

### Homework 3

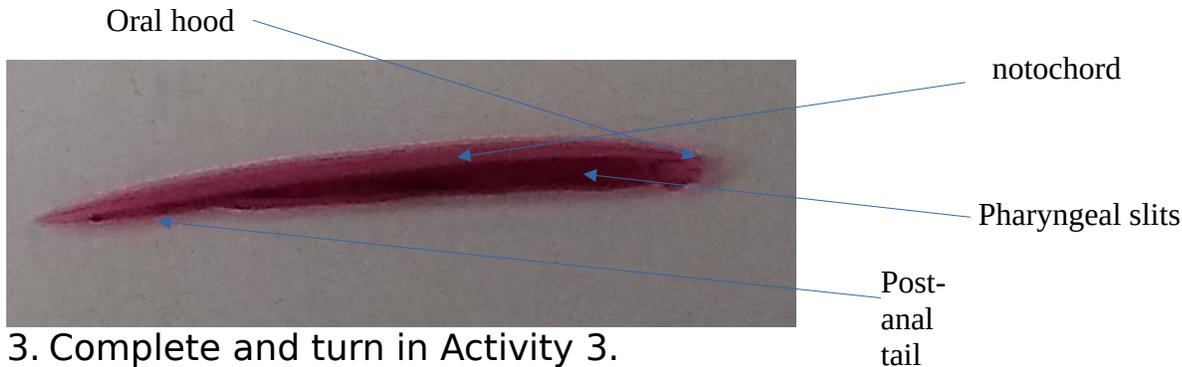
#### 1. Complete and turn in the table for Activity 1.

1. Examine the specimens and describe them in the table below.

Name of Specimen	Description
seastar	A star like structure with points on its arms and rough looking skin.
seaurchin	A mass of spikes all protruding outwards.
Brittle sea star	A star like structure with points on its arms and rough looking skin. Much thinner arms.
Sand dollar	A flat decorated disc.
Seacucumber 1	A tubal structure that resembles a cucumber.
Seacucumber 2	A tubal structure that resembles a cucumber. Much bigger but not too much longer than seacucumber 1.

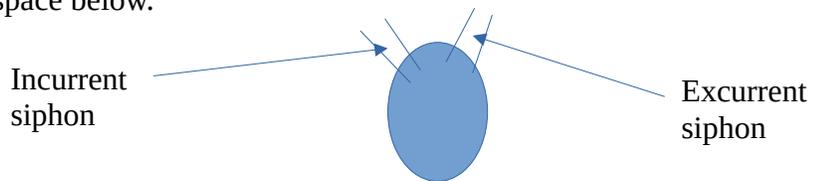
#### 2. Complete and turn in Activity 2.

1. Label the oral hood, dorsal hollow nerve cord, notochord, pharyngeal slits, and the post-anal tail on the picture below.



#### 3. Complete and turn in Activity 3.

1. Examine the specimens and sketch it in the space below.  
 2. Label the incurrent and excurrent siphons.



#### 4. Complete and turn in the table for Activity 4.

1. Complete the following chart.

Name of Specimen	Type of Specimen: Cartilaginous Fish, Ray-finned Fish, Amphibian, Reptile, or Mammal
rat	mammal
toad	<b>Amphibian</b>

Name of Specimen	Type of Specimen: Cartilaginous Fish, Ray-finned Fish, Amphibian, Reptile, or Mammal
	<b>Cartilaginous Fish</b>
lampry	
perch	rayfin
turtle	reptile
seahorse	rayfin

5. Complete and turn in the table for Activity 5.

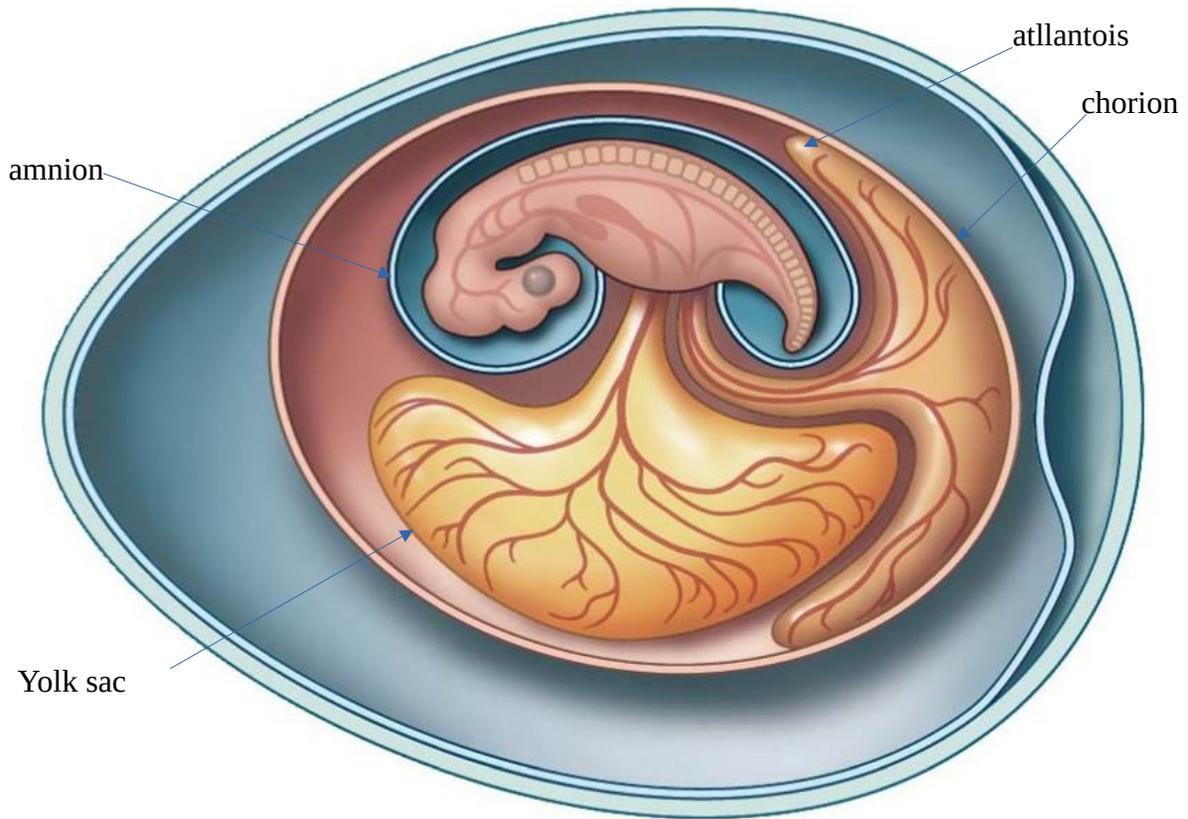
1. Examine the vertebrate specimens and complete the table below

Characteristic	Lamprey	Perch	Frog	Lizard	Rat
Type of symmetry	bilateral	bilateral	bilateral	bilateral	bilateral
Outer covering: smooth skin, scales, or hair	scales	scales	Smooth skin	scales	hair
Type of appendage: fins or limbs with digits	fins	fins	Limbs with digits	Limbs with digits	Limbs with digits
Paired appendages: present or absent	absent	present	present	present	present
Jaws: present or absent	absent	present	present	present	present
Respiratory organs: bare gills, gills covered by an operculum, or lungs	Bare gills	Gills covered by an operculum	lungs	lungs	lungs
Defined neck: present or absent	absent	absent	absent	present	present

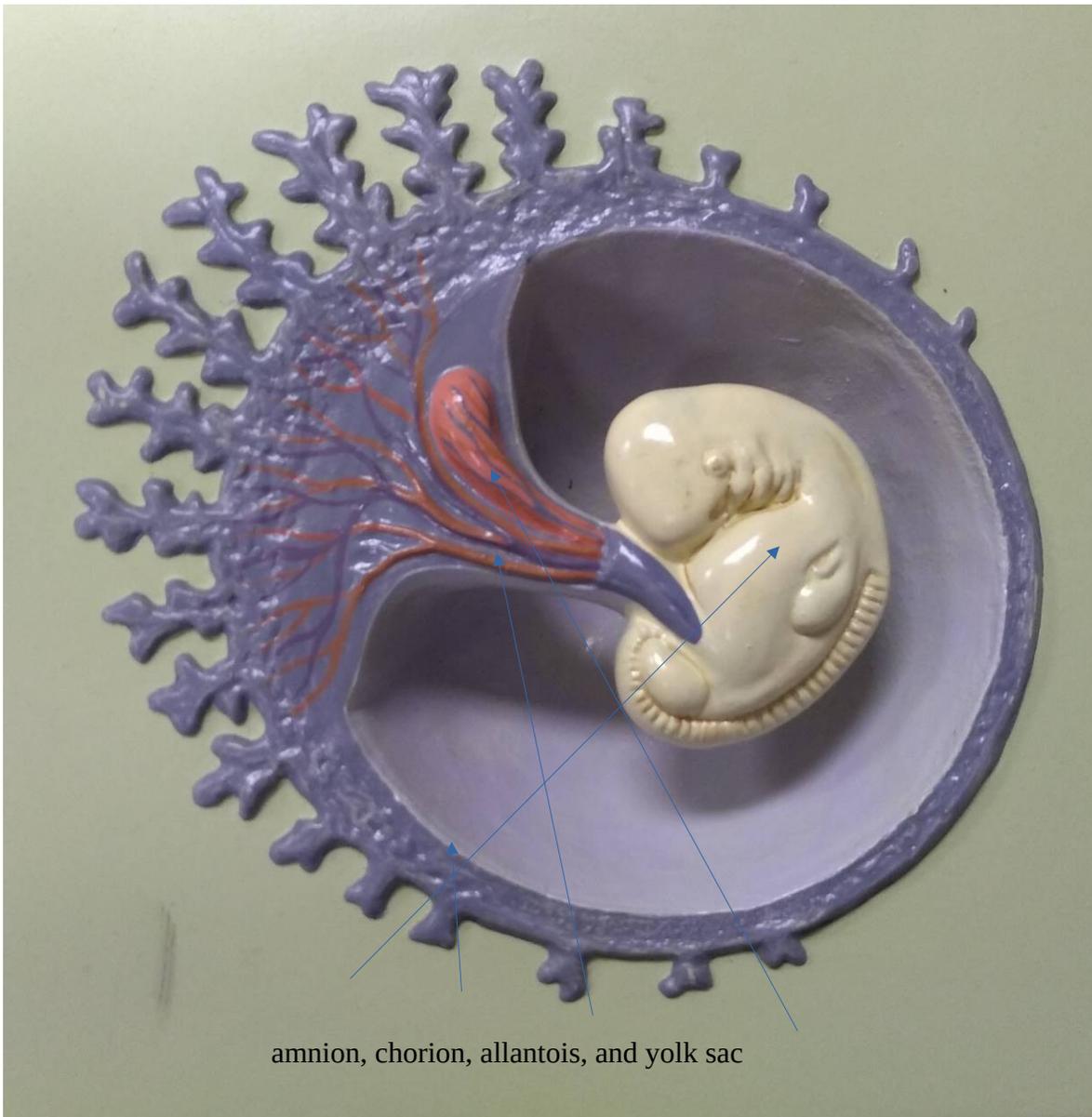
Characteristic	Lamprey	Perch	Frog	Lizard	Rat
Urogenital openings: cloaca* or separate openings	cloaca	cloaca	cloaca	cloaca	urogenital

6. Complete and turn in Activity 6.

1. Label the amnion, chorion, allantois, and yolk sac in the picture below.



2. Label the amnion, chorion, allantois, and yolk sac in the picture of the human embryo model below.



7. Complete and turn in the Review Questions.

**Review Questions**

1. Complete the following chart.

Type of Vertebrate	Vertebrae	Jaws	Bones	Lungs or Lung Derivatives	Tetrapods	Amniotic eggs
Cyclostomes	yes	no	no	no	no	no
Chondrichthyes	yes	yes	no	yes	no	no
Actinopterygii	yes	yes	yes	no	no	no

Type of Vertebrate	Vertebrae	Jaws	Bones	Lungs or Lung Derivatives	Tetrapods	Amniotic eggs
Actinistia	yes	yes	yes	yes	no	no
Dipnoi	yes	yes	yes	yes	no	no
Amphibians	yes	yes	yes	yes	yes	no
Reptiles	yes	yes	yes	yes	yes	yes
Mammals	yes	yes	yes	yes	yes	yes

2. Describe the function of each of the extraembryonic membranes in both reptiles and eutherian mammals in the chart below.

Extraembryonic Membrane	Reptiles	Eutherian Mammals
Chorion	Protection and gas exchange	Makes placenta for nutrient and gas exchange
Allantois	Stores waste and gas exchange	Makes umbilical cord and placenta. Waste and nutrient exchange
Yolk sac	Initial nutrients before placenta develops	Initial nutrients before placenta develops
Amnion	Protects from physical damage with fluid cushioning	Protects from physical damage with fluid cushioning

3. List the four characteristics that are unique to chordates.  
Post anal tail, notochord, dorsal hollow nerve cord, and pharyngeal slits.

4. Describe the characteristics of echinoderms.  
Radial symmetry, endoskeleton, water vascular system, tube feet, and spines.

5. Describe the characteristics of cephalochordates and urochordates.

Fish like body | Sac like body

Dorsal hollow nerve cord

pharyngeal slits

post anal tail | no post anal tail