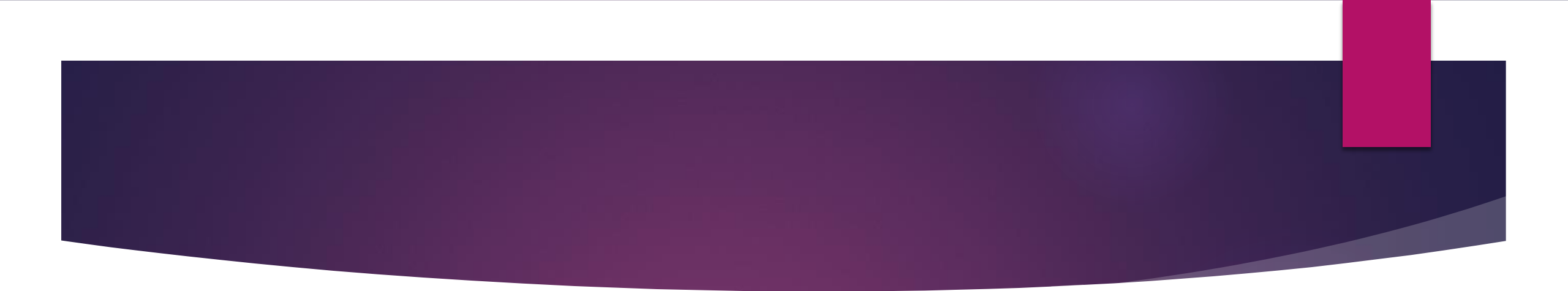


Ministry of Higher Education
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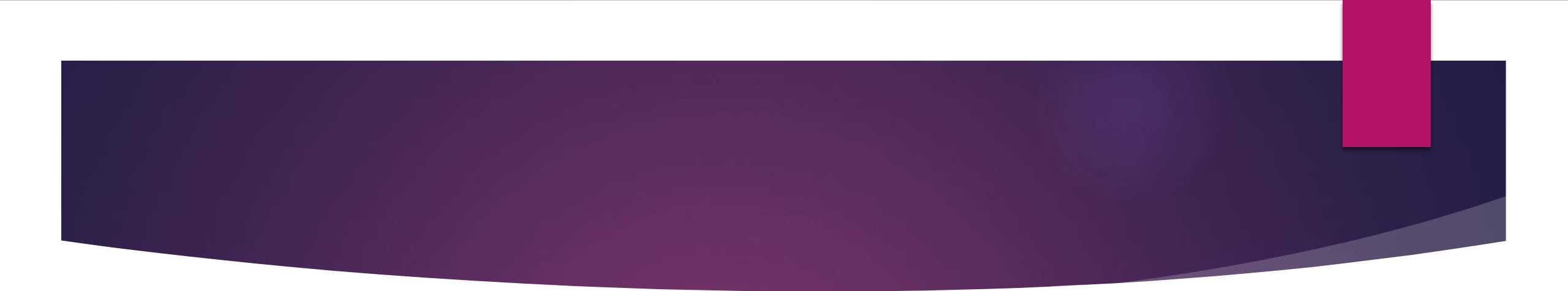


Comparative Anatomy Grade 4 (2018-2019) (lab 3)



Class :Osteichthyes
Subclass :Sarcopterygians
Order :Dipnoi (Lung fish)

Lungfish are best known for retaining characteristics primitive within the Osteichthyes, including the ability to breathe air, and structures primitive within Sarcopterygii, including the presence of lobed fins with a well-developed internal skeleton.



The African Lungfish (*Protopterus aethiopicus*) and the Australian Lungfish (*Neoceratodus forsteri*) are both ancient eel-like fish, with an elongated body and a paddle tail.

African Lung Fish	Australian Lung Fish
<p>The African Lungfish has a pair of lungs</p>	<p>Australian Lungfish has one single lung.</p>
<p>The African Lungfish loses the function of its gills and uses only its lungs.</p>	<p>The Australian Lungfish retains the function of its gills and only uses its lungs when there is not enough water to breathe (such as during droughts).</p>
<p>The African Lungfish can live out of water for 3-4 years under the mud in a sleep state called aestivation.</p>	<p>The Australian Lungfish can live out of water only for several days if its body is kept moist. It cannot survive complete water depletion.</p>
<p>The African Lungfish grows to 180 centimeters (72 inches)</p>	<p>Australian Lungfish grows to about 150 centimeters (57 inches) in length.</p>
<p>The African Lungfish is an obligate air breather (restricted to one function – i.e. the use of its two lungs. The adult African Lungfish always breathes with its lungs, and not with its gills.</p>	<p>The Australian Lungfish is a facultative air breather, only breathing air with its one lung when oxygen in the water is not sufficient. It is the only facultative air breathing lungfish in the world. The adult Australian Lungfish can breathe with its gills and with its lung.</p>

AUSTERILAN LUNGFISH



Africans Lung Fish



Characteristics of American Lung Fish

- (*Lepidosiren paradoxa*) is the single species of lungfish found in swamps and slow-moving waters of the Amazon, Paraguay, and lower Paraná River basins in South America.
- Notable as an obligate air-breather
- Common names includes American-mud, scaly salamander fish, In Portuguese, it is also known as *piramboia*
- The immature lungfish is spotted with gold on a black background; in the adult, this fades to a brown or gray color
- Its tooth-bearing premaxillary and maxillary bones are fused as in all Dipnoi.

- Has an elongated, almost eel-like body. It may reach a length of 125 cm (4.10 ft)
- The pectoral fins are thin and thread-like while the pelvic fins are somewhat larger.
- The fins are connected to the shoulder by a single bone, which is a marked difference from most fish, whose fins usually have at least four bones at their base
- The gills are greatly reduced and essentially non-functional in the adults



Characteristics of Tetrapods

- ▶ a superclass of animals that includes all limbed vertebrates (backboned animals) constituting the classes Amphibia (amphibians), Reptilia (reptiles), Aves (birds), Mammalia (mammals)
- ▶ all tetrapods are essentially “limbed fish,” because their ultimate vertebrate ancestor is a fish
- ▶ All tetrapods share a variety of morphological features. These include a pair of bones (the ulna and radius and the tibia and fibula) in the epipodial segments of the forelimbs and hind limbs, digits on the end of each limb, an oval window (fenestra ovalis) in the skull opening into the middle ear, a stapes (ear bone), and several other skeletal features.

Amphibians

- ▶ All amphibians are cold blooded and will spend the winter months in cooler climates resting ,buried in the mud or leaf litters
- ▶ Amphibians lay their eggs in the water
- ▶ They have a moist skin
- ▶ As they grow their body changes to suit life on land through most amphibians are never far from wetland environment. They will return to water to mate and lay eggs .
- ▶ Newly hatched amphibians live in the water breath oxygen through gills and develop lungs over time



Kingdom: Animalia

Phylum :Chordata

Group:Vertebrata

Super class :Gnathostomata

Class: Amphibian

Subclass :Lissamphibian

3 Orders of Modern Amphibians

(about 4,500 species)

1. Anura - includes
frogs and toads

2. Caudata -
salamanders and
newts

3. Gymnophiona (Apoda)
includes caecilians
(legless tropical
amphibians) (worm-like)

Class Amphibia

Order Caudata
(salamanders)



Order Anura
(frogs and toads)



Order Gymnophiona
(caecilians)



Characteristics of order: Caudata

- ▶ Bearing a tail
- ▶ Have four limbs usually of equal size. A tail and elongated body
- ▶ Skin is smooth and glandular with mucous and poisons glands
- ▶ Found primarily under leaf litters , in soil, or may be fully aquatic

Order :Caudata

Example :Salamander



Order: Anura (frog and toads)

- ▶ 3450 species
- ▶ All have tailed larval stage, but are tailless as an adult non retain larval characteristics as adult
- ▶ 21 families
- ▶ Family : Ranidae (Larger frog of north America)
- ▶ Family: Hylidae (Tree frogs)
- ▶ Family: Bufonidae (Toads)

Frogs

Toads

slimy, smooth skin

lay eggs in clusters

have teeth in top jaws

bulging eyes

jump

mostly live in water

are amphibians

adults have lungs

have a brain

hatch from eggs

have a heart

the young live in water

have a backbone

dry, warty skin

lay eggs in chains

poison glands behind eyes

have no teeth

walk

live on land

Order: Anura



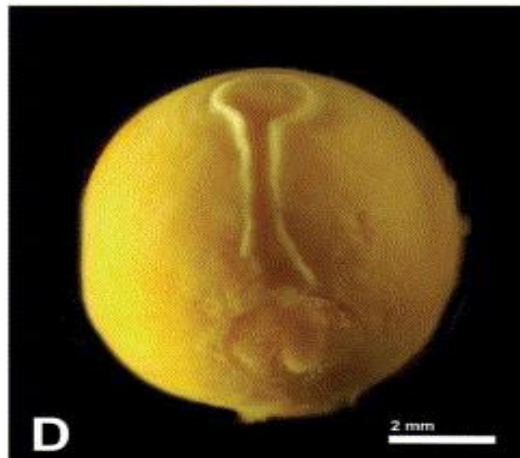
Order: Apoda (Gymnophiona) (example :Caecilian)

- ▶ Limbless (naked snake)
- ▶ Most species are totally blind
- ▶ Mostly borrow or aquatics
- ▶ Carnivorous
- ▶ All thought to have internal fertilization
- ▶ Some lay eggs (Female guards),others develop inside female

Order :Apoda



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ANY QUESTIONS ??????????

