Reptile Lab

Domain: Eukarya  
Supergroup: Unikonta  
Clade: Opisthokonts  
Kingdom: Animalia

Phylum: Chordata – Chordatea

Class: Amphibia – Amphibians
  Order: Urodela - Salamanders
  Order: Anurans – Frogs/Toads
  Order: Apodans - Caecilians
Class: Testudines – Turtles
Class: Sphenodontia – Tuataras
Class: Squamata – Lizards/Snakes
  Lizards
    Family – Agamidae – Old World Lizards
    Family – Anguidae – Glass Lizards
    Family – Chameleoniidae – Chameleons
    Family – Corytophanidae – Helmet Lizards
    Family - Crotaphytidae – Collared Lizards
    Family – Helodermatidae – Gila Monster
    Family – Iguanidae – Iguanids
    Family – Phrynosomatidae – NA Spiny Lizards
    Family – Polychrotidae – Anoles
    Family – Geckkonidae – Geckos
  Snakes
    Family – Boidae – Pythons and Boas
    Family – Colubridae – Colubrids
    Family – Elapidae – Elapids
    Family – Hydrophiidae – Sea Snakes
    Family – Viperidae - Viperids
Class: Crocodilia – Crocodilia

Introduction – Phylum Chordata

Although chordates vary widely in appearance, they are distinguished as a phylum by the presence of four anatomical features that appear sometime during their life time. They exhibit deuterostome development and bilateral symmetry. Chordates only comprise 5% of the animal species but may be the most commonly known phylum. They comprise of both invertebrates and vertebrates. This lab will be looking at the vertebrate animals that moved onto land. We will explore the living amphibian and reptile clades.

Station 1 – Tetrapods

1. What were three physical differences tetrapods evolved to accommodate their new way of life when they emerged onto land?

2. When do tetrapods appear in the fossil record? What was the name of the extinct group of lungfish that lead to the tetrapods?

3. What type of habitat did the first tetrapods evolve in?
Station 2 – Tetrapods – General Characteristics – Oxygen Content

1. To breath air, the lung developed from what?

2. What does a double circulatory system allow for?

3. Bony fish have 4 external nares (2 on each side) which allow water to run across the olfactory tissue. What do tetrapods have? What does this allow them to do?

Station 3 – Tetrapods – General Characteristics – Body Density

1. The limbs developed in shallow water. How much less buoyant is air over water? What are the homologous structures between fins and limbs?

2. In fish, the pectoral girdle is attached to the skull. What did tetrapods develop? What happened to the pelvic girdle to increase the force that can be generated by the hind legs?

3. What did the vertebrae develop to help support the spine in the absence of buoyant water? What did they also develop to protect the lungs?

4. The skull has been shortened and the snout elongated. The head separated from the body by a neck to allow for what? Why was a second vertebrae added?

Station 4 – Tetrapods – General Characteristics – Temperature Regulation

1. What is the current theory of why tetrapods evolved?

2. What does an increase of 10 degrees Celsius allow for?

Station 5 – Evolutionary History

1. What is the name of the fossil called a “Fishapod”?

2. What fish characteristics does it have?

3. What tetrapod characteristics does it have?
Station 6 – Class: Amphibians

1. What does the word “amphibian” mean?

2. What type of egg do they have?

3. What type of skin do they have? What does allow for?

4. When did amphibians appear in the fossil record? When did modern amphibian fossils appear?

5. What are amphibians found?

Station 7 – Class: Amphibians – General Characteristics

1. What is the difference between poisonous and venomous?

2. What does poisonous mean?

3. What does venomous mean?

Station 8 – Order: Urodela

1. What does the word Urodela mean? What does this clade consist of?

2. How are their legs positioned?

3. What do they eat?

4. When did salamanders appear in the fossil record?

5. Where are salamanders found?
Station 9 – California Newt

1. How is a newt different than a salamander? What is a terrestrial juvenile called?

2. Are California Newts venomous or poisonous? What is the name of the toxin they produce? How harmful is it?

3. Where are they located?

4. What type of habitat are they found in?

Station 10 – Ensatina

1. What is unique about their breeding locations?

2. Where are they located?

3. What type of habitat are they found in?

Station 11 – California Slender Salamander

1. What type of salamander are they? How does this species breathe?

2. What are they considered due to their limited range?

3. Where are they primarily located?

4. What type of habitat can they be found in?
Station 12 – Order Anura

1. What does the word anura mean? What does this clade consist of?

2. When does the oldest “protofrog” appear? When does the molecular clock date them?

3. Where is the greatest concentration of species diversity of anurans?

Station 13 – Anura – General Characteristics

1. What does the term “frog” usually refer to?

2. What does the term “toad” usually refer to?

Station 14 – Other Anura – General Characteristics – Defense

1. What is the toxic substance on frogs called?

2. What is the name of the poison glans on toads?

3. What do poison dart frogs secrete? Where do they get this poison? What is the term for them advertising their toxicity?

Station 15 – Order Anura – General Characteristics – Features

1. Where is the tongue attached? What acts like an eardrum? What is the name of the transparent membrane?

2. Note the skeleton and the preserved specimen of the frog. What are the three functions of the skull?

3. Is the skeleton as flexible as the fish skeleton? Why?

4. What is the function of the pectoral girdle?

5. What is the function of the pelvic girdle? Do frogs have ribs?
### Station 16 - CLASS AMPHIBIA – INTERNAL FEATURES

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<td>Reproductive System</td>
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### Station 17 – Animal Sounds – Frogs
This Week you are responsible for the following animals calls:

- California Tree frog
- Pacific Tree Frog
- California Toad
- American Bullfrog
- Western Spadefoot Toad
Station 18 – Western Spadefoot Toad

1. What type of frog are they similar to?

2. What makes them unique?

3. Where are they located?

4. What type of habitat are they found in?

Station 19 – Red-Spotted Toad

1. What characteristic is used to identify them?

2. Where are they located?

3. What type of habitat are they found in?

Station 20 – California Tree Frog

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

Station 21 – Pacific Tree Frog

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?
Station 22 – American Bullfrog

1. What makes them easy to identify?

2. What is it considered to be? What is the concern?

3. Where are they native to?

4. What type of habitat are they found in?

Station 23 - Amniotes

1. What are amniotes? What group of amniotes are mammals found in? What group of amniotes are reptiles and birds found in?

2. When did the first amniotes appear?

Station 24 – Amniotes – General Characteristics – Amniotic egg

1. What does this egg allow them to do?

Station 25 – Amniotes – General Characteristics – Skull Development

1. What type of skull did the first reptiles have?

2. What type of skull is seen with one temporal opening? What did the opening allow? What did this line evolve into?

3. What type of skull is seen in the “True Reptiles”?
Station 26 – Reptiles

1. When did Reptiles originate?

2. Where are they found?

Station 27 – Reptiles – General Characteristics

1. What are the four Classes that make up the clade Reptiles?

Station 28 – Class Testudines

1. What are they characterized by and what did it develop from?

2. When did they evolve?

3. Where are they found?

Station 26 – Class Testudines

1. In general, what is the difference between a turtle and a tortoise?

2. From a biological perspective, what is a tortoise?

Station 30 - Class Testudines - Turtle Skulls

1. What type of skull are turtles believe to have now?

2. Why do they appear to be an anapsid?
Station 31 – Class Testudines – General Characteristics

1. What is the name of the upper part of the shell? What is the name of the lower part of the shell? What is the name of the horny scales that cover the shell?

2. What do turtles use on the beaks instead of teeth?

3. How do they use their tongues? What can’t they do that other reptiles can?

4. What are the two main turtle lineages?

Station 32 – Green Sea Turtle

1. Where are they located?

2. What are the three habitat types of their life stages?

3. What do they eat?

Station 33 – Leatherback Sea Turtle

1. How are they different than other sea turtles?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?
Station 34 – Desert Tortoise

1. Why can they live in desert areas that exceed 140 degrees Celsius?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 35 – Western Pond Turtle

1. Where are they located?

2. What type of habitat are they found in?

3. What do they eat?

Station 36 – Red-eared Slider

1. What are they known for?

2. Where are they originally from?

3. Why have they spread? What is it outcompeting?

4. What habitat are they found in?

5. What do they eat?
Station 37 – Spiny Soft shelled Turtle

1. Where do they get their name?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat and what do they have to do to swallow?

Station 38 – Mata Mata

1. What does the Mata Mata resemble?

2. Where are they located?

3. What type of habitat are they found in?

4. How does it capture prey? Because of its mouth’s structure, what can’t they do?

Station 39 – Class: Sphenodontia

1. What characteristics make them different from lizards? What is unusual about their “third” eye?

2. What geological time are these “lizards” dated back to?

3. Where are they located?
Station 40 – Class Squamata

1. How is this class distinguished?

2. When do they appear in the fossil record? What does mitochondrial evidence suggest?

3. Where can they be found?

Station 41 – Class: Squamata – General Characteristics

1. What characteristics are found in lizards?

2. What characteristics are found in snakes?

Station 42 – Class: Squamata - Tail Autotomy

1. What is caudal autotomy?

2. How do lizards achieve this?

Station 43 - Family: Agamidae

1. What is the example for this family? What will they do when threatened?

2. How are they unique?

3. Where are they located?
Station 44 - Family: Chameleonidae

1. What chameleon adaptation is made to their toes?

2. What adaptations have been made to their eyes?

3. What adaptations have been made to their tongue?

4. What function does color changing provide them?

5. Where are they located?

Station 45 - Family: Polychrotidae

1. What is their common name? What is the name of the throat fan? What is it used for?

2. What are they often incorrectly called? Why are they called this?

3. Where are they located? Why have the become widespread?

Station 46 - Family: Geckonidae

1. What are they well known for?

2. What do they lack? What do they have instead? How do they keep it clean?

3. Where are they located?
Station 47 - Family: Corytophanidae

1. What is this lizards nickname and how did it get its name?

2. Where are Basilisk Lizards found?

Station 48 - Family: Scincidae

1. What can most skinks do to avoid predators?

2. What is unique about Juvenile Western Skinks?

3. Where are Western Skinks located?

4. What do they eat?

Station 49 - Family: Iguanidae

1. What is this group of lizards main characteristic?

2. What type of lifestyle do they have?

Station 50 – Chuckwalla

1. How do Common Chuckwallas escape from predators?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?
Station 51 – Desert Iguana

1. What is unique about Desert Iguanas thermoregulation?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 52 – Green Iguana

1. Why have they been introduced to other areas?

2. Why are they called a disposable pet?

3. Where are they located?

4. What type of habitat are they found in?

5. What do they eat?

Station 53 – Marine Iguana

1. What does their dark tones allow them to do?

2. Where are they found? Why are they unique today?

3. What do they eat?
Station 54 - Family: Phrynosomatidae

1. What is this family adapted for?

2. Where are they located?

Station 55 – Zebra-tailed Lizards

1. How will they stand at the hottest parts of the day?

2. What will they do when threatened?

3. Where are they located?

4. What habitat are they found in?

5. What do they eat?

Station 56 – Western Fence Lizard

1. What are these lizards also known as?

2. Where are they located

3. What habitat are they found in?

4. What do they eat?
Station 57 – Side-blotched Lizard

1. Where are they located?

2. What habitat are they found in?

3. What do they eat?

Station 58 – Horned Lizard

1. What were they called before?

2. What behavior do some Horned Lizards have for escaping from predators?

3. What do Horned Lizards eat and what adaptations do they have to allow them to do this?

4. What is rain harvesting?

5. Where are they located?

6. What habitat are they found in?

7. What do they eat?
Station 59 - Family: Anguidae – The Southern Alligator Lizard

1. Where are they located?

2. What habitat are they found in?

3. What do they eat?

Station 60 - Family: Anniellidae - California Legless Lizard

1. How can you tell they are not snakes?

2. How is their basking different than other lizards?

3. What habitat are they found in?

4. What do they eat?

Station 61 – Family: Crotaphytidae - Blunt-nosed Leopard Lizard

1. Why is this species disappearing?

2. Where are they located?

3. What do they eat?
Station 62 – Family: Teiidae - Western Whiptail Lizard

1. What sexual behavior are they known for?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat?

Station 63 – Family: Helodermatidae

1. How are their venom glands different then snakes? What do they lack?

2. What is the venom used for? How do they get it into their victims?

3. What are the two venomous lizards in this family?

4. What is the other venomous lizard?

Station 64 - Class: Squamata (Snakes)

1. What do these organisms usually lack?

2. What adaptation is seen in their skulls?

3. What did they probably evolve from and when

4. Where are they located?
Station 65 - Snakes – General Characteristics

1. What is the function of the Jacobsen’s organ?

2. What is the function of the Loreal Pits?

Station 66 – Family Elapsidae

1. What does this family include?

2. What are they characterized by?

3. What type of toxins do they have?

4. Where are they located?

5. How do they hunt?

Station 67 – King Cobra

1. What is this species known for?

2. A typical bite can kill how many people?

3. What does it do when it is confronted?

4. Where are they located?

5. What habitat are they found in?

6. What do they eat?
Station 68 – Taipan

1. What is this species known for?

2. A typical bite can kill how many people?

3. Where are they located?

4. What habitat are they found in?

5. What do they eat?

Station 69 – Sea Snakes

1. What is this species known for?

2. How are they adapted for a life at sea?

3. Where are they located?

4. What habitat are they found in?

5. What do they eat?
Station 70 - Family: Boidae

1. Are they venomous?

2. What large snakes are included in this family?

3. What makes them unique?

4. Where are they located?

5. What do they eat?

Station 71 – Rosy Boa

1. What do they do when they are disturbed?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat?

Station 72 – Family: Colubridae

1. Are they venomous?

2. What makes them unique?

3. When did they show in the fossil record?

4. Where are they found?
Station 73 - Ring-necked Snake

1. Are these snakes venomous?

2. What are these snakes known for?

3. Where are they located?

4. What habitat are they found in?

5. What do they eat?

Station 74 – Coachwhips

1. What are these snakes known for?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat?

Station 75 – Western Shovel-nosed Snake

1. What are these snakes known for?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat?
Station 76 - King Snake

1. Why are these snakes called King snakes?

2. Where are they located?

3. What habitat are they found in?

4. What do they eat?

Station 77 - Gopher Snake

1. What are these snakes mistaken for?

2. How can you tell them apart?

3. Where are they located?

4. What habitat are they found in?

5. What do they eat?

Station 78 - Family: Viperidae

1. What type of fangs do they have? How do they “bite”?

2. Which type of snake is more dangerous?

3. When do they first appear in the fossil record?

4. Where are they located?

5. What two categories is the venom placed in?
Station 79 – Western Diamondback

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 80 – Red Diamond Rattlesnake

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 81 – Speckled Rattlesnake

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?
Station 82 – Western Rattlesnake

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 83 – Sidewinder

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?

Station 84 – Mohave Rattlesnake

1. What makes them unique?

2. Where are they located?

3. What type of habitat are they found in?

4. What do they eat?
Station 85 – Class: Crocodilia

1. What are the four groups of crocodilia?

2. What are they closely related to?

3. When do they appear in the fossil record?

4. Where are they located?

Station 86 – Class: Crocodilia

Be able to identify the four types

1.

2.

3.

4.

Station 87 – Animal Sounds – Reptile - This Week you are also responsible for the following animals calls:

Rattlesnake

Alligator

Baby Alligator