High School Science Virtual Learning

General Biology
Classification: Mammals

May 15, 2020

High School Biology
Lesson: May 15, 2020

Objective/Learning Target:
Students will be able to learn about and explain the classification (binomial nomenclature) of Mammals.

Let's get started:

1. What is one main difference between amphibians and reptiles?

2. What is the phylum (classification) name given to both amphibians and reptiles?

Let's get started: **Answer Key**

1. Amphibians use both lungs and gills, use toxic skin secretions and bit for defense, have webbed five digit limbs, skin texture is smooth and moist, external fertilization, etc. Reptiles have lungs, use nails and teeth, have four limbs (except snakes), dry and scaly skin, internal fertilization, amniotic eggs, etc.
2. Chordata

Key Information

Some key information before we dive much further will be necessary for you to understand.

Mammals fall under the Animalia Kingdom and the Phylum known as Chordata. Their subphylum is Vertebrata because they have a backbone that is segmented. Further, mammals fall into the class of Mammalia in which there are three subclasses and 19 orders.

There are three physical characteristics that are distinct from other animals for mammals. These include:

1. Hair
2. Production of Milk
3. Many aspects of the Skeleton, especially the Skull

Lesson Activity:

1. Watch this video. While you are doing so, take careful notes about the different subclasses of mammals. Organize your notes into a chart that resembles something like this. If there is a style of chart that you would prefer, use that. This is an example of one.

Subclass	Characteristics	Examples
Monotremes		
Marsupials		
Placentals		

Lesson Activity:

2. Read through this article. Use the information in it to add to your chart from the previous slide. Here is an example of how you may be able to do that.

Order	Characteristics	Examples

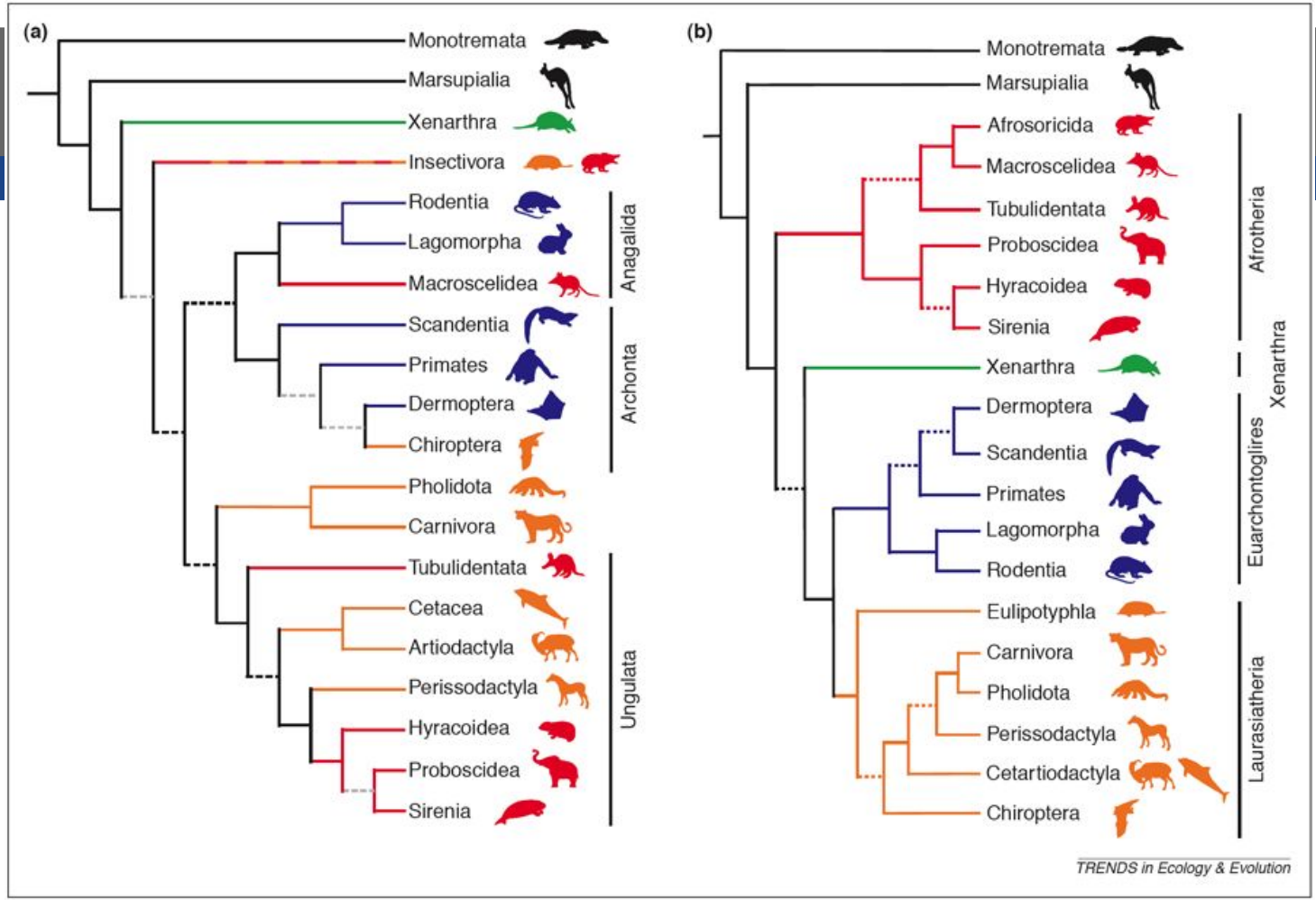
Practice

You will use the information from previous and following and your notes to help answer the following questions.

Practice Questions

1. What are the three characteristics of mammals that are distinct to them and no other animals?
2. What are some other key features of mammals?
3. What are the three subclasses of mammals?
4. Which subclass of mammals is known for using a placenta to attach the young to the mother and birth them after reaching full development?
5. Which subclass of mammals is known for laying eggs and only has two families?
6. Which subclass of mammals is known for birthing the young before reaching full development and the young develop in a pouch outside of the womb.

Use this phylogenetic tree to answer the questions on the next slide.



Practice Questions

7. Who is most closely related to Montremeata?

8. Who is most closely related to Carnivora?

9. Who is most closely related to Primates?

10. Who is most closely related to Cetacea?

11. Who is most closely related to Rodentia?

12. Who is most closely related to Insectivora?

Practice Questions Answer Key

1. Hair, milk production, and skeletal components.
2. Warm-blooded, four-chambered hearts, larger brains, and suckling young.
3. Monotremes, marsupials, and placentals.
4. Placentals
5. Monotremes
6. Marsupials
7. Marsupialia
8. Pholidota
9. Scandentia
10. Artiodactyla
11. Lagomorpha
12. Xenarthra

Common Misconceptions

Sometimes, we want to classify animals based upon movement, body coverings, habitat, or number of legs. We classify mammals based upon the presence of hair, milk production, and skeletal aspects.

Mammals do live in the arctic regions and they are more than just polar bears. They are also home to whales, seals, caribou, ox, rabbits, etc.

This link also provides some other misconceptions you may have about mammals and other phylums of Animalia.

Additional Resources

Here is more information on the different types of mammals and how they are classified: Mammal Classification

This resource outlines more on the evolution of mammals that lead to the different orders of mammals: Evolution and Classification of Mammals

Still wanting more information? Here is another excellent breakdown of mammal classification: Mammal Classification Breakdown