Week 1: Animal Diversity

Objective	Related information

Define the terms phylogeny and ontogeny	• Phylogeny
	  ○ Branch of biology that deals with phylogenesis
	  ▪ Phylogenesis
	  • The evolutionary development and diversification of a species or group of organisms, or of a particular feature of an organism.
	  ○ Based on shared characteristics and evolutionary history
	  ○ Morphological, developmental, molecular, etc.
	  ○ Points of agreement

List the anatomical features that define vertebrates	• Fate of the blastopore
	  ○ Anus develops from the blastopore
	  ○ Mouth is secondary
	• Symmetry
	  ○ Vertebrates are bilaterally symmetrical
	• Coelom
	  ○ Coelom (cavity) formation
	  ▪ Enterocoelous
	  • Folds of archenteron form coelom
	  ○ Vertebrates are coelomates
	  ▪ Cavity lined with mesoderm
	  ▪ Allows for complex internal organs
	• Germ layers
	  ○ Vertebrates have 3 germ layers
	  ▪ Ectoderm
	  • Epidermis
	  • Nervous system (neural tube)
	  ▪ Mesoderm
	  • Muscle
	  • Connective tissue
	  • Heart
	  • Kidneys
	  • Gonads
	  ▪ Endoderm
	  • Epithelial linings
	  • Glands
	• Chordate characteristics
	  ○ Four chordate developmental characteristics (beyond 8 cell stage)
	  ▪ Notochord
	  • Skeletal
	  ▪ Dorsal hollow nerve chord
	  • Out of pouches from ectoderm
	  • Nervous system
	  ▪ Pharyngeal slits
	  • Ancestral gills
	  • Feeding→ breathing → other structures
	  ▪ Post anal tail
	  • Locomotion

<table>
<tr><td></td><td>
Tail extends past of the end of the digestive tracts
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<tr><td>Explain the difference between somatic and visceral components of the body</td><td>

Somatic components of the body

Parts of the body that make up the periphery

Skin, skeletal muscle and sensory organs
It is the part of the body that is in contact with the environments surrounding the body

<table>
<tr><th>Attribute</th><th>Somatic System</th><th>Visceral System</th></tr>
<tr><td>Embryological origin of tissue</td><td>“Body wall”: somatic (parietal) mesoderm (dermatome, myotome)</td><td>“Organs”: splanchnic (visceral) mesoderm, endoderm</td></tr>
<tr><td>Example in adult tissues</td><td>Dermis of skin
Skeletal muscle
Connective tissue</td><td>Glands
Cardiac muscle
Smooth muscle</td></tr>
<tr><td>Perception</td><td>Conscious
Voluntary</td><td>Unconscious
Involuntary</td></tr>
</table>

Visceral components of the body

Refers to internal organs in the body
This includes those around the chest, such as the heart and lungs, and those within the abdomen such as the liver, intestines and pancreas
The visceral area may be said to be around the gut in a figurative sense

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