

**Animalia II: The Deuterostomes**

I. Phylum Echinodermata

Spiny skin

Sea stars, sea urchins, sand dollars

5 part body plan – radial symmetry in the adult (bilateral symmetry in larvae)

Water vascular system

II. Phylum Chordata

A. Common features

Notochord

Dorsal hollow nerve cord

Pharyngeal slits

Post-anal tail

B. Two major groupings

Invertebrate

Vertebrate

C. Invertebrate Chordates

Lancelets – Subphylum Cephalochordata

Notochord extends to front of head

Tunicates – Subphylum Urochordata

Notochord shortened in larvae; absent in adults

Hagfishes – craniates but not vertebrate

D. Vertebrate Chordates

Lampreys – jawless vertebrates

Vertebrates with jaws

Cartilaginous fishes: Class Chondrichthyes

Vertebrates with jaws and swim bladders or lungs

Bony Fishes

Ray-finned fishes

Lobe-finned fishes

Lungfish

Tetrapods

Amphibians

Moist skin

3-chambered heart

Amniotes

Reptiles – not a clade!

Dry skin

Amniotic egg

Ectotherm

BIO 102 General Biology  
Lecture Outline

Birds

Feathers

Calcereous amniotic egg

Endotherm

Mammals

Hair

Mammary glands

Teeth

Endotherm

Orders:

Monotremes

Marsupials

Placental mammals