Pericardium
	Primary head vein
	Sinus venosus
	Tubular heart begins folding
	Umbilical arteries
	Umbilical veins (right and left)
	Optic primordia fill neuromere D2
	Otic pits
	Chiasmatic plate

	Mesencephalic flexure
	Neural tube
	Neuromeres D1 and D2 (in diencephalon)
	Optic sulcus in forebrain
	Pontine region identifiable near cranial nerves VII and VIII
	Segment D in rhombencephalon
	Some secondary neuromeres
	Superior colliculus
	Telencephalon
	Telencephalon (or telencephalic) medium
	Body cavities
	Hyoid arch
	Mandibular arch and maxillary process
	Neural crest: Trigeminal, facioacoustic, glossopharyngeal-vagal, and occipitospinal
	Somites: Pairs 4 through 12
<b>3 weeks, 3 days</b>	Primordial germ cells begin moving from umbilical vesicle to hindgut
	Face: Maxillary and mandibular processes (bilaterally)
	Cloacal membrane
	Mesonephric duct emerges from nephrogenic cord
	Nephric vesicles
	Cystic primordium
	Hepatic diverticulum
	Liver
	Membrane between future mouth and throat may begin to rupture
	Angiogenesis along surface of central nervous system
	Aortic sac
	Atrioventricular canal
	Capillary plexus begins forming around brain and spinal cord
	Conotruncus
	Conus cordis emerging from right ventricle
	Endocardium
	Heart contractions produce peristaltic blood flow
	Internal carotid arteries
	Interventricular septum
	Primordium of myocardium
	Sinus venosus separating from left atria
	Trabeculated outpouches along primary cardiac tube representing primordia of left and right ventricles
	Trigeminal and otic arteries
	Facio-vestibulocochlear ganglia (CN VII, CN VIII)
	Glossopharyngeal and vagal ganglia

	 Optic evagination (starting at 14 somites)
	 Otic vesicle
	 Trigeminal ganglia (CN V)
	 Neural crest: Optic crest emerges during Carnegie Stages 11 and 12
	 Nose: Nasal plate
	 Optic vesicles form (17 to 19 somites)
	 Adenohypophysial pouch
	 Adenohypophysis
	 Lamina terminalis
	 Mesencephalon contains tectum and tegmentum
	 Neural crest production and migration continue
	 Neurohypophysial primordia
	 Neuropore (near brain) closes
	 Notochord
	 Segmentation of mesoblast alongside neural tube bilaterally
	 Somites: Pairs 13 through 20
<b>3 weeks, 3 days - 5 weeks, 6 days</b>	 All eight rhombomeres (Rh 1 through Rh 7, Rh D) - Present in stages 11 through 17
<b>3 weeks, 5 days</b>	 Telopharyngeal bodies
	 Alimentary epithelium invades stroma of liver
	 Alimentary epithelium proliferates in primordia of stomach, liver, and dorsal pancreas
	 First part of pancreas
	 Gastric portion of foregut elongates (25 to 28 somites)
	 Hepatic primordium with abundant vascular plexus
	 Omental bursa
	 Oropharyngeal membrane is ruptured
	 Pharyngeal arch 3
	 Pharyngeal arches with dorsal and ventral parts
	 Umbilical vesicle elongates
	 Cervical sinus
	 Laryngotracheal groove
	 Lung bud
	 Tracheo-esophageal septum
	 Atrioventricular canal
	 Common cardinal veins (right and left)
	 Descending aorta
	 Heart circulates blood to and from central nervous system, umbilical vesicle, and chorion
	 Hepatocardiac channels (right and left)
	 Rostral and caudal cardinal veins along brain and spinal cord feeding common cardinal veins
	 Septum primum and foramen primum sometimes present

	<ul style="list-style-type: none"> <li>Septum primum, foramen primum</li> </ul>
	<ul style="list-style-type: none"> <li>Sinu-atrial foramen prevents backflow into sinus venosus</li> </ul>
	<ul style="list-style-type: none"> <li>Sinus venosus collects venous blood from entire embryo</li> </ul>
	<ul style="list-style-type: none"> <li>Superior vena cava, inferior vena cava, and sinus venosus collecting all venous blood</li> </ul>
	<ul style="list-style-type: none"> <li>Unidirectional circulation</li> </ul>
	<ul style="list-style-type: none"> <li>Vitelline arteries and veins</li> </ul>
	<ul style="list-style-type: none"> <li>Hypoglossal cord (CN XII) enters pharyngeal arch 4</li> </ul>
	<ul style="list-style-type: none"> <li>Otocyst nearly closed</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal discs form part of ectodermal ring</li> </ul>
	<ul style="list-style-type: none"> <li>Optic vesicles covered by sheath (formed by mesencephalic and optic crest)</li> </ul>
	<ul style="list-style-type: none"> <li>Brain involves 40% of neural tube</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Embryonic commissural plate</li> </ul>
	<ul style="list-style-type: none"> <li>Ectodermal ring complete</li> </ul>
	<ul style="list-style-type: none"> <li>Hypoglossal nucleus (CN XII)</li> </ul>
	<ul style="list-style-type: none"> <li>Lowermost spinal cord formation begins</li> </ul>
	<ul style="list-style-type: none"> <li>Mamillary recess</li> </ul>
	<ul style="list-style-type: none"> <li>Marginal layer in rhombencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Mesencephalic flexure at 90 degrees</li> </ul>
	<ul style="list-style-type: none"> <li>Mesencephalon with two neuromeres: M1 and M2</li> </ul>
	<ul style="list-style-type: none"> <li>Motor neurons in basal plate of rhombencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Neural tube closes (lower back)</li> </ul>
	<ul style="list-style-type: none"> <li>Neurofibrils form in rhombencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Primary neurulation ends</li> </ul>
	<ul style="list-style-type: none"> <li>Primordia of ventral thalamus and subthalamus in diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Sulcus limitans</li> </ul>
	<ul style="list-style-type: none"> <li>Sulcus limitans in midbrain</li> </ul>
	<ul style="list-style-type: none"> <li>Somites: Pairs 21 through 29</li> </ul>
	<ul style="list-style-type: none"> <li>Upper limb primordium at level of somites 8 to 10</li> </ul>
	<ul style="list-style-type: none"> <li>Progressively C-shaped embryo</li> </ul>
4 weeks	<ul style="list-style-type: none"> <li>Spleen primordia</li> </ul>
	<ul style="list-style-type: none"> <li>Thymic primordia</li> </ul>
	<ul style="list-style-type: none"> <li>Lower lip forms from merging of mandibular processes</li> </ul>
	<ul style="list-style-type: none"> <li>Melanoblasts in epidermis</li> </ul>
	<ul style="list-style-type: none"> <li>Gonadal ridge extends from C-7 to T-8 levels</li> </ul>
	<ul style="list-style-type: none"> <li>Primordial germ cells migrate to mesonephric ridges</li> </ul>
	<ul style="list-style-type: none"> <li>Primordial germ cells number several hundred</li> </ul>
	<ul style="list-style-type: none"> <li>Urorectal septum</li> </ul>
	<ul style="list-style-type: none"> <li>Thyroid bilobed and attached to pharynx by thyroglossal duct</li> </ul>
	<ul style="list-style-type: none"> <li>Diaphragm primordia</li> </ul>
	<ul style="list-style-type: none"> <li>Glomeruli emerge in mesonephros</li> </ul>

	<ul style="list-style-type: none"> <li>Mesonephric duct attached to cloaca</li> </ul>
	<ul style="list-style-type: none"> <li>Nephric tubules now S-shaped</li> </ul>
	<ul style="list-style-type: none"> <li>Urogenital sinus</li> </ul>
	<ul style="list-style-type: none"> <li>Urorectal cleavage line</li> </ul>
	<ul style="list-style-type: none"> <li>Diverticulum ilei marks division between foregut and hindgut</li> </ul>
	<ul style="list-style-type: none"> <li>Intestines growing in length</li> </ul>
	<ul style="list-style-type: none"> <li>Mesentery from end of duodenum to proximal half of colon</li> </ul>
	<ul style="list-style-type: none"> <li>Opening between gut and umbilical vesicle decreases</li> </ul>
	<ul style="list-style-type: none"> <li>Pancreas: Ventral pancreas</li> </ul>
	<ul style="list-style-type: none"> <li>Pharyngeal pouches 1 through 4</li> </ul>
	<ul style="list-style-type: none"> <li>Pharynx</li> </ul>
	<ul style="list-style-type: none"> <li>Pleuroperitoneal canals</li> </ul>
	<ul style="list-style-type: none"> <li>Stalk of umbilical vesicle lengthens and narrows</li> </ul>
	<ul style="list-style-type: none"> <li>Stomach assumes shape of a spindle</li> </ul>
	<ul style="list-style-type: none"> <li>Umbilical vesicle at height of development</li> </ul>
	<ul style="list-style-type: none"> <li>Vitelline duct</li> </ul>
	<ul style="list-style-type: none"> <li>Bronchial buds</li> </ul>
	<ul style="list-style-type: none"> <li>Mesenchyme from coelomic epithelium surrounds esophagus and lung buds</li> </ul>
	<ul style="list-style-type: none"> <li>Trachea</li> </ul>
	<ul style="list-style-type: none"> <li>Anterior, middle, and posterior cerebral plexuses</li> </ul>
	<ul style="list-style-type: none"> <li>Aorta branches include dorsal intersegmental, lateral segmental, and ventral segmental arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Aortic arches 4 and 6</li> </ul>
	<ul style="list-style-type: none"> <li>Artery from the common iliac artery feeds each lower limb bud</li> </ul>
	<ul style="list-style-type: none"> <li>Atrioventricular bundle</li> </ul>
	<ul style="list-style-type: none"> <li>Cardiac contractions still under myogenic control</li> </ul>
	<ul style="list-style-type: none"> <li>Celiac artery, superior and inferior mesenteric arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Circulatory system "well established"</li> </ul>
	<ul style="list-style-type: none"> <li>Common iliac arteries (right and left, from dorsal aorta bifurcation)</li> </ul>
	<ul style="list-style-type: none"> <li>Contractions well coordinated and sequential from sinus venosus to atria to ventricles</li> </ul>
	<ul style="list-style-type: none"> <li>Ductus venosus</li> </ul>
	<ul style="list-style-type: none"> <li>Functioning two-chamber heart</li> </ul>
	<ul style="list-style-type: none"> <li>Gas exchange through placenta begins</li> </ul>
	<ul style="list-style-type: none"> <li>Gelatinous reticulum (or cardiac mesenchyme)</li> </ul>
	<ul style="list-style-type: none"> <li>Heart chambers bulging with fluid</li> </ul>
	<ul style="list-style-type: none"> <li>Heart now functions as two parallel pumps</li> </ul>
	<ul style="list-style-type: none"> <li>Heart: Atrioventricular cushions (rostroventral and caudodorsal)</li> </ul>
	<ul style="list-style-type: none"> <li>Heart: Myocardium wall 3 to 4 cells thick</li> </ul>

	<ul style="list-style-type: none"> <li>■ Primary head veins (right and left) drain anterior, middle, and posterior cerebral plexuses and feed precardinal veins</li> </ul>
	<ul style="list-style-type: none"> <li>■ Small arteries emerging throughout mesoderm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ventricle walls trabeculated</li> </ul>
	<ul style="list-style-type: none"> <li>■ Vertebral arteries</li> </ul>
	<ul style="list-style-type: none"> <li>■ Vitelline veins empty exclusively into hepatic plexus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Most cranial nerve ganglia</li> </ul>
	<ul style="list-style-type: none"> <li>■ Trigeminal, glossopharyngeal, and vagal preganglia</li> </ul>
	<ul style="list-style-type: none"> <li>■ Basement membrane of otic disc surrounds otic vesicle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Endolymphatic appendage</li> </ul>
	<ul style="list-style-type: none"> <li>■ Otic invagination</li> </ul>
	<ul style="list-style-type: none"> <li>■ Otic vesicle closes</li> </ul>
	<ul style="list-style-type: none"> <li>■ Terminal-vomeronasal neural crest</li> </ul>
	<ul style="list-style-type: none"> <li>■ Brain: Commissural plate</li> </ul>
	<ul style="list-style-type: none"> <li>■ Cerebellum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Common afferent tract</li> </ul>
	<ul style="list-style-type: none"> <li>■ Fourth ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Interstitial nucleus (part of medial longitudinal fasciculus)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Isthmus rhombencephali (a new neuromere)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Oculomotor (CN III) and trochlear nuclei (CN IV) in mesencephalon (midbrain) and isthmus respectively</li> </ul>
	<ul style="list-style-type: none"> <li>■ Retinal and lens discs</li> </ul>
	<ul style="list-style-type: none"> <li>■ Amnion surrounds connecting stalk and vitelline stalk</li> </ul>
	<ul style="list-style-type: none"> <li>■ Hyoid arch subdivides into dorsal and ventral segments</li> </ul>
	<ul style="list-style-type: none"> <li>■ Limb buds - the first sign of arms and legs</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lower limb buds</li> </ul>
	<ul style="list-style-type: none"> <li>■ Umbilical cord emerging</li> </ul>
	<ul style="list-style-type: none"> <li>■ Upper and lower limb buds</li> </ul>

<b>Unit 5: 4 to 5 Weeks</b>
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









































<b>4 weeks, 4 days</b>	<ul style="list-style-type: none"> <li>■ Thymus</li> </ul>
	<ul style="list-style-type: none"> <li>■ Parathyrogenic zones</li> </ul>
	<ul style="list-style-type: none"> <li>■ Thyroglossal duct</li> </ul>
	<ul style="list-style-type: none"> <li>■ Thyroid pedicle lengthens</li> </ul>
	<ul style="list-style-type: none"> <li>■ Dorsal contour develops depression at level of sclerotomes 4 and 5</li> </ul>
	<ul style="list-style-type: none"> <li>■ Muscular plates between upper and lower limb buds</li> </ul>
	<ul style="list-style-type: none"> <li>■ Glomerular capsules, partially vascularized</li> </ul>
	<ul style="list-style-type: none"> <li>■ Mesonephric corpuscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Metanephrogenic cap emerges from ureteric bud</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ureteric buds</li> </ul>
	<ul style="list-style-type: none"> <li>■ Angiogenesis within peri-esophageal mesenchyme</li> </ul>
	<ul style="list-style-type: none"> <li>■ Epiploic foramen</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lesser sac (omental bursa)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Small intestine forming coils</li> </ul>



	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Tongue: Hypopharyngeal eminence</li> <li><span style="color: orange;">■</span> Arytenoid swellings (right and left)</li> <li><span style="color: orange;">■</span> Capillary network surrounds pulmonary mesenchyme</li> <li><span style="color: orange;">■</span> Epithelial lamina of larynx</li> <li><span style="color: orange;">■</span> Lungs: Right and left primary (or main stem) bronchi</li> <li><span style="color: orange;">■</span> Mesenchyme covering esophagus and respiratory tree separates</li> <li><span style="color: orange;">■</span> Mesenchyme surrounds bronchi</li> <li><span style="color: orange;">■</span> Pleura (mesothelium) surrounds part of mesenchyme</li> <li><span style="color: orange;">■</span> Right main bronchus longer than left</li> <li><span style="color: red;">■</span> Atria walls thin, ventricle walls thick and trabeculated</li> <li><span style="color: red;">■</span> Atrioventricular cushions not fused</li> <li><span style="color: red;">■</span> Common pulmonary vein drains pulmonary plexuses into left atrium</li> <li><span style="color: red;">■</span> Conotruncal ridges or cushions (remnants of cardiac jelly)</li> <li><span style="color: red;">■</span> Epicardium</li> <li><span style="color: red;">■</span> Left subclavian artery feeds left axillary artery, left vertebral artery, and left thyrocervical trunk</li> <li><span style="color: red;">■</span> Outflow tract still with one lumen</li> <li><span style="color: red;">■</span> Posterior communicating arteries</li> <li><span style="color: red;">■</span> Pulmonary arch (sixth aortic arch) forms from aorta and aortic sac</li> <li><span style="color: red;">■</span> Pulmonary capillary network fed by pulmonary arteries, drain into left atrium</li> <li><span style="color: red;">■</span> Sinu-atrial (SA) node</li> <li><span style="color: red;">■</span> Superior mesenteric artery and vein</li> <li><span style="color: red;">■</span> Upper limb buds with early marginal blood vessel</li> <li><span style="color: yellow;">■</span> Brachial plexus</li> <li><span style="color: yellow;">■</span> Cervical plexus</li> <li><span style="color: yellow;">■</span> Dorsal roots</li> <li><span style="color: yellow;">■</span> Hypoglossal nerve roots unite (CN XII)</li> <li><span style="color: yellow;">■</span> Lens and retina invaginate to form optic cup</li> <li><span style="color: yellow;">■</span> Primordium of cochlear duct</li> <li><span style="color: yellow;">■</span> Rami communicantes</li> <li><span style="color: yellow;">■</span> Spinal nerves reach muscle primordia</li> <li><span style="color: yellow;">■</span> Upper limb buds innervated</li> <li><span style="color: yellow;">■</span> External ear: Auricular hillocks merging</li> <li><span style="color: yellow;">■</span> Eyes located on sides of head</li> <li><span style="color: yellow;">■</span> Lens pits</li> <li><span style="color: yellow;">■</span> Lens vesicle open to surface (lens pore)</li> <li><span style="color: yellow;">■</span> Nose: Nasal pits</li> <li><span style="color: yellow;">■</span> Nose: Nasal plate (or disc) flat or concave</li> <li><span style="color: yellow;">■</span> Pigment in retina (external layer of optic cup)</li> <li><span style="color: blue;">■</span> D1 and D2 no longer identifiable within diencephalon</li> <li><span style="color: blue;">■</span> 75% of midbrain covered by marginal layer</li> </ul>
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	■ All 16 secondary neuromeres
	■ Brain enlarges 50% since Carnegie Stage 13
	■ Brain: Cerebral hemispheres appear and begin rapid growth
	■ Brain: Lateral ventricles
	■ Cerebellum with intermediate and ventricular layers
	■ Cerebellum: Primordium found in alar plate of rhombomere 1
	■ Corpora striata primordia connected by commissural plate
	■ Cranial nerve 3
	■ Di-telencephalic sulcus
	■ Dorsal and ventral thalami
	■ Dorsal funiculus
	■ Hypothalamic sulcus
	■ Hypothalamus
	■ Mamillary region
	■ Medial and lateral longitudinal fasciculi
	■ Median ventricular eminence
	■ Pontine flexure
	■ Preoptic sulcus extends between optic evaginations
	■ Preoptico-hypothalamo-tegmental tract
	■ Primary meninx surrounds most of brain
	■ Rhombic lip
	■ Spinal cord wall with three zones: ventricular (ependymal) zone, mantle (intermediate) zone, and marginal zone
	■ Subthalamus with medial striatal ridge emerging
	■ Synencephalon
	■ Tegmentum
	■ Tentorium cerebelli, medial portion
	■ Terminal-vomer nasal crest contacts brain (olfactory area)
	■ Torus hemisphericus (TH)
	■ Velum transversum
	■ Ventral longitudinal fasciculus
	■ Ventral segment of hyoid arch subdivides
<b>4 weeks, 5 days</b>	■ Primordium of antitragus emerges from ventral subsegment of hyoid arch
	■ Gonad framework found in coelomic epithelium
	■ Thyroid detached from epithelium of pharynx in some embryos
	■ Lower limb bud rounded proximally and tapered distally
	■ Mesenchymal skeleton in upper and lower limbs
	■ Right and left neural processes
	■ Sclerotomic material around notochord (rhombomere D level)

	<ul style="list-style-type: none"> <li>Vertebrae well defined</li> </ul>
	<ul style="list-style-type: none"> <li>Vertebral centra</li> </ul>
	<ul style="list-style-type: none"> <li>Primary urogenital sinus</li> </ul>
	<ul style="list-style-type: none"> <li>Ureteric bud extends to pelvis of the ureter</li> </ul>
	<ul style="list-style-type: none"> <li>Bladder and rectum are separating caudal to ureters</li> </ul>
	<ul style="list-style-type: none"> <li>Dense mesenchyme surrounds much of gastrointestinal tract</li> </ul>
	<ul style="list-style-type: none"> <li>Esophagus elongates, passes dorsal to carina and between main stem bronchi</li> </ul>
	<ul style="list-style-type: none"> <li>Gall bladder and cystic duct</li> </ul>
	<ul style="list-style-type: none"> <li>Liver: Hepatic ducts</li> </ul>
	<ul style="list-style-type: none"> <li>Ventral pancreas appears as an offshoot of the cystic duct</li> </ul>
	<ul style="list-style-type: none"> <li>Lobar bud swellings denote areas of secondary bronchi</li> </ul>
	<ul style="list-style-type: none"> <li>Remnants of coelomic epithelium forming visceral pleura</li> </ul>
	<ul style="list-style-type: none"> <li>Atrioventricular cushions apposed</li> </ul>
	<ul style="list-style-type: none"> <li>Blood flow divided into right and left streams through atrioventricular canal, ventricles, outflow tract, and aortic sac</li> </ul>
	<ul style="list-style-type: none"> <li>Blood vessels penetrate diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li>Capillary plexus surrounds esophagus</li> </ul>
	<ul style="list-style-type: none"> <li>Capillary plexus surrounds lung buds</li> </ul>
	<ul style="list-style-type: none"> <li>Cardiac mesenchyme surrounds ventricles and outflow tract</li> </ul>
	<ul style="list-style-type: none"> <li>Coronary arteries (terminal end)</li> </ul>
	<ul style="list-style-type: none"> <li>Foramen secundum begins in septum primum</li> </ul>
	<ul style="list-style-type: none"> <li>Left ventricle with thicker walls and greater volume than right</li> </ul>
	<ul style="list-style-type: none"> <li>Right subclavian artery originates from brachiocephalic artery and feeds right thyrocervical trunk and axillary and vertebral arteries</li> </ul>
	<ul style="list-style-type: none"> <li>Semilunar cusps</li> </ul>
	<ul style="list-style-type: none"> <li>Capsule present around lens</li> </ul>
	<ul style="list-style-type: none"> <li>Corneal epithelium overlying optic cup</li> </ul>
	<ul style="list-style-type: none"> <li>Ear: Endolymphatic duct</li> </ul>
	<ul style="list-style-type: none"> <li>Geniculate and vestibulocochlear ganglia separating</li> </ul>
	<ul style="list-style-type: none"> <li>Lens body now present containing some lens fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Lower limb buds innervated</li> </ul>
	<ul style="list-style-type: none"> <li>Optic stalk</li> </ul>
	<ul style="list-style-type: none"> <li>Utricle, endolymphatic duct, and endolymphatic sac</li> </ul>
	<ul style="list-style-type: none"> <li>Utriculo-endolymphatic fold</li> </ul>
	<ul style="list-style-type: none"> <li>External ear primordia emerges from caudolateral portion of mandibular arch</li> </ul>
	<ul style="list-style-type: none"> <li>Face: Lateral and medial nasal processes bilaterally</li> </ul>
	<ul style="list-style-type: none"> <li>Lateral nasal processes along dorsolateral lip of nasal pits</li> </ul>
	<ul style="list-style-type: none"> <li>Lens vesicles closed, pores absent</li> </ul>

	 Nose: Nasal discs recede forming nasal pits
	 Optic chiasm
	 Adult lamina terminalis
	 Amygdaloid area
	 Cerebellar plate
	 Cerebellum with marginal layer
	 Fibers of dorsal funiculus reach level of C1
	 First axodendritic synapses in cervical spinal cord
	 First nerve fibers
	 Habenular nucleus
	 Habenulo-interpeduncular tract
	 Lateral striatal ridge (derived from telencephalon and comprised mainly of neostriatum)
	 Lateral ventricular eminence
	 Locus caeruleus
	 Longitudinal zones in diencephalon
	 Marginal layer throughout most of diencephalon
	 Material for sympathetic trunks scattered in cervical region
	 Median striatal ridge (paleostriatum)
	 Mesencephalic tract of CN 5
	 Most cranial nerves seen
	 Olfactory fibers reach brain
	 Optic groove (also called preoptic recess)
	 Postoptic recess
	 Primordium of epiphysis
	 Rhombomeres still identifiable
	 Superior colliculi and its commissure
	 Superior medullary velum
	 Supramamillary commissure
	 Synapses among motor neurons in spinal cord
	 Tectobulbar tract
	 Tentorium
	 Third ventricle
	 Trigemino-cerebellar tract
	 Trochlear nerve root and decussation (CN IV)
	 Hand plate emerges from distal upper limb bud
	 Frontonasal prominence
<b>5 weeks</b>	 Arytenoid and epiglottal swellings
	 Lobar pattern mimics adult pattern
	 T-shaped laryngeal inlet
	 Pacemaker cells
<b>Unit 6: 5 to 6 Weeks</b>	
<b>5 weeks, 2 days</b>	 Apical epidermal ridges
	 Mammary ridge

	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f8d7da; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Maxillary and premaxillary fields still widely separated</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f8d7da; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Nipples emerge from mammary crest</li> </ul>
	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Gonad region separates from mesonephros</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Gonadal primordium</li> </ul>
	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Labioscrotal swelling</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d4edda; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Urogenital fold and groove</li> </ul>
	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d1ecf1; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Suprarenal gland: Cortex primordium</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d1ecf1; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Suprarenal gland: Medulla</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d1ecf1; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Thyroid detaches from pharynx</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d1ecf1; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Thyroid with right and left lobes connected by an isthmus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Cartilage in mandibular arch</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Hand area with central carpal region and digital plate with marginal vein</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Pre-chondrocranium: Otic capsule, nasal capsule, and parachordal condensations</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Primordia of primary palate</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Ribs: Primordia now present for all 12 pairs</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #e2e3e5; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Vertebral column with 36 levels of ganglia and myotomes</li> </ul>
	<ul style="list-style-type: none"> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Extra-ocular pre-muscle masses receive cranial nerve fibers [oculomotor (CN III), trochlear (CN IV), and abducens (CN VI) nerves]</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Gluteal mesoderm</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Infrahyoid pre-muscle masses</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Limb mesoderm</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Sternocleidomastoid-trapezius pre-muscle mass with spinal accessory nerve (CN11)</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Thigh and thigh mesoderm</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f4cccc; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Tongue pre-muscle mass</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Metanephros at level of sacrum</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Urethral plate</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Lesser omentum (ventral mesogastrum)</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Peritoneal cavity</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Rectum</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Stomach: Greater and lesser curvatures</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #d9ead3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Yolk stalk disappears</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #fcf8e3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Bronchial tree expanding</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #fcf8e3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Cervical sinus diminished in size</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #fcf8e3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Epiglottis</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #fcf8e3; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Primitive Larynx</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f2dede; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Anterior, middle, and posterior cerebral arteries</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f2dede; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Atrioventricular (AV) node</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f2dede; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Atrioventricular cushions fuse with interventricular septum</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f2dede; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Circle of Willis almost complete</li> <li><span style="display: inline-block; width: 15px; height: 10px; background-color: #f2dede; border: 1px solid #c3e6cb; margin-right: 5px;"></span> Conotruncal septum</li> </ul>

	<ul style="list-style-type: none"> <li>Endocardial cushions (rostroventral and caudodorsal) begin fusing around atrioventricular canal forming right and left atrioventricular canals and two separate blood streams</li> </ul>
	<ul style="list-style-type: none"> <li>External carotid artery</li> </ul>
	<ul style="list-style-type: none"> <li>Foramen primum disappearing</li> </ul>
	<ul style="list-style-type: none"> <li>Hepatic portal vein</li> </ul>
	<ul style="list-style-type: none"> <li>Infundibulum of right ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>Jugular lymph sac</li> </ul>
	<ul style="list-style-type: none"> <li>Lateral atrioventricular cushions</li> </ul>
	<ul style="list-style-type: none"> <li>Mesencephalic artery</li> </ul>
	<ul style="list-style-type: none"> <li>Myelencephalic artery</li> </ul>
	<ul style="list-style-type: none"> <li>Perilental blood vessels</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive cavernous sinus drains primitive maxillary and supraorbital veins</li> </ul>
	<ul style="list-style-type: none"> <li>Primitive renal plexus</li> </ul>
	<ul style="list-style-type: none"> <li>Right ventricle feeds sixth (pulmonary) aortic arches; left ventricle feeds fourth aortic arches</li> </ul>
	<ul style="list-style-type: none"> <li>Semilunar valves (aortic and pulmonary) are forming</li> </ul>
	<ul style="list-style-type: none"> <li>Ventricles each with three parts: inlet, trabecular pouch, and outflow tract</li> </ul>
	<ul style="list-style-type: none"> <li>Ventricles enlarge and deepen side-by-side forming an ever growing interventricular septum</li> </ul>
	<ul style="list-style-type: none"> <li>Celiac plexus</li> </ul>
	<ul style="list-style-type: none"> <li>Cochlear nerve present</li> </ul>
	<ul style="list-style-type: none"> <li>Femoral and obturator nerves innervate rostralateral part of lower limb</li> </ul>
	<ul style="list-style-type: none"> <li>Hypoglossal nerve (CN XII) reaches tongue</li> </ul>
	<ul style="list-style-type: none"> <li>Intercostal nerves</li> </ul>
	<ul style="list-style-type: none"> <li>Lumbar and sacral plexuses</li> </ul>
	<ul style="list-style-type: none"> <li>Musculocutaneous, radial, ulna, and median nerves enter upper limb bud</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal pits face more ventrally, still widely separated</li> </ul>
	<ul style="list-style-type: none"> <li>Nasofrontal groove</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory fibers connect nasal pits with brain</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory fibers enter brain</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory tubercle present</li> </ul>
	<ul style="list-style-type: none"> <li>Peroneal and tibial nerves innervate caudomedial part of lower limb</li> </ul>
	<ul style="list-style-type: none"> <li>Phrenic nerve</li> </ul>
	<ul style="list-style-type: none"> <li>Pigment in retina visible externally</li> </ul>
	<ul style="list-style-type: none"> <li>Primordium of cochlear pouch</li> </ul>
	<ul style="list-style-type: none"> <li>Tibial nerve innervates foot area</li> </ul>
	<ul style="list-style-type: none"> <li>Auricular hillocks on hyoid arch (antitragus and helix)</li> </ul>
	<ul style="list-style-type: none"> <li>Auricular hillocks on mandibular arch (tragus and crus)</li> </ul>
	<ul style="list-style-type: none"> <li>Blind nasal sac</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal fin</li> </ul>

	■ Alar lamina emerging with dense rhombic lip
	■ All cranial nerves identifiable
	■ Archipallium, paleopallium, and neopallium
	■ Area epithelialis
	■ Brain: Primordial plexiform layer in area of future temporal lobe
	■ Cajal-Retzius cells
	■ Commissure of the trochlear nerve
	■ Diencephalic subthalamic nucleus
	■ Dorsal and ventral thalami separated by groove
	■ Dorsal funiculus fibers reach medulla oblongata
	■ Epiphysis cerebri
	■ Glial cells identifiable adjacent to neurons
	■ Greater petrosal nerve
	■ Hippocampus: Gyrus dentatus
	■ Infundibular recess and infundibulum
	■ Interventricular foramen large
	■ Marginal ridge
	■ Medial and lateral ridges of corpus striatum are continuous
	■ Median forebrain bundle
	■ Neurohypophysial outgrowth
	■ Olfactory tubercle
	■ Pontine flexure deepens
	■ Posterior commissure
	■ Recurrent laryngeal nerve
	■ Reticular formation more defined
	■ Retinal fissure closes
	■ Splanchnic nerve
	■ Sulcus limitans hippocampi
	■ Superior laryngeal nerve
	□ Second pharyngeal arch more prominent
	□ Third pharyngeal arch recedes
<b>5½ weeks</b>	□ Initial tooth formation
<b>5½ weeks - 6 weeks</b>	■ Subtle movement begins
<b>5 weeks, 5 days - 7 weeks, 1 day</b>	■ Melanocytes in epidermis
<b>5 weeks, 6 days</b>	■ Facial growth centers grow and begin merging forming nose and upper jaw
	■ Genital eminence forms phallus or genital tubercle
	■ Gonad grows into oval shape with irregular surface
	■ Auditory ossicles identifiable in mesenchyme
	■ Cartilage in occipital sclerotomes (1-4)
	■ Digital rays in hand plate
	■ Femur: Chondrification begins
	■ Foot with rounded digital plate

	<ul style="list-style-type: none"> <li><input type="checkbox"/> Hypoglossal foramen (or canal) through sclerotome 4 (area of future occipital bone)</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Odontogenic epithelium emerges in six areas (four maxillary and two mandibular)</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Primary palate components (right and left) fuse in midline</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Primitive palatine groove</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Primordium of cartilage within nasal septum</li> </ul>
	<ul style="list-style-type: none"> <li><input type="checkbox"/> Vertebral centra begin chondrification</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Primordia of orbital muscles</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Calices</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Mesonephros can produce urine</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Pelvis of the ureter with three main divisions</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Vesico-urethral canal</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Biliary ducts within liver</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Dorsal and ventral pancreas fuse but retain separate ducts</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Duodenum enlarges proximal to and distal to bile and pancreatic ducts</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Esophagus developing a submucous coat surrounding epithelium</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Intestinal loop begins umbilical herniation</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Primordial vermiform appendix</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Stomach regions include gastric canal, fundus, corpus (or body), and pyloric antrum</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Trachea: Precursors of tracheal cartilages</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Condensing mesenchyme around junction between left and right atria and cardiac tube is precursor to mitral and tricuspid valves</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Outflow tract rotates counterclockwise</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Right and left atrioventricular canals totally separated</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> All parasympathetic cranial nerve ganglia identifiable</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> All spinal nerves present</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Cell islands in olfactory tubercle</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Crescentic lens cavity</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Geniculate ganglion separate from vestibulocochlear nerve</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Globular process emerges from each medial nasal process</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Nasal fin connecting nasal disc and surface epithelium</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Nasofrontal grooves</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Olfactory tubercle with cellular islands</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Hyomandibular groove enlarges (onset of concha and external auditory meatus formation)</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Medial rims of nasal pits form nasal septum</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Nostril becomes continuous with nasal sac</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Primary lens fibers</li> </ul>
	<ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Retinal fissure closed</li> </ul>



	Capillaries between adenohypophysis and hypothalamus
	Commissure of the oculomotor nerves
	Cortical nucleus in amygdaloid body
	Dentate and isthmic nuclei in cerebellum
	Dura begins forming in basal area
	Epiphysis cerebri with intermediate layer
	First hint of septal nucleus
	Frontal and temporal poles of cerebral hemispheres
	Gustatory fibers separate from common afferent tract
	Hemispheric stalk
	Intermediate layer in tectum mesencephali
	Interventricular foramen
	Mesencephalon with intermediate layer
	Somites: Pairs 38 and 39
	Spinal cord reaches caudal tip of body
	Subarachnoid space
	Synapses in spinal cord between interneurons and primary afferent neurons
	Ventral thalamus with intermediate layer
	Anterior choroid artery
<b>6 weeks</b>	Blood forming in liver
	Milk lines
	Handplates develop subtle flattening
	Medial skull cartilages: Parachordal, hypophyseal, and trabecular
	Tooth buds (primary teeth)
	Intestines fill base of umbilical cord
	Crown-heel length 1.6 cm

**Unit 7: 6 to 7 Weeks**

<b>6 weeks, 2 days</b>	Angiogenesis begins inside gonads
	Gonad grows into oval shape with irregular surface
	Ostium (abdominal) of uterine tube at rostral end of paramesonephric duct (in female embryos)
	Paramesonephric duct forms from rostral end of mesonephric duct
	Testicular cords in gonads of male embryos
	Testicular cords in male gonad
	Elbow regions sometimes identifiable
	Embryo with cervical and lumbar flexures
	Embryo with dorsal concavity
	Finger rays with early interdigital notching
	Humerus, radius, and ulna
	Humerus: Chondrocytes in phases one through three
	Scapula and clavicle









































	□ Semicircular ducts form in order: anterior, posterior, and lateral
	□ Sternum: Episternal cartilage created from fusion of right and left sternal bars
	□ Tibia and fibula
	□ Toe rays sometimes present
	■ Deltoid muscle
	■ External and internal abdominal oblique muscles
	■ Levator scapulae muscle
	■ Longus cervicis and semispinalis cervicis muscles
	■ Pectoralis major muscles
	■ Platysma muscle
	■ Rectus abdominis muscle
	■ Rectus capitus posterior and semispinalis capitis muscles
	■ Serratus anterior muscles
	■ Splenius and longissimus muscles
	■ Stapedius muscle
	■ "Common excretory duct is disappearing"
	■ Cloacal membrane ruptures (stages 18-19)
	■ Primordia of secretory tubules
	■ Esophagus with muscular and submucous coats
	■ Submandibular gland primordia
	■ Bronchial tree with subsegmental buds
	■ Bronchial tree with well established segmental bronchi
	■ Lingula of left upper lobe
	■ Aortic and pulmonary valves assuming shape of a cup
	■ Brachiocephalic veins, right and left
	■ Inferior vena cava
	■ Interventricular septum: membranous part begins forming
	■ Left coronary artery arises from aorta
	■ Mesenchyme ridges in place of future mitral and tricuspid valves
	■ Pulmonary and aortic blood flows completely separate
	■ Secondary interventricular foramen sometimes closing (stage 18-21) interventricular septum
	■ Septum secundum and foramen ovale (stages 18-21)
	■ Bucconasal membrane
	■ Bucconasal membrane detaches opening up nasal airway
	■ Crus commune
	■ Ethmoidal epithelium emerges from upper medial nasal wall
	■ Frontonasal angle (marks location of future nasal bridge)

	<ul style="list-style-type: none"> <li>Mesenchyme thickenings mark beginning of "sclera and its muscular attachments"</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal tip emerges</li> </ul>
	<ul style="list-style-type: none"> <li>Nerve fibers in retina</li> </ul>
	<ul style="list-style-type: none"> <li>Optic fibers</li> </ul>
	<ul style="list-style-type: none"> <li>Retina's outer lamina heavily pigmented</li> </ul>
	<ul style="list-style-type: none"> <li>Vomer nasal nerve and ganglion</li> </ul>
	<ul style="list-style-type: none"> <li>Vomer nasal organ marked by groove and located in fold of lower medial nasal wall</li> </ul>
	<ul style="list-style-type: none"> <li>Choanae</li> </ul>
	<ul style="list-style-type: none"> <li>Conjunctival sac marked by groove</li> </ul>
	<ul style="list-style-type: none"> <li>Cornea and conjunctiva</li> </ul>
	<ul style="list-style-type: none"> <li>Ear: Stapes primordium surrounds stapedia artery</li> </ul>
	<ul style="list-style-type: none"> <li>External ear: Crus helices forming from auricular hillocks two and three (from mandibular arch)</li> </ul>
	<ul style="list-style-type: none"> <li>Eyelid folds sometimes present</li> </ul>
	<ul style="list-style-type: none"> <li>Nasal fin splits forming choanae and bucconasal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>Nasolacrimal duct begins as epithelial strand emanating from nasomaxillary groove</li> </ul>
	<ul style="list-style-type: none"> <li>Nostrils, nasal wings, and nasal septum easily seen</li> </ul>
	<ul style="list-style-type: none"> <li>Olfactory bulb sometimes with olfactory ventricle</li> </ul>
	<ul style="list-style-type: none"> <li>Primary lens fibers filling lens vesicle cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Adenohypophysis no longer open to pharyngeal cavity</li> </ul>
	<ul style="list-style-type: none"> <li>Archistriatum</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Dentate nucleus in internal cerebellar swellings</li> </ul>
	<ul style="list-style-type: none"> <li>Brain: Pineal recess emerges representing anterior lobe of epiphysis</li> </ul>
	<ul style="list-style-type: none"> <li>Cerebrospinal fluid production begins</li> </ul>
	<ul style="list-style-type: none"> <li>Choroid plexuses in fourth and lateral ventricles</li> </ul>
	<ul style="list-style-type: none"> <li>Corpus striatum much larger extending to preoptic sulcus; has subtle groove</li> </ul>
	<ul style="list-style-type: none"> <li>External cerebellar swellings contain future flocculus</li> </ul>
	<ul style="list-style-type: none"> <li>Four amygdaloid nuclei</li> </ul>
	<ul style="list-style-type: none"> <li>Fourth ventricle: Choroid folds</li> </ul>
	<ul style="list-style-type: none"> <li>Hippocampus reaches olfactory region</li> </ul>
	<ul style="list-style-type: none"> <li>Interpeduncular fossa</li> </ul>
	<ul style="list-style-type: none"> <li>Neurohypophysis walls are folded</li> </ul>
	<ul style="list-style-type: none"> <li>Nucleus ambiguus of the vagus (CN10)</li> </ul>
	<ul style="list-style-type: none"> <li>Prosencephalic septum</li> </ul>
	<ul style="list-style-type: none"> <li>Red nucleus</li> </ul>
	<ul style="list-style-type: none"> <li>Substantia nigra</li> </ul>
	<ul style="list-style-type: none"> <li>Supra-optic commissure</li> </ul>
<b>6½ weeks</b>	<ul style="list-style-type: none"> <li>Volar pads on palms</li> </ul>
<b>6 weeks, 5 days</b>	<ul style="list-style-type: none"> <li>Greater thymic bud</li> </ul>
	<ul style="list-style-type: none"> <li>Cheeks form by merging of maxillary and mandibular processes</li> </ul>

	<input type="checkbox"/> Mammary gland primordium
	<input type="checkbox"/> Mammary ridge disappears leaving only mammary gland primordium
	<input type="checkbox"/> Female duct
	<input type="checkbox"/> Gonads extend from levels T-10 to L-2
	<input type="checkbox"/> Rete ovarii (in female embryos)
	<input type="checkbox"/> Rete testis begins emerging from seminiferous cords (Stage 19-23) (in male embryos)
	<input type="checkbox"/> Tunica albuginea in male embryos
	<input type="checkbox"/> Suprarenal gland: Cortex
	<input type="checkbox"/> Suprarenal gland: Medulla populated by prechromaffin cells
	<input type="checkbox"/> Beginnings of occipital and sphenoid bones
	<input type="checkbox"/> Bilateral cartilaginous sternal bars tie ribs together; sternal bars join cranially to form the episternal bar in the midline
	<input type="checkbox"/> Cartilage within otic capsule envelops semicircular canals and cochlear duct
	<input type="checkbox"/> Cartilaginous styloid process
	<input type="checkbox"/> Ear: Cartilaginous malleus, incus, and stapes (the middle ear ossicles)
	<input type="checkbox"/> Ectomeninx covers lateral and dorsal surfaces of brain (laying the foundation for the flat bones of the skull)
	<input type="checkbox"/> Intervertebral discs form from caudal condensed portion of sclerotomes
	<input type="checkbox"/> Ischium and ilium
	<input type="checkbox"/> Labiodental lamina: Inner dental lamina and outer labiokingival band
	<input type="checkbox"/> Laryngeal cartilages
	<input type="checkbox"/> Limbs point forward (ventrally)
	<input type="checkbox"/> Orbitosphenoid cartilage located within ectomeninx near optic stalk
	<input type="checkbox"/> Ossification begins in maxilla (stages 19 -20)
	<input type="checkbox"/> Primitive palate (or intermaxillary segment)
	<input type="checkbox"/> Rib primordia become cartilaginous
	<input type="checkbox"/> Ribs each have an identifiable head and shaft
	<input type="checkbox"/> Trachea: Tracheal cartilage
	<input type="checkbox"/> U-shaped labiodental lamina form along upper and lower oral cavity
	<input type="checkbox"/> Vertebral column represented by cartilaginous centrum, neural arch, and short transverse process
	<input type="checkbox"/> Esophagus: Muscularis layer adjacent to esophageal plexus
	<input type="checkbox"/> Gluteal muscle group
	<input type="checkbox"/> Iliopsoas muscles
	<input type="checkbox"/> Infrahyoid muscles
	<input type="checkbox"/> Internal intercostal muscles
	<input type="checkbox"/> Limb extensor muscles located dorsally

	<ul style="list-style-type: none"> <li>■ Limb flexor muscles located ventrally</li> </ul>
	<ul style="list-style-type: none"> <li>■ Midgut: Muscularis</li> </ul>
	<ul style="list-style-type: none"> <li>■ Muscle tissue forming around phrenic nerve within septum transversum portion of diaphragm</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pharyngeal constrictor muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Premuscle mass of the muscles of mastication innervated by mandibular nerve</li> </ul>
	<ul style="list-style-type: none"> <li>■ Quadratus lumborum muscle</li> </ul>
	<ul style="list-style-type: none"> <li>■ Rhomboid and scalene muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Sternocleidomastoid and trapezius muscles distinct and innervated by separate branches of spinal accessory nerve (CN XI)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Thenar and hypothenar eminences</li> </ul>
	<ul style="list-style-type: none"> <li>■ Tongue forms from swellings in floor of pharynx</li> </ul>
	<ul style="list-style-type: none"> <li>■ Tongue: Extrinsic muscles identifiable</li> </ul>
	<ul style="list-style-type: none"> <li>■ Tongue: Intrinsic muscles identifiable</li> </ul>
	<ul style="list-style-type: none"> <li>■ Transversospinal and erector spinae muscle groups</li> </ul>
	<ul style="list-style-type: none"> <li>■ Upper limb flexors innervated by musculocutaneous, median, and ulnar nerves</li> </ul>
	<ul style="list-style-type: none"> <li>■ Major calyces, cranial and caudal, with collecting tubules within metanephrogenic mass</li> </ul>
	<ul style="list-style-type: none"> <li>■ Mesonephros extends from T-9 to L-3</li> </ul>
	<ul style="list-style-type: none"> <li>■ Metanephros extends from T-12 to L-2</li> </ul>
	<ul style="list-style-type: none"> <li>■ Renal capsule covers distal collecting tubules</li> </ul>
	<ul style="list-style-type: none"> <li>■ Renal vesicles form in part of metanephros</li> </ul>
	<ul style="list-style-type: none"> <li>■ Ureter forms from "proximal segment of metanephric diverticulum"</li> </ul>
	<ul style="list-style-type: none"> <li>■ Urogenital sinus comprised of three parts: Bladder, pelvic, and phallic portions</li> </ul>
	<ul style="list-style-type: none"> <li>■ Anal folds adjacent to anal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>■ Anal membrane</li> </ul>
	<ul style="list-style-type: none"> <li>■ Duodenum: "Assumes the shape of an arc"</li> </ul>
	<ul style="list-style-type: none"> <li>■ Greater omentum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lateral palatine process</li> </ul>
	<ul style="list-style-type: none"> <li>■ Liver: rapid growth, right side greater than left</li> </ul>
	<ul style="list-style-type: none"> <li>■ Median mandibular groove disappears as mandibular processes merge in midline</li> </ul>
	<ul style="list-style-type: none"> <li>■ Palatine fossa (from pharyngeal pouch 2)</li> </ul>
	<ul style="list-style-type: none"> <li>■ Primitive oral cavity</li> </ul>
	<ul style="list-style-type: none"> <li>■ Primitive rima oris replaces stomodeum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Stomach wall layers: Mucosa, submucosa, muscularis, and serosa</li> </ul>
	<ul style="list-style-type: none"> <li>■ Submandibular and parotid gland buds</li> </ul>
	<ul style="list-style-type: none"> <li>■ Submandibular gland duct</li> </ul>
	<ul style="list-style-type: none"> <li>■ Bronchial tree: First generation of subsegmental bronchi complete</li> </ul>
	<ul style="list-style-type: none"> <li>■ Glottis, primitive</li> </ul>









































	<ul style="list-style-type: none"> <li>■ Lung sac, right: Oblique and horizontal fissures define upper, lower, and middle lobes</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lung sac: Apex and base</li> </ul>
	<ul style="list-style-type: none"> <li>■ Lung, left: Oblique fissure defines upper and lower lobes</li> <li>■ "Septum primum fuses with endocardial cushions" obliterating ostium primum and creating the ostium secundum</li> </ul>
	<ul style="list-style-type: none"> <li>■ Apex of left ventricle</li> <li>■ Circulus arteriosus (Circle of Willis) complete</li> </ul>
	<ul style="list-style-type: none"> <li>■ External iliac arteries</li> <li>■ Iliac lymph sac</li> </ul>
	<ul style="list-style-type: none"> <li>■ Intercostal and subcostal arteries</li> <li>■ Internal thoracic artery and costocervical trunk</li> </ul>
	<ul style="list-style-type: none"> <li>■ Mesenteric lymph sac</li> <li>■ Mesonephric artery feeds mesonephros, gonads, and suprarenal glands</li> <li>■ Papillary muscles</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pontine, superior cerebellar, and anterior and posterior inferior cerebellar arteries replace myelencephalic and metencephalic arteries</li> <li>■ Primitive marginal sinus drains diencephalon</li> <li>■ Primitive tentorial sinus drains cerebral vesical</li> <li>■ Primitive transverse and sigmoid sinuses</li> </ul>
	<ul style="list-style-type: none"> <li>■ Pulmonary arteries (right and left)</li> <li>■ Right coronary artery arises from aorta</li> <li>■ Splenic vein</li> <li>■ Tricuspid and mitral valves</li> </ul>
	<ul style="list-style-type: none"> <li>■ Anterior chamber between iridopupillary membrane and thickened ectoderm</li> <li>■ Auditory tube and primitive tympanic cavity form from tubotympanic recess pharyngeal pouch 1)</li> <li>■ Celiac, superior mesenteric, and inferior mesenteric preaortic ganglia</li> <li>■ Choana</li> <li>■ Cochlear duct tip grows upward</li> <li>■ Esophageal plexus formed by vagal nerves (CN X)</li> <li>■ Facial nerve (CN VII) branches: Chorda tympani, greater petrosal, posterior auricular, and digastric</li> <li>■ Facial nerve (CN VII) reaches cervicomandibular region</li> <li>■ Glossopharyngeal nerve (CN IX) innervates stylopharyngeus premuscle mass</li> <li>■ Hypoglossal nerve (CN XII) innervates separating tongue muscles</li> <li>■ Linguogingival groove</li> <li>■ Nasolacrimal duct forms from maxillonasal groove</li> <li>■ Nasolacrimal ducts extend from medial eyes to primitive nasal cavity</li> </ul>

	 Nerve fibers begin extending from retina
	 Optic fibers enter chiasmatic plate
	 Primitive nasal cavity
	 Primordial vitreous body
	 Superior, middle, and inferior cervical ganglia
	 Trigeminal nerve (CN V) with ophthalmic, maxillary, and mandibular divisions reach their destinations
	 Vagal trunks, anterior and posterior, extending into abdomen
	 Eyelids: Upper and lower lids present and growing
	 Sacculle and cochlear duct
	 Adenohypophysis: Lateral lobes of pars tuberalis
	 Adenohypophysis: Pars intermedia emerging
	 Brain: Internal capsule formation underway
	 Cerebral hemispheres cover half of diencephalon
	 Dorsal and ventral cochlear nuclei
	 Fourth ventricle: Lateral recesses
	 Ganglion of nervus terminalis
	 Globus pallidus externus in the diencephalon
	 Habenular commissure
	 Intermediate layer in dorsal thalamus
	 Lemniscal decussation
	 Lower limb nerves (femoral, obturator, sciatic, common peroneal, and tibial) identifiable
	 Medial accessory olivary nucleus
	 Neurohypophyseal bud
	 Nuclei of forebrain septum
	 Nucleus accumbens
	 Occipital pole of cerebral hemispheres
	 Optic stalk with barely discernible lumen
	 Paraphysis marks dividing line in roof between telencephalon and diencephalon
	 Primitive filum terminale
	 Radial nerve innervates upper limb extensors
	 Rhombomeres no longer distinguishable
	 Subcommissural organ
	 Zona limitans intrathalamica between dorsal and ventral thalami
<b>6 weeks, 6 days</b>	 Cloacal membrane ruptures
<b>7 weeks</b>	 Head rotates
	 Ovaries
	 The heart has four chambers and is nearly complete.
	 The heart rate peaks at 165 to 170 beats per minute.
	 Crown-heel length 2.2 cm
<b>Unit 8: 7 to 8 Weeks</b>	
<b>7 weeks, 1 day</b>	 Facial processes no longer distinguishable




















	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Ovaries full of primitive oogonia, intermediate pregranulosa cells, and mesenchyme</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Testes with short straight tubules</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Upper limbs with slightly flexed elbows</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Diaphragm: Central tendon</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: darkgreen;">■</span> Renal vesicles with S-shaped lumina</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Submandibular gland: Solid epithelial ducts enlarge and begin to branch</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Adenohypophysis with new capillaries on rostral surface</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Scalp vascular plexus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cochlear duct tip growing horizontally</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Lens cavity completely filled</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Optic commissure</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Optic fibers extend to optic chiasma</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cornea with three layers</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Brain: Inferior colliculus (in mesencephalon)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebral hemispheres expand beyond lamina terminalis</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Cerebral hemispheres extend over two-thirds of diencephalon</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Interpeduncular groove</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Medial septal nucleus</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Nigrostriatal fibers</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Nucleus of diagonal band</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Sacrocaudal spinal cord formation (secondary neurulation) complete</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Sensory pathways: Cuneate and gracile decussating fibers</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Septum verum</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: blue;">■</span> Spinothalamic tract</li> </ul>
<b>7 weeks, 1 day - 8 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Stomach: Folds in stomach wall</li> </ul>
<b>7 weeks, 2 days</b>	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Arteries and veins of heart complete</li> </ul>
<b>7 weeks, 3 days</b>	<ul style="list-style-type: none"> <li><span style="color: pink;">■</span> Volar pads begin to emerge on fingertips</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Chondrocranium with dorsum sellae and hypophysial fossa</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Dens (of second cervical vertebrae)</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Sternoclavicular joint and manubrium</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Trachea: Thyroid cartilage</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: grey;">■</span> Wrists slightly flexed</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Gluteus medius and gluteus minimus muscles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Iliacus muscles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Mylohyoid and infrahyoid muscles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: magenta;">■</span> Orbicularis oculi muscles</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Submandibular gland: Solid ducts with definitive branches</li> </ul>
	<ul style="list-style-type: none"> <li><span style="color: red;">■</span> Anterior and posterior choroid arteries</li> </ul>











	<span style="color: red;">■</span> Left superior vena cava disappears (Stages 21-23)
	<span style="color: red;">■</span> Scalp vascular plexus moving toward vertex
	<span style="color: yellow;">■</span> Cornea: Substantia propria layer
	<span style="color: yellow;">■</span> Fibers of optic nerve reach brain
	<span style="color: yellow;">■</span> Eyelids growing rapidly
	<span style="color: blue;">■</span> Anterior and inferior horns of lateral ventricle
	<span style="color: blue;">■</span> Brain: Insula within cerebral hemisphere
	<span style="color: blue;">■</span> C-shaped lateral ventricle
	<span style="color: blue;">■</span> Cerebral hemispheres cover 75% of diencephalon
	<span style="color: blue;">■</span> Cerebral hemispheres cover more than half of diencephalon
	<span style="color: blue;">■</span> Cortical plate within primordial plexiform layer
	<span style="color: blue;">■</span> Glial and neurilemmal (Schwann) cells within cranial nerves
	<span style="color: blue;">■</span> Globus pallidus internus
	<span style="color: blue;">■</span> Internal fiber layer of cerebellum
	<span style="color: blue;">■</span> Lateral olfactory tract
	<span style="color: blue;">■</span> Primordium of dentate nucleus
	<span style="color: blue;">■</span> Pyramidal cells in hippocampus
	<span style="color: blue;">■</span> Subthalamic nucleus proper, entopeduncular nucleus, and globus pallidus externus within subthalamus
	<span style="color: blue;">■</span> Sulcus transversus rhombencephali
	<span style="color: blue;">■</span> Ventral part of lateral geniculate body
<b>7½ weeks</b>	<span style="color: pink;">■</span> Fingertips thicken
	<span style="color: pink;">■</span> Plantar pads toes
	<span style="color: red;">■</span> EKG pattern similar to adult
<b>7 weeks, 5 days</b>	<span style="color: grey;">■</span> Endolymphatic and jugular foramina
	<span style="color: grey;">■</span> Hands can reach one another and fingers can overlap
	<span style="color: grey;">■</span> Optic foramen, foramen rotundum, internal acoustic foramen
	<span style="color: grey;">■</span> Osteoblasts emerge
	<span style="color: grey;">■</span> Pelvis: Obturator foramen
	<span style="color: magenta;">■</span> Obturator internus muscles
	<span style="color: magenta;">■</span> Rectus femoris muscle
	<span style="color: green;">■</span> Large glomeruli present within metanephros
	<span style="color: purple;">■</span> Submandibular gland: Secondary branching with lumen formation starting at oral end of duct
	<span style="color: orange;">■</span> Costodiaphragmatic recess of pleural cavity
	<span style="color: red;">■</span> Chordae tendineae (Stages 22 and 23)
	<span style="color: red;">■</span> Intradural veins (sinuses)
	<span style="color: red;">■</span> Scalp vascular plexus 75% of the way to the vertex
	<span style="color: yellow;">■</span> Cochlear duct's second loop growing upward
	<span style="color: yellow;">■</span> Scleral condensation
	<span style="color: yellow;">■</span> Tragus and antitragus taking shape
	<span style="color: yellow;">■</span> Eyelids continue growing rapidly over the surface of the cornea

	 Optic nerve acquires a sheath
	 Brain: Claustrum
	 Brain: Cortical plate within cerebral hemispheres
	 Brain: Internal capsule with connections to epithalamus, dorsal thalamus, and mesencephalon
	 Brain: Putamen
	 Cerebral hemispheres cover 75% of diencephalon
	 Commissural plate thickens
	 Cortical plate expanding rapidly
	 Folds in roof of third ventricle
	 Nerve fibers between neopallial subplate and internal capsule
	 Thalamocortical fibers
<b>8 weeks</b>	 Ductus deferens
	 Interstitial cells forming within testis
	 Testicular tubules
	 Male embryos are making testosterone already!
	 Anterior inferior iliac spine
	 Costal cartilage
	 Enamel organ
	 Femur: Head and acetabular fossa
	 Glenoid fossa
	 Greater trochanter
	 Head of humerus
	 Inguinal ligament
	 Joint development: Cavitation underway in hip, knee, and ankle (in some embryos)
	 Joint development: Cavitation underway in shoulder, elbow, and wrist (in some embryos)
	 Nucleus pulposus (from notochord)
	 Ossification underway in scapula and distal phalanges in some embryos
	 Pubic symphysis
	 Scapular spine and notch
	 Skull: Foramen magnum (wide)
	 Skull: Ossification underway in some embryos
	 Superior and inferior pubic rami
	 Ulna: Styloid process and olecranon
	 Vertebrae cartilaginous (33 or 34 in number)
	 Anterior digastric muscles
	 Depressor anguli oris muscle
	 Esophagus: Longitudinal muscles
	 Obliquus superior capitis muscle
	 Obturator externus, gluteus maximus, and hamstring muscles
	 Posterior belly of the digastric muscle









	<span style="color: #e91e63;">■</span> Psoas tendon
	<span style="color: #e91e63;">■</span> Rectus sheath with anterior and posterior lamina
	<span style="color: #e91e63;">■</span> Temporal and lateral pterygoid muscles
	<span style="color: #e91e63;">■</span> Zygomaticus major muscle
	<span style="color: #437428;">■</span> Kidneys at level of first three lumbar vertebrae
	<span style="color: #437428;">■</span> Metanephros: Numerous large glomeruli
	<span style="color: #437428;">■</span> Metanephros: Secretory tubules elongating and becoming convoluted
	<span style="color: #437428;">■</span> Sinusal tubercle
	<span style="color: #437428;">■</span> Urethra
	<span style="color: #9c27b0;">■</span> Gastrosplenic ligament
	<span style="color: #9c27b0;">■</span> Nerves reaching intestinal loop
	<span style="color: #9c27b0;">■</span> Submandibular gland: Lumen present in terminal portions of duct
	<span style="color: #9c27b0;">■</span> Submandibular gland: Mesodermal sheath surrounds gland
	<span style="color: #9c27b0;">■</span> Unfused uvula (edge of unfused palatine shelf) and secondary palate
	<span style="color: #ffb74d;">■</span> Pseudoglandular stage begins
	<span style="color: #f44336;">■</span> Azygos vein
	<span style="color: #f44336;">■</span> Blood supply to the brain closely resembles adult pattern
	<span style="color: #f44336;">■</span> Hemiazygos veins
	<span style="color: #f44336;">■</span> Inferior epigastric artery
	<span style="color: #f44336;">■</span> Inferior vena cava valve at junction of right atrium
	<span style="color: #f44336;">■</span> Scalp vascular plexus nearing vertex
	<span style="color: #f44336;">■</span> Submandibular glands: Angiogenesis begins around epithelial tree (ducts)
	<span style="color: #f44336;">■</span> Superior sagittal sinus
	<span style="color: #fff9c4;">■</span> Cochlear duct's 2.5 coils nearly complete
	<span style="color: #fff9c4;">■</span> Cranial nerve distribution mimics adult pattern
	<span style="color: #fff9c4;">■</span> Eye: Secondary vitreous body
	<span style="color: #fff9c4;">■</span> Lens: Secondary lens fibers emerging
	<span style="color: #fff9c4;">■</span> Retina: Eight layers present
	<span style="color: #fff9c4;">■</span> Retina: Four of the ten adult layers present
	<span style="color: #fff9c4;">■</span> Tympanic membrane
	<span style="color: #c8e6c9;">■</span> Eyelids fusing laterally and medially
	<span style="color: #c8e6c9;">■</span> Optic tract reaches ventral portion of lateral geniculate body
	<span style="color: #0070c0;">■</span> "The rhombencephalon...presents striking resemblance to that of the newborn."
	<span style="color: #0070c0;">■</span> Amygdala area
	<span style="color: #0070c0;">■</span> Brain represents 43% of embryo
	<span style="color: #0070c0;">■</span> Brain: Caudate nucleus and putamen within corpus striatum
	<span style="color: #0070c0;">■</span> Cerebellar commissures
	<span style="color: #0070c0;">■</span> Cerebellum with external germinal layer

	 Cerebral hemispheres cover lateral portion of diencephalon
	 Choroid plexus now lobular
	 Cortical plate covers nearly all of neopallial surface
	 Dura lines entire vertebral canal
	 Fasciculus cuneatus and fasciculus gracilis form the decussation of the medial lemnisci
	 Greater palatine nerve
	 Grey and white matter
	 Hippocampus reaches temporal pole
	 Inferior and superior cerebellar peduncles
	 Most cisterns present
	 Principal nucleus of inferior olivary nuclei
	 Pyramidal decussations
	 Right- and left-handedness emerges
	 Suprapineal recess
	 Suprascapular nerve
	 Vermis of cerebellum
	 Crown-heel length 4.3 cm
	 Embryonic Period Ends
	 The 8-week embryo has formed more than 4,000 permanent body parts.





**Unit 9: 8 to 9 Weeks**

<b>8 weeks, 1 day</b>	 Humerus: Bone marrow replaces cartilage
<b>8 weeks, 1 day - 9 weeks</b>	 Anal canal patent
<b>8½ weeks</b>	 Eyelids completely fused
	 Neurons synapse in cerebral cortex (marginal zone)
<b>9 weeks</b>	 Drinking fluid is becoming routine
	 Sucking the thumb
	 External capsule
	 Olivary nucleus with five components

**Unit 10: 9 to 10 Weeks**

<b>9 weeks - 10 weeks</b>	 Larynx recanalizes
<b>10 weeks</b>	 Palatine tonsils
	 Three-layered epidermis
	 Now, all the bones are getting harder
	 Tooth buds (secondary teeth)
	 Physiologic herniation ends
	 Commissure of the fornix
	 Crown-heel length 7.5 cm

**Unit 11: 10 to 11 Weeks**

<b>10 weeks - 12 weeks</b>	 Langerhans cells enter epidermis
<b>10½ weeks</b>	 Volar and plantar pads regress
<b>11 weeks</b>	 Intermediate layer
	 Intestines absorb water & glucose

	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Small intestine lined with villi</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length</li> </ul>
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**Unit 12: 11 to 12 Weeks**

<b>12 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Sebaceous glands</li> <li><span style="color: cyan;">■</span> Many different hormones are present in pituitary gland</li> <li><span style="color: magenta;">■</span> All facial muscles in final positions</li> <li><span style="color: purple;">■</span> Bowel movements</li> <li><span style="color: purple;">■</span> Liver: Bile production begins</li> <li><span style="color: blue;">■</span> Corpus callosum</li> <li><span style="color: blue;">■</span> Crura cerebri</li> <li><span style="color: blue;">■</span> Myelination in spinal cord</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 12 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Head circumference 10 cm</li> </ul>
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**Unit 13: 3 to 4 Months**

<b>13 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Teeth are growing</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 15 cm</li> </ul>
<b>14 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Girls move their jaws more than the boys do</li> <li><span style="color: blue;">■</span> Cerebellum resembles adult structure</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 17 cm</li> </ul>
<b>15 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 19.5 cm</li> </ul>
<b>16 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: green;">■</span> Quickening</li> <li><span style="color: purple;">■</span> Colon lined with villi</li> <li><span style="color: orange;">■</span> Canalicular stage begins</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 21 cm</li> </ul>

**Unit 14: 4 to 5 Months**

<b>18 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Apocrine sweat glands</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Sweat glands</li> </ul>
<b>19 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Melanin production</li> <li><span style="color: blue;">■</span> Sulci on surface of cerebral hemispheres</li> </ul>
<b>20 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Peyer's patches</li> <li><span style="color: orange;">■</span> Surfactant production (low levels)</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 28 cm</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Head circumference 20 cm</li> </ul>

**Unit 15: 5 to 6 Months**

<b>21 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Periderm disappears</li> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Stratum corneum</li> </ul>
<b>22 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: yellow;">■</span> Cornea structure</li> <li><span style="color: blue;">■</span> Behavioral states</li> </ul>
<b>23 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Brain weight 100 grams</li> </ul>
<b>24 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 34.5 cm</li> </ul>

**Unit 16: 6 to 7 Months**

<b>25 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: purple;">■</span> Intestinal lining contains all adult cell types</li> </ul>
<b>26 weeks</b>	<ul style="list-style-type: none"> <li><span style="color: orange;">■</span> Terminal sac stage begins</li> </ul>
<b>28 weeks</b>	<ul style="list-style-type: none"> <li><span style="border: 1px solid black; display: inline-block; width: 15px; height: 10px;"></span> Crown-heel length 39.5 cm</li> </ul>

Unit 17: 7 to 8 Months	
30 weeks	<input type="checkbox"/> Head circumference 30 cm
32 weeks	<input checked="" type="checkbox"/> Esophagus: Lower esophagus muscles functional
	<input type="checkbox"/> Crown-heel length 45 cm
Unit 18: 8 to 9 Months	
36 weeks	<input checked="" type="checkbox"/> Surfactant production accelerates
	<input type="checkbox"/> Brain weight 300 grams
	<input type="checkbox"/> Crown-heel length 48.5 cm
Unit 19: 9 Months to Birth	
37 weeks	<input checked="" type="checkbox"/> Fetus drinks an estimated 15 oz (or 450cc) of amniotic fluid/day
38 weeks	<input checked="" type="checkbox"/> Heart beats 54 million times before birth
	<input checked="" type="checkbox"/> Spinal cord ends at third lumbar vertebrae
	<input type="checkbox"/> Brain weight 350 grams
	<input type="checkbox"/> Crown-heel length 50 cm
	<input type="checkbox"/> Head circumference 35 cm
	<input type="checkbox"/> Time to be born!
66 weeks, 5 days	<input checked="" type="checkbox"/> Premuscle cells form sheets representing muscles of facial expression