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Attempt 1 of 3

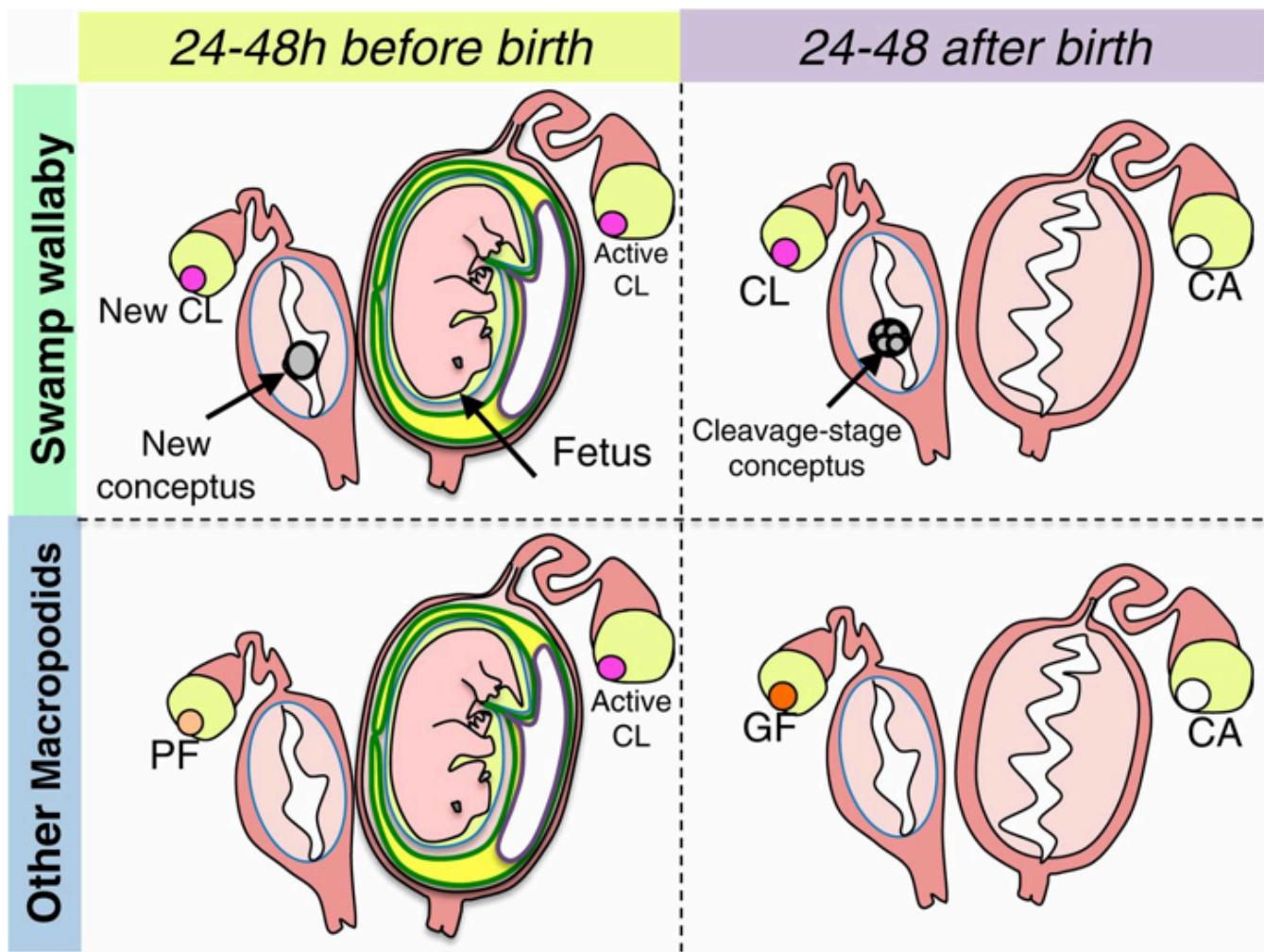
Written Feb 28, 2024 9:50 AM - Feb 28, 2024 9:51 AM

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Attempt Score 0 / 34 - 0 %

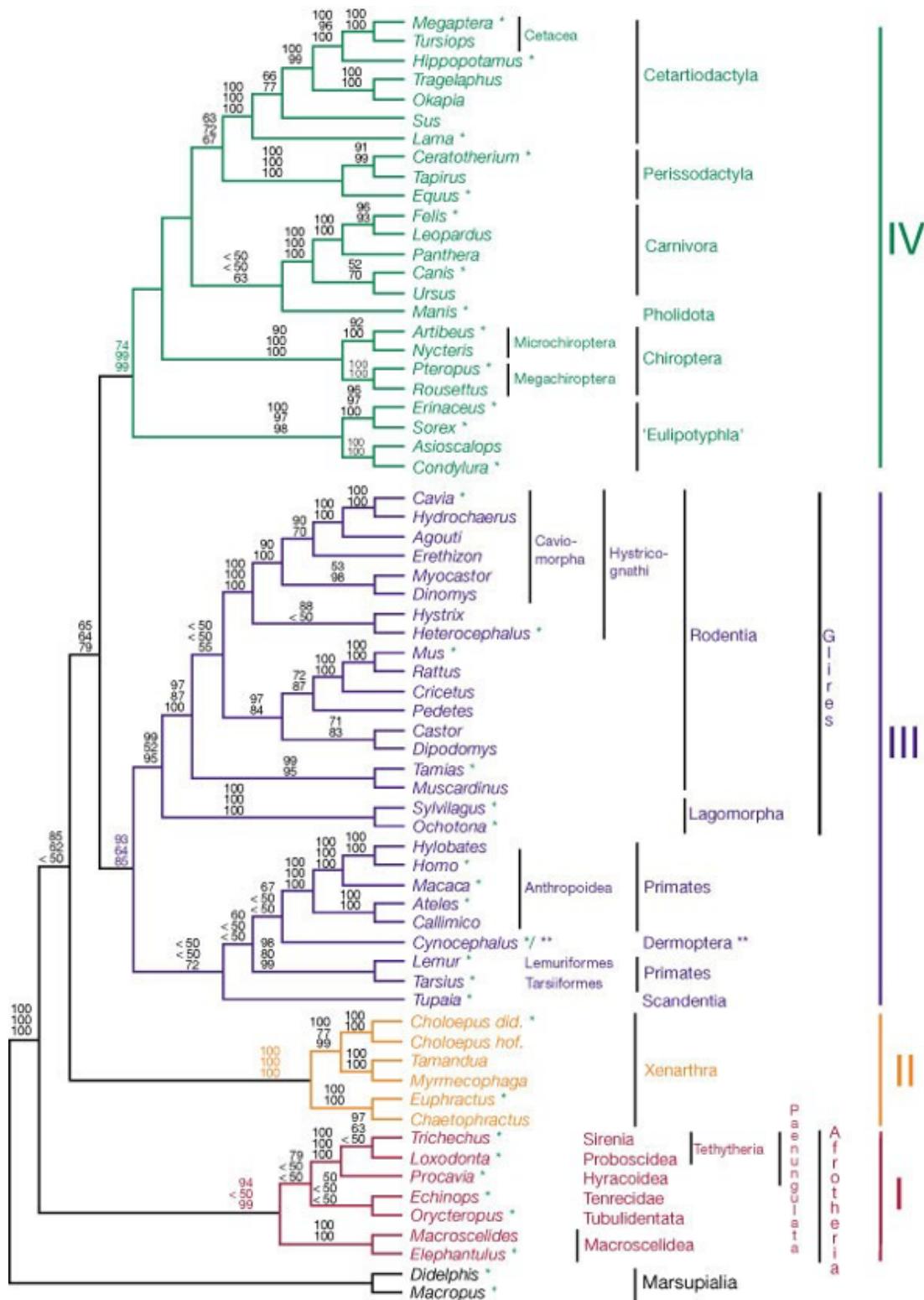
Question 1

0 / 1 point



I learned something new, and really cool, in one of the Better Know a Clade presentations. The presentation was on Macropodidae (kangaroos and related species) and I learned that the species *Wallabia bicolor* (swamp wallaby) presents continuous pregnancy, shown in the image above)!

Using the graph below, this species belong to which clade of mammals?



Chiroptera

Rodentia

Cetartopdactyla

Primates

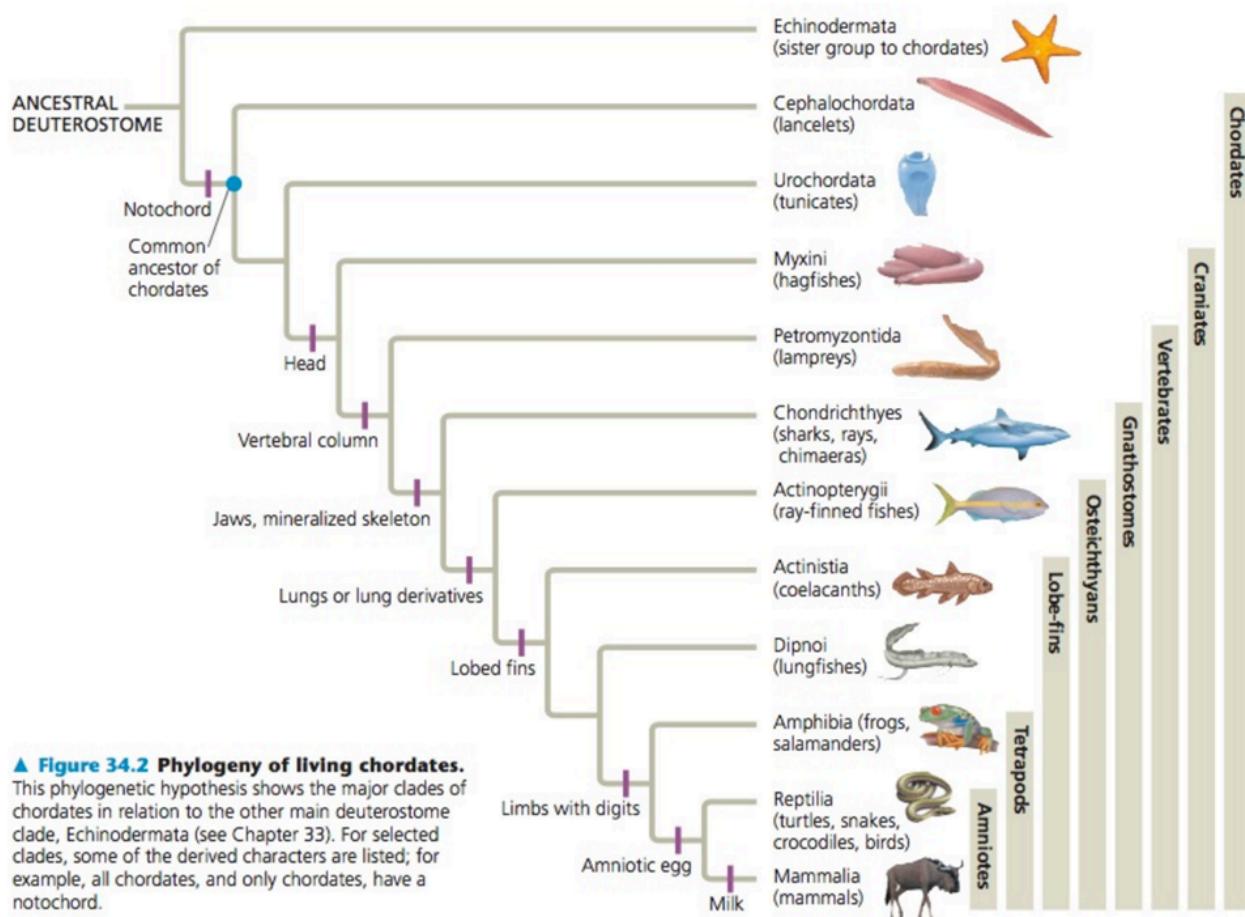
Marsupalia

Lagomorpha

Xenarthra

Question 2

0 / 1 point



▲ Figure 34.2 Phylogeny of living chordates.

This phylogenetic hypothesis shows the major clades of chordates in relation to the other main deuterostome clade, Echinodermata (see Chapter 33). For selected clades, some of the derived characters are listed; for example, all chordates, and only chordates, have a notochord.

Using the graph above, we can conclude that a vertebral column is

paraphyletic for the Chordates

polyphyletic for the vertebrates

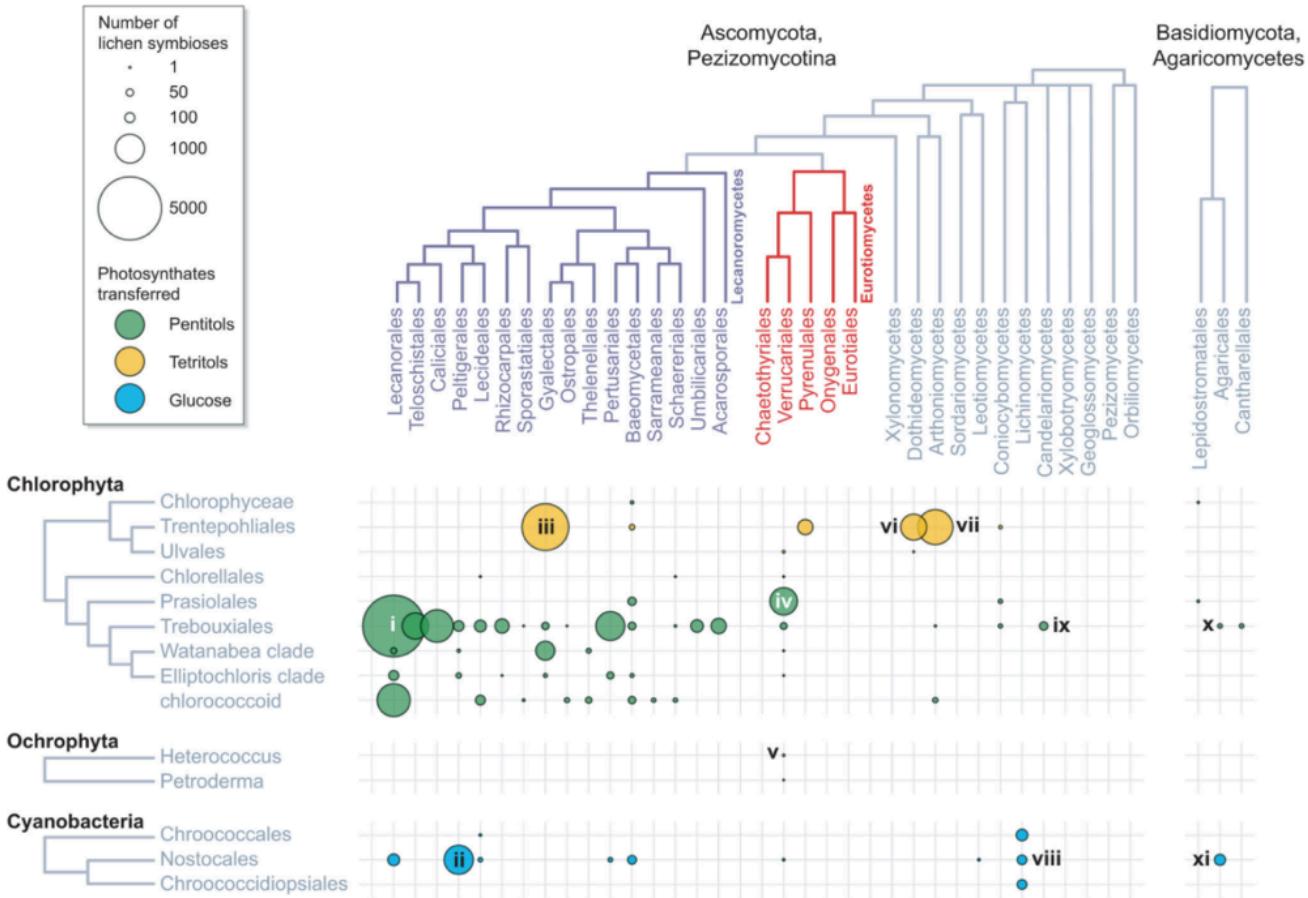


- homoplastic within the Amniota
- derived (synapomorphic) for the Gnathostomes
- ancestral (plesiomorphic) for the Tetrapods

Question 3

0 / 1 point

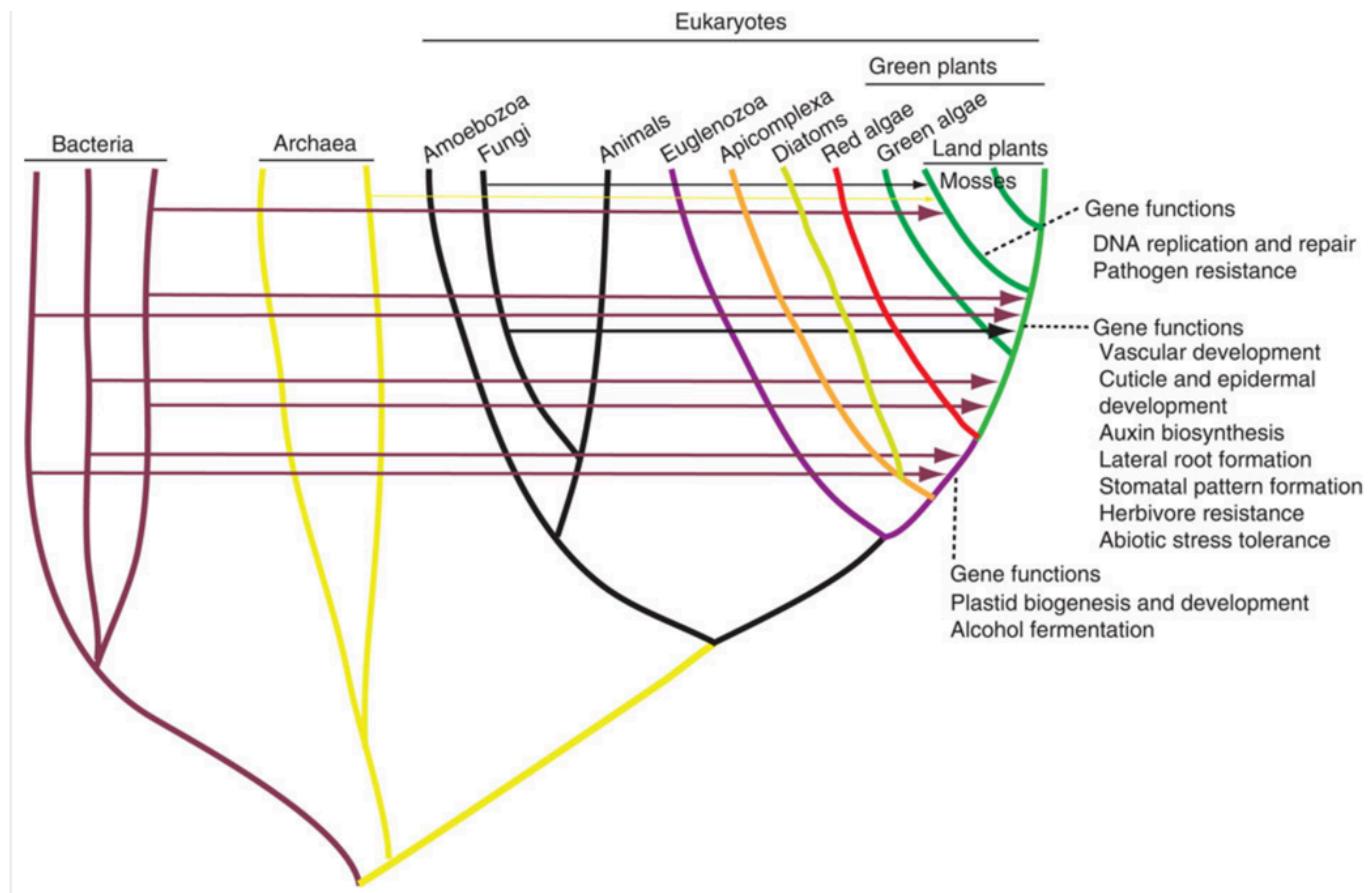
(a)



A lichen is a composite organism composed of at least one of the taxa at the top and one of the taxa to the left. The taxa at the top are

- green algae
- Fungi

- Lycophyta
- Viridiplantae
- Bryophyta

Question 4**0 / 1 point**

"The occurrence of [the phenomenon depicted in this figure] helps to explain why trees built using different genes can give inconsistent results." This is a quote from Ch. 26 of your textbook. What phenomenon is depicted here? (This is a great figure)

- meiosis
- gene duplication

- polymorphism
- homoplasy
- ➡ horizontal gene transfer

Question 5**0 / 1 point**

Speciation forms a conceptual bridge between

- ➡ microevolution and macroevolution
- trade-offs between reproduction and survival
- evolution and extinction
- stabilizing and disruptive selection
- historical constraints and contingency

Question 6**0 / 1 point**

The Biological Species Concept can be useful for which of the following groups?

- organisms that are known only through their fossils
- organisms that have single-stranded DNA
- organisms that reproduce by binary fission
- organisms in which the feeding ecology is well known
- ➡ organisms that reproduce by sex

Question 7**0 / 1 point**

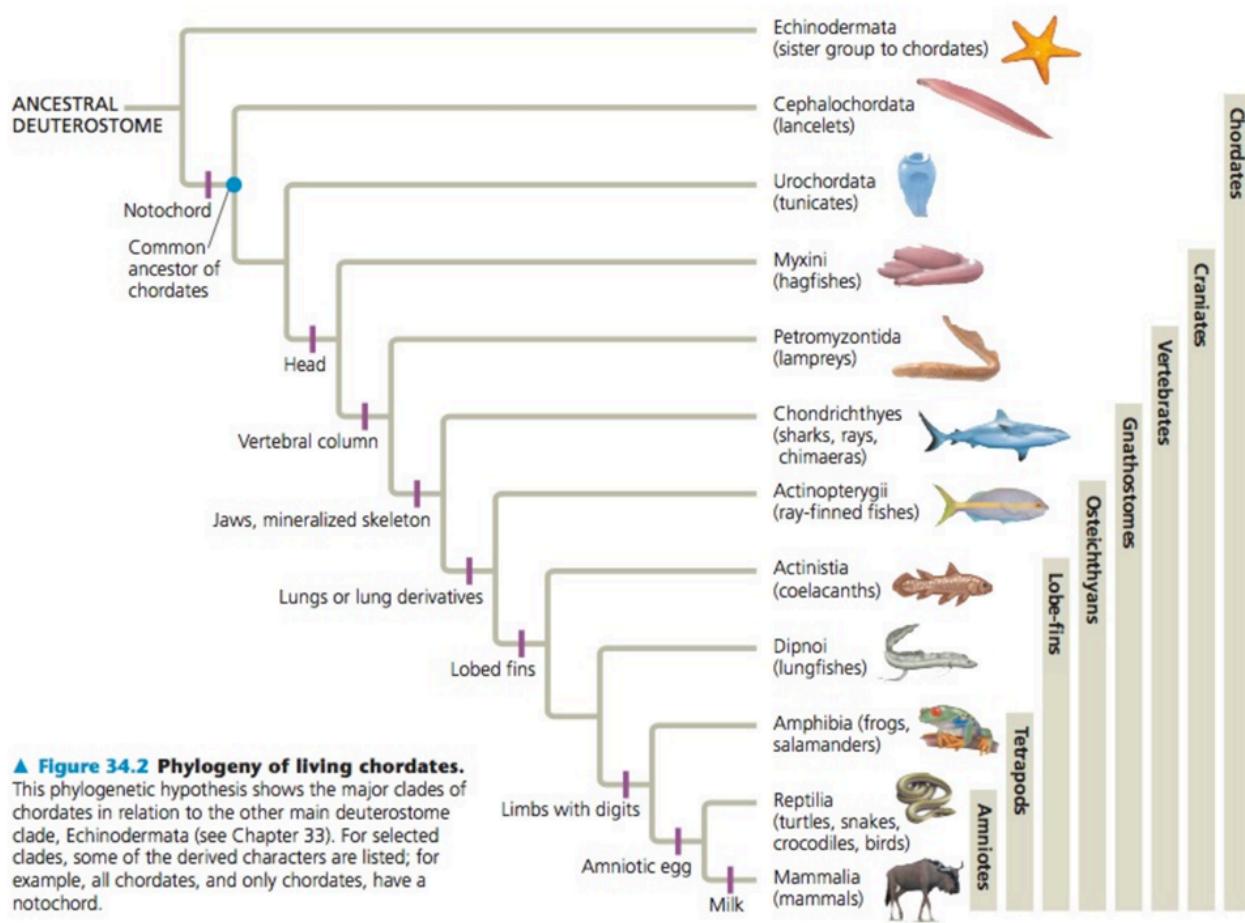
Ole Seehausen and Jacques van Alphen placed males and females of the

cichlid *Pundamilia pundamilia* and *P. nyererei* together in two aquarium tanks, one with natural light and one with a monochromatic orange lamp. Under normal light, the two species are noticeably different in male breeding coloration; under monochromatic orange light, the two species are very similar in color. Under normal light, females of each species strongly preferred males of their own species. But under orange light, females of each species responded indiscriminately to males of both species. The resulting hybrids were viable and fertile.

This is an example of evidence for what contributing to speciation in these fish?

- sexual selection
- geographic isolation
- a mutation of large effect ("hopeful monster")
- founder effect
- polyploidy

Question 8**0 / 1 point**



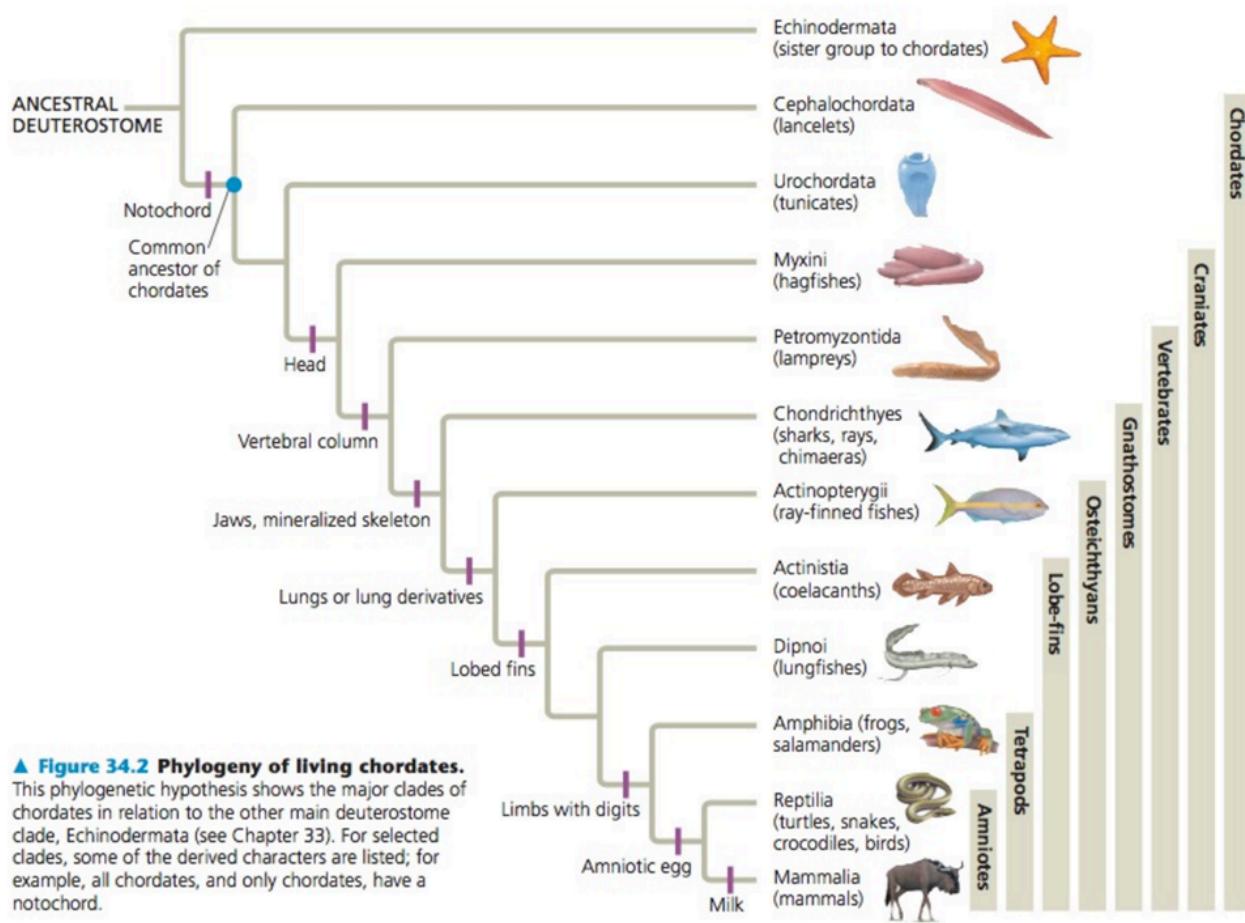
▲ Figure 34.2 Phylogeny of living chordates.
This phylogenetic hypothesis shows the major clades of chordates in relation to the other main deuterostome clade, Echinodermata (see Chapter 33). For selected clades, some of the derived characters are listed; for example, all chordates, and only chordates, have a notochord.

Using this graph, we can conclude that Cephalochordata are the oldest clade of Chordates

- True
 False

Question 9

0 / 1 point



▲ Figure 34.2 Phylogeny of living chordates.
This phylogenetic hypothesis shows the major clades of chordates in relation to the other main deuterostome clade, Echinodermata (see Chapter 33). For selected clades, some of the derived characters are listed; for example, all chordates, and only chordates, have a notochord.

Using this graph, we can conclude that the clade Gnathostomes is older than the clade Osteichthys

- True
 False

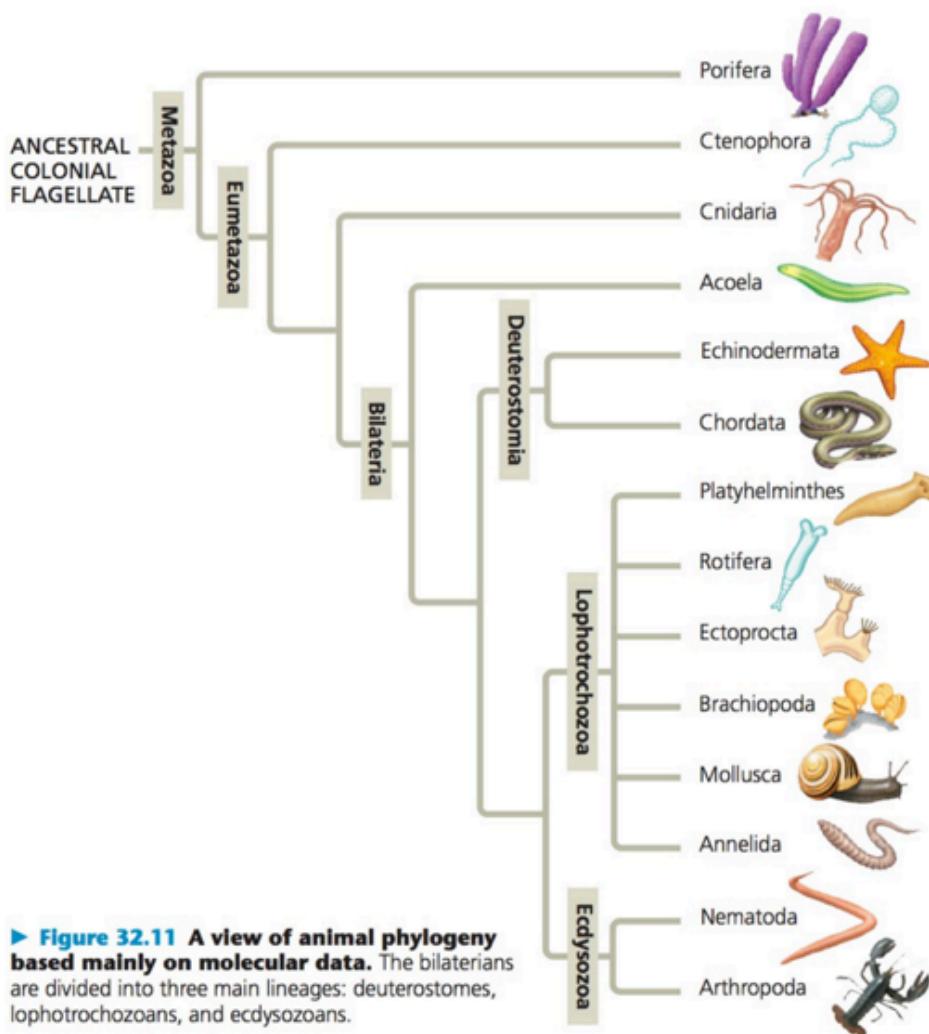
Question 10

0 / 1 point



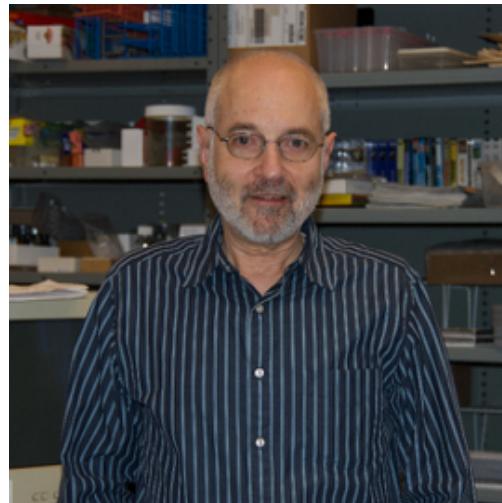
The image to the left is the caterpillar of *Manduca sexta* (tobacco hornworm), the model organism that Dr. David Champlin uses in his research on the regulation of development.

Using the phylogeny below, this species is in the clade



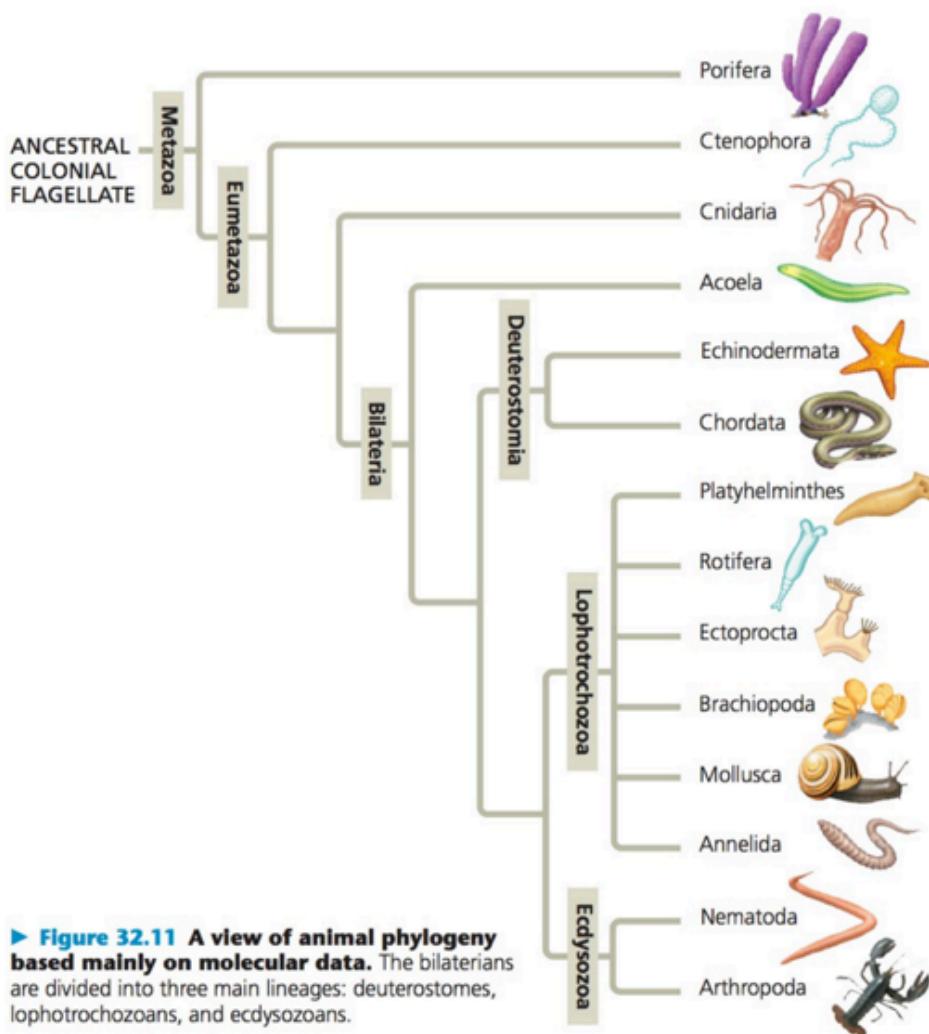
► **Figure 32.11 A view of animal phylogeny based mainly on molecular data.** The bilaterians are divided into three main lineages: deuterostomes, lophotrochozoans, and ecdysozoans.

- Mollusca
- Cnidaria
- Echinodermata
- Chordata
- Nematoda
- Annelida
- ➡ Arthropoda

Question 11**0 / 1 point**

The left image is the insect *Drosophila* (a fruit or vinegar fly), the model organism that Dr. Ken Weber uses in his research.

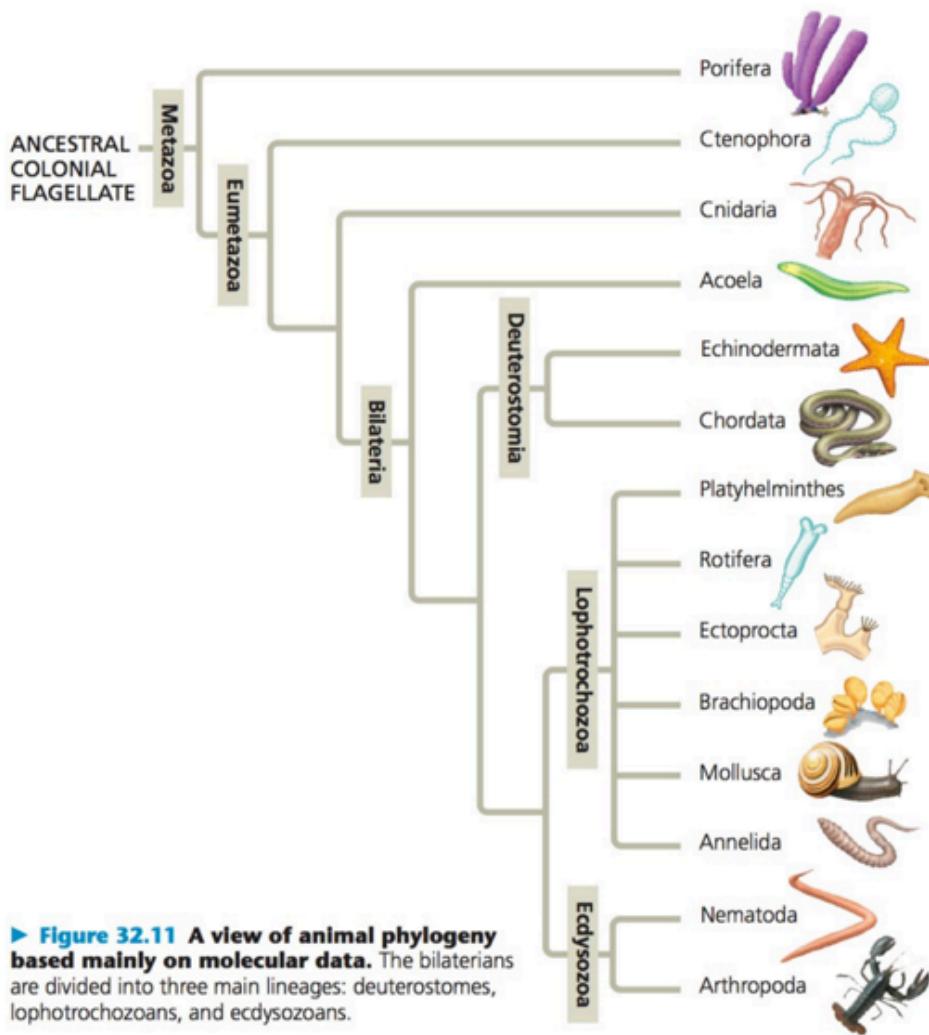
Using the phylogeny below, this species is in the clade



- Mollusca
- Nematoda
- Cnidaria
- Chordata
- Echinodermata
- Arthropoda
- Annelida

Question 12

0 / 1 point



The major metazoan clades in the graph above were originally defined by common developmental (embryonic) characters including the derived state triploblastic. What is triploblastic?

- the embryo develops three germ layers: endoderm, ectoderm, and mesoderm
- the embryo divides its coelom into three separate compartments
- the embryo has three sets of paired appendages
- the embryo has three planes of symmetry

- the embryo has three outgrowths of the gut

Question 13**0 / 1 point**

Of all possible trees, the maximum parsimony tree

- has the most statistical support
- contains the fewest character state changes
- is the closest to the true tree
- is the most likely tree given a model of evolutionary change
- joins taxa that are most similar in morphology or genetics

Question 14**0 / 1 point**



Dr. Terry Theodose, who just retired, studied the ecology of salt marshes including *Spartina alterniflora* (smooth cordgrass) shown here. It is true grass.

This species is in the clade

- Monilophytes
- liverworts (Marchantiophytes)
- Angiosperms
- Lycophytes

- hornworts (Anthocerotophytes)
- mosses (Bryophytes)
- Gymnosperms

Question 15**0 / 1 point**

This is *Osmundastrum cinnamomeum*, which is fairly common in the Maine woods around Portland.

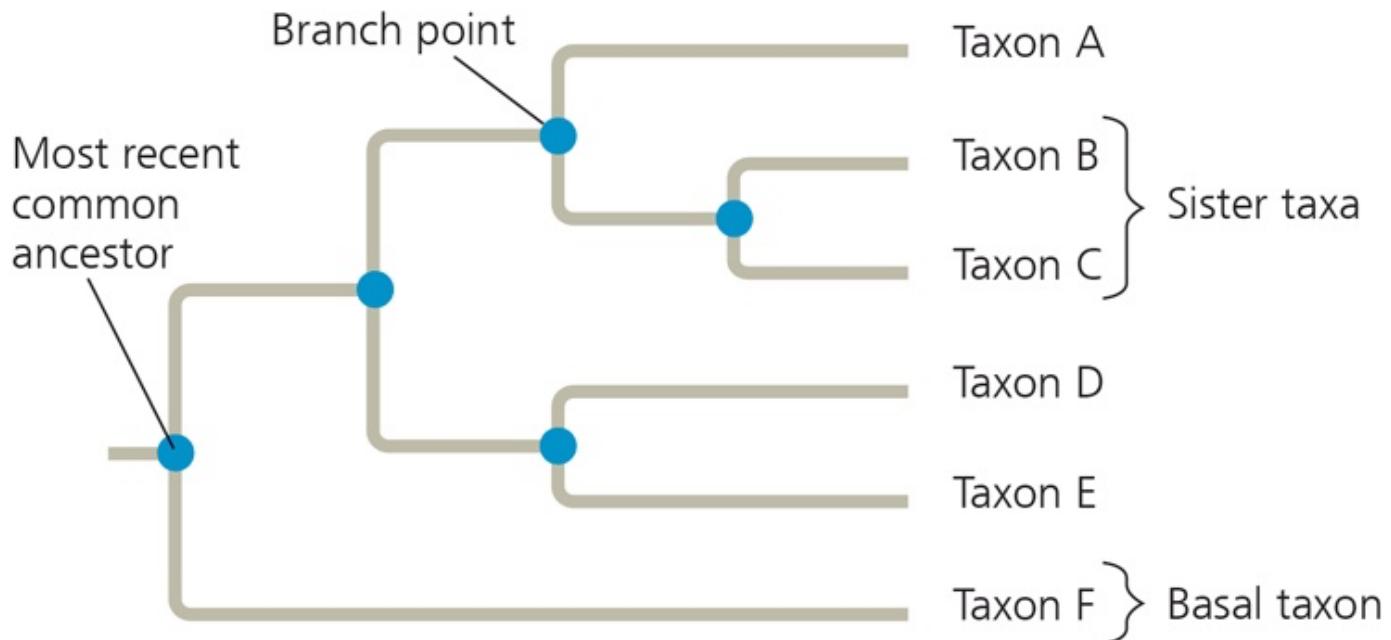
This species is in the clade

- liverworts (Marchantiophytes)

- Angiosperms
- Gymnosperms
- Monilophytes
- mosses (Bryophytes)
- hornworts (Anthocerotophytes)
- Lycophytes

Question 16

0 / 1 point



This image from your textbook identifies Taxon F as the "Basal Taxon".

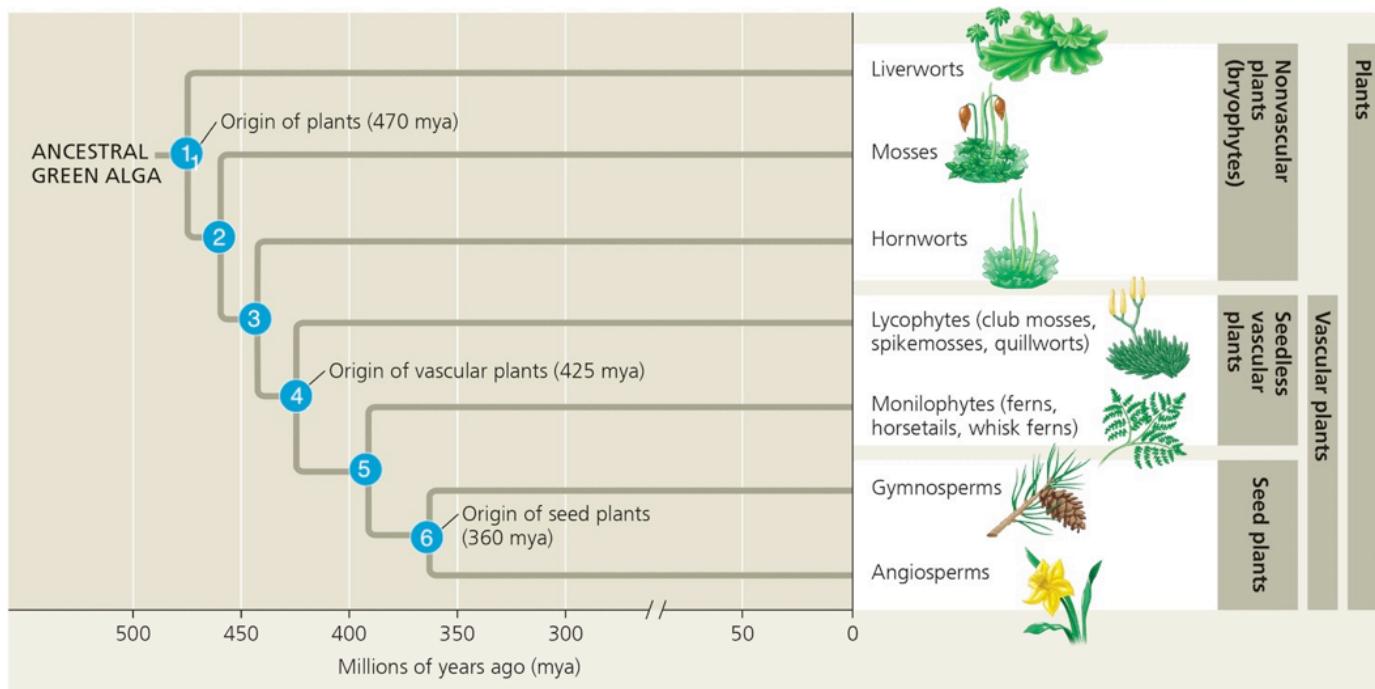
- This is a misleading way to refer to F, because the expected amount of evolutionary change from the most recent common ancestor of all taxa is the same for F as it is for any of the taxa A through E
- This is a meaningful way to refer to F because F is the ancestor of taxa A - E
- This is a misleading way to refer to F, because taxons E and D are

equally basal to taxon F.

- This is a meaningful way to refer to F because F is the first taxon to branch off the phylogeny
- we cannot say if this is meaningful or misleading without knowing the phenotypes

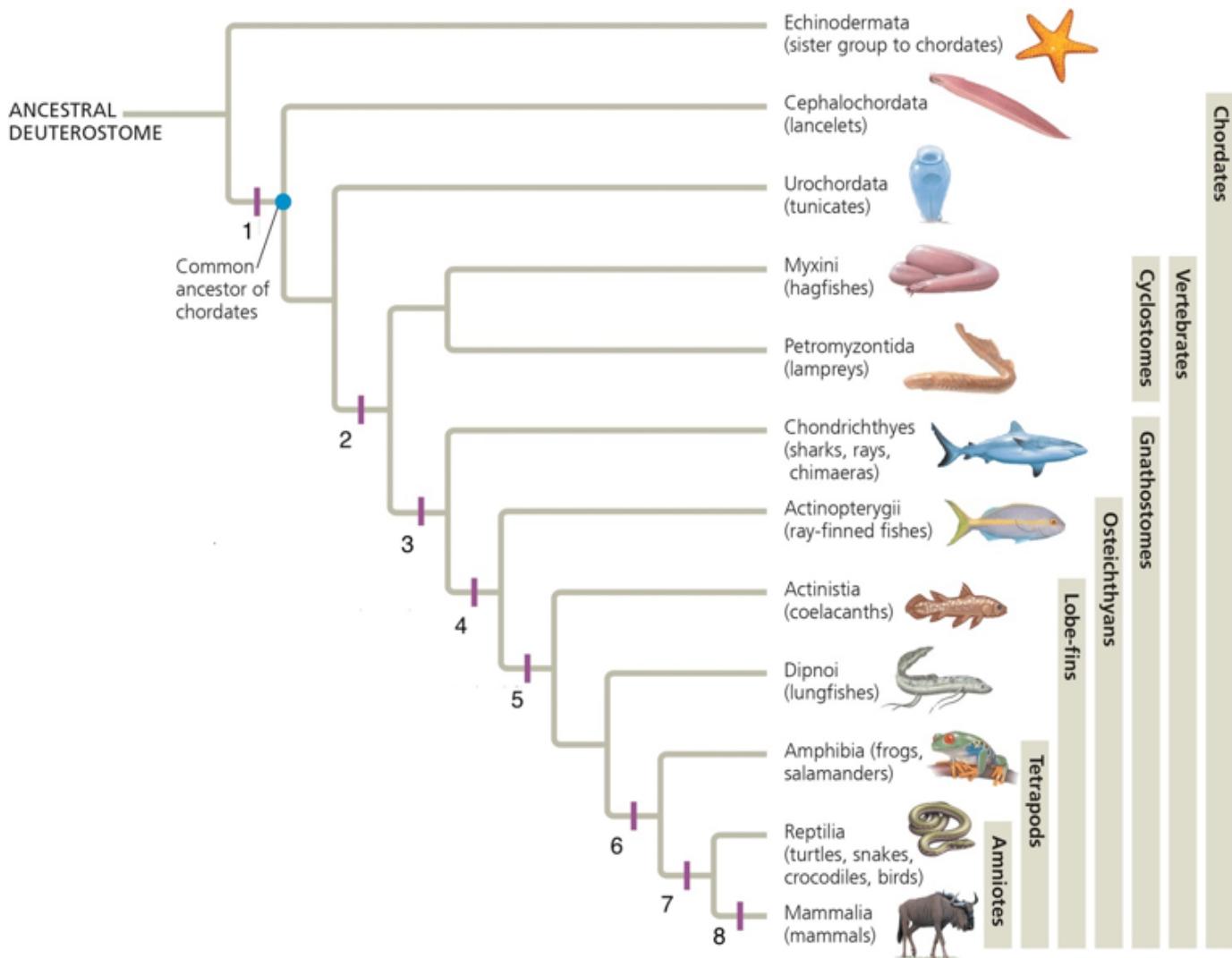
Question 17

0 / 1 point



The node labeled 2 in the graph above represents the most recent common ancestor of

- plants
- mosses, hornworts, and vascular plants
- liverworts and mosses
- mosses and hornworts
- the non-vascular plants

Question 18**0 / 1 point**

The origin of lungs was a major innovation in the evolution of vertebrates. Presence of lungs (or lung derivatives) is a synapomorphy at which labeled dash?

- 2
- 8
- 3
- 7

4

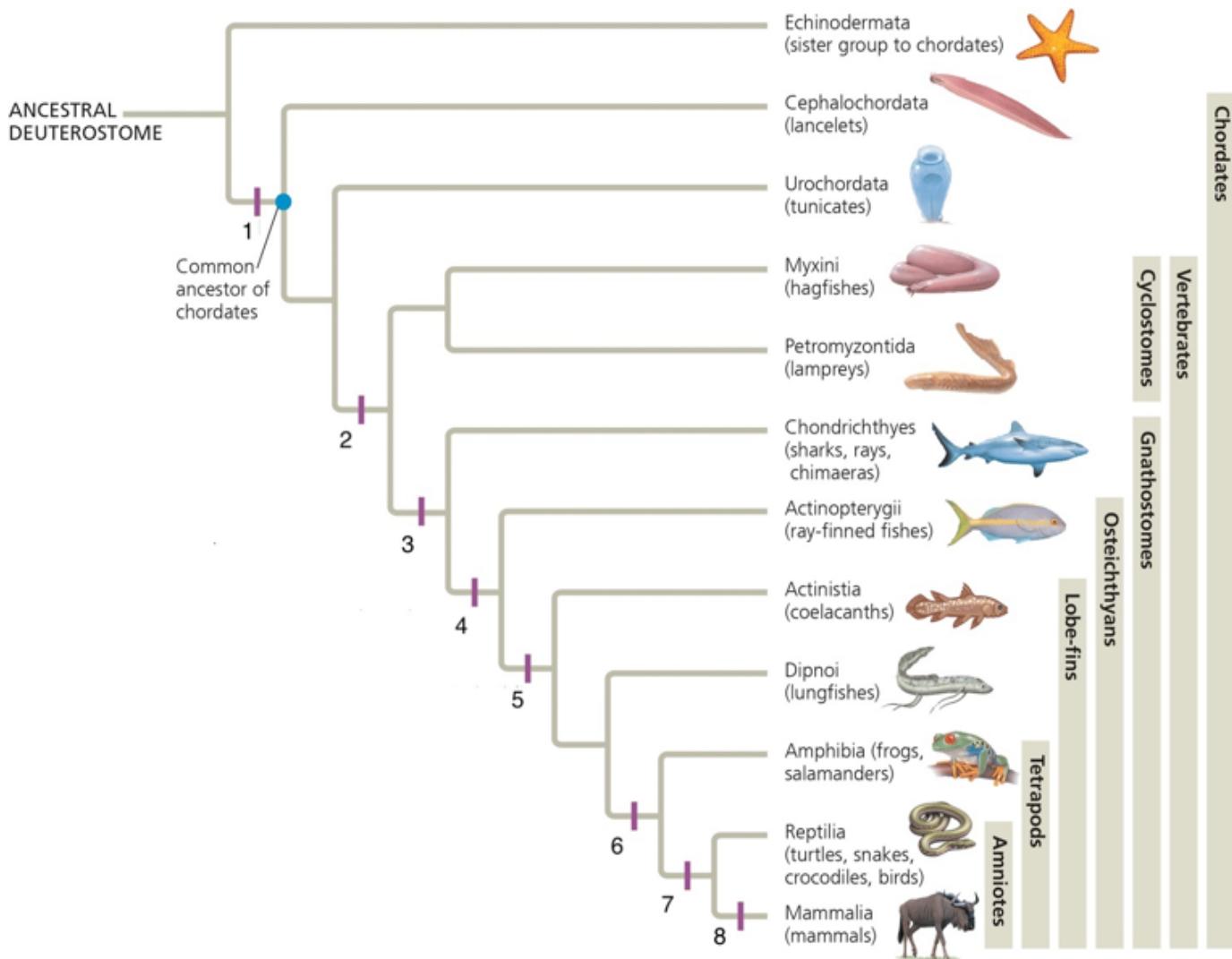
6

5

1

Question 19

0 / 1 point



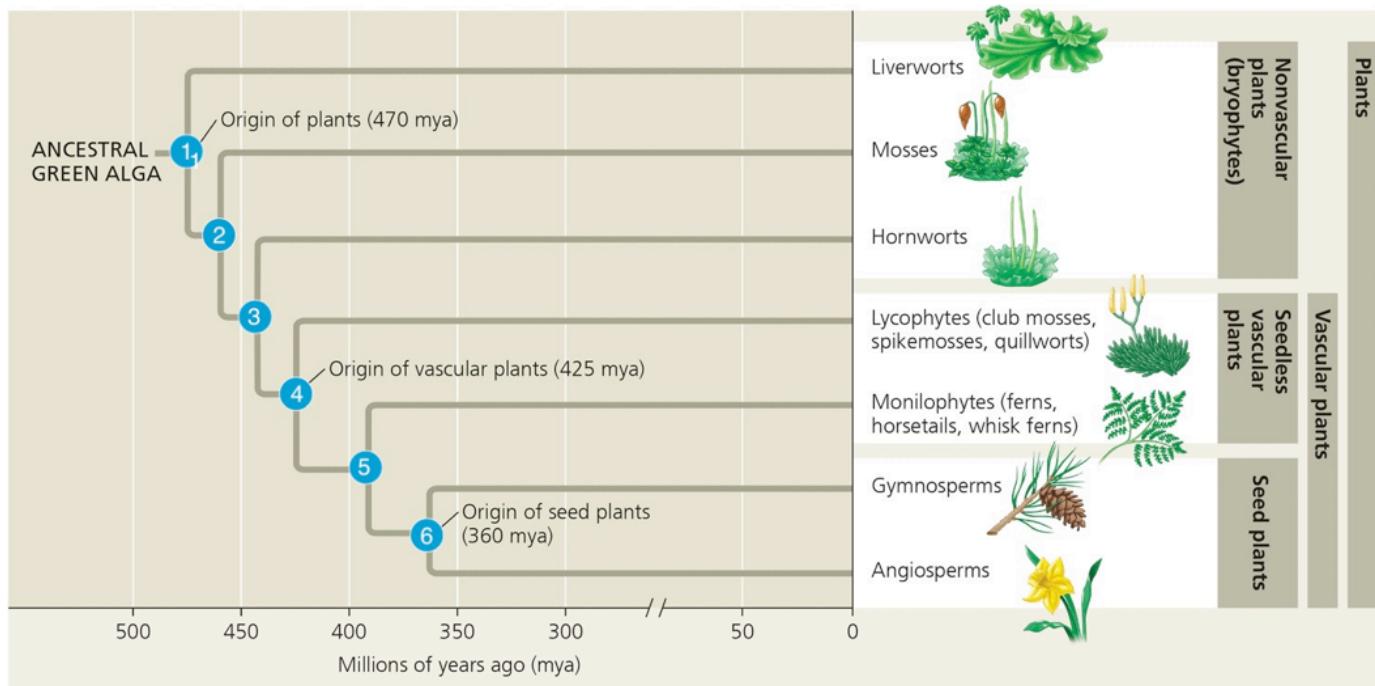
The origin of jaws was a major innovation in the evolution of vertebrates. Presence of jaws is a synapomorphy at which labeled dash?

7

- 4
- 1
- 8
- 2
- 6
- 5
- 3

Question 20

0 / 1 point

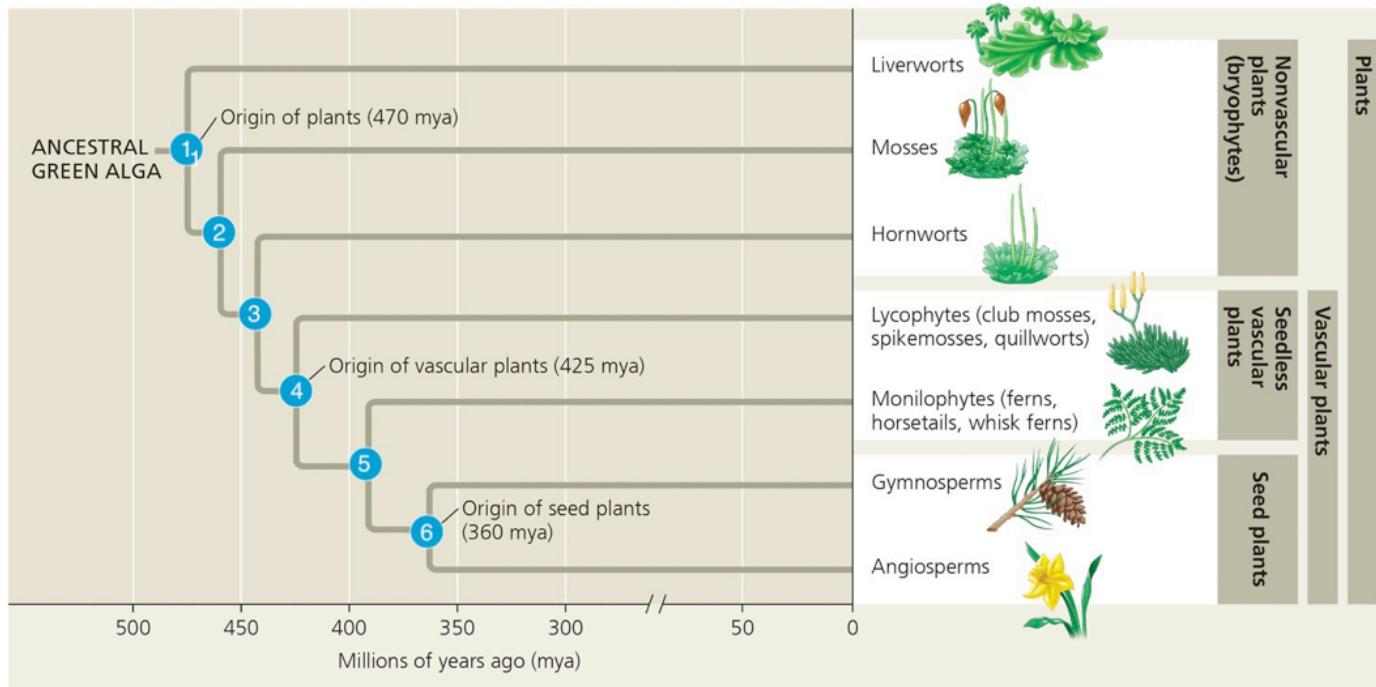




This is *Osmundastrum cinnamomeum*, which is fairly common in the Maine woods around Portland.

Using the phylogeny above, this species is in the clade

- Gymnosperms
- Angiosperms
- Monilophytes
- liverworts (Marchantiophytes)
- hornworts (Anthocerotophytes)

Lycophytes mosses (Bryophytes)**Question 21****0 / 1 point**



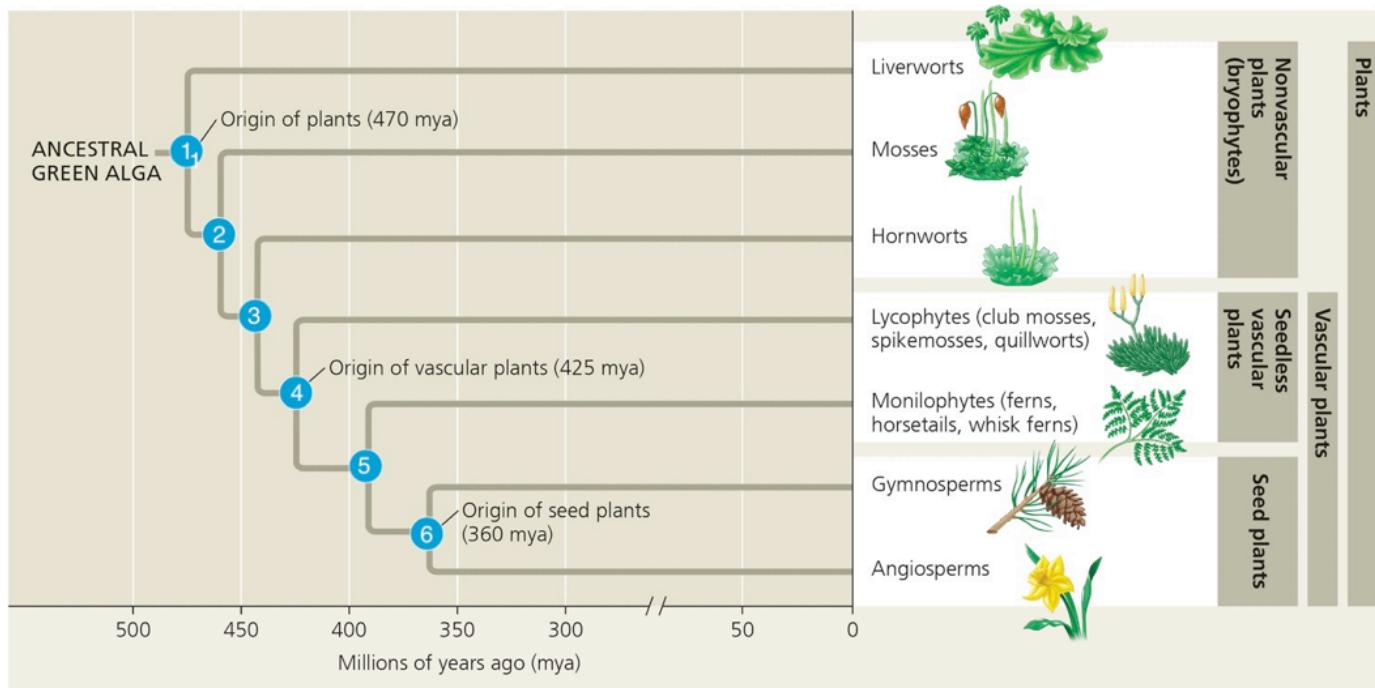
This beauty is *Erythronium americanum* (trout lily) a common herbaceous plant in our deciduous woods. The above-ground part emerges after the snow melts and will die back before canopy closure (when the deciduous trees grow leaves). Using the phylogeny above, this species is in the clade

- Gymnosperms
- liverworts (Marchantiophytes)
- mosses (Bryophytes)
- Angiosperms
- Lycophytes
- hornworts (Anthocerotophytes)

Monilophytes

Question 22

0 / 1 point





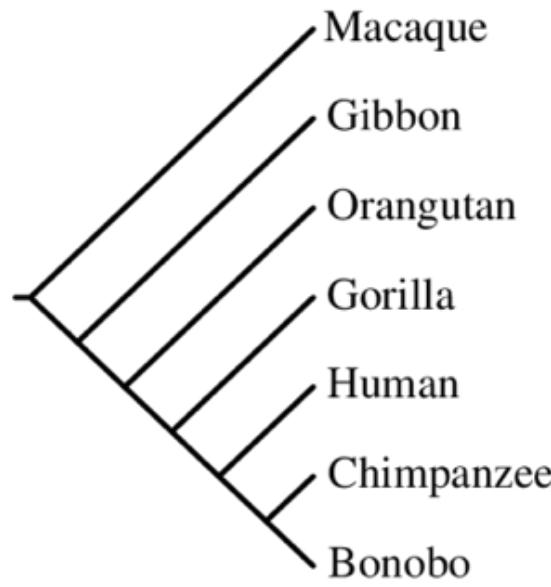
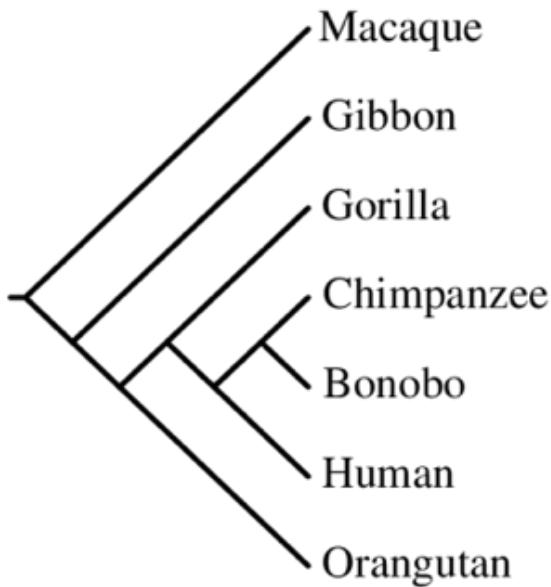
The beautiful tree above is *Larix laricina* (American larch or tamarack). The tamarack is a deciduous conifer that inhabits bogs and wet spruce/fir forests. In southern Maine, I've seen it in the Saco Heath. What does "deciduous" mean

- for the sporophyte generation to be dominant
- having the male and female reproductive parts on different individuals

- to have two embryonic seed leaves
- to shed leaves seasonally
- to bear cones

Question 23

0 / 1 point

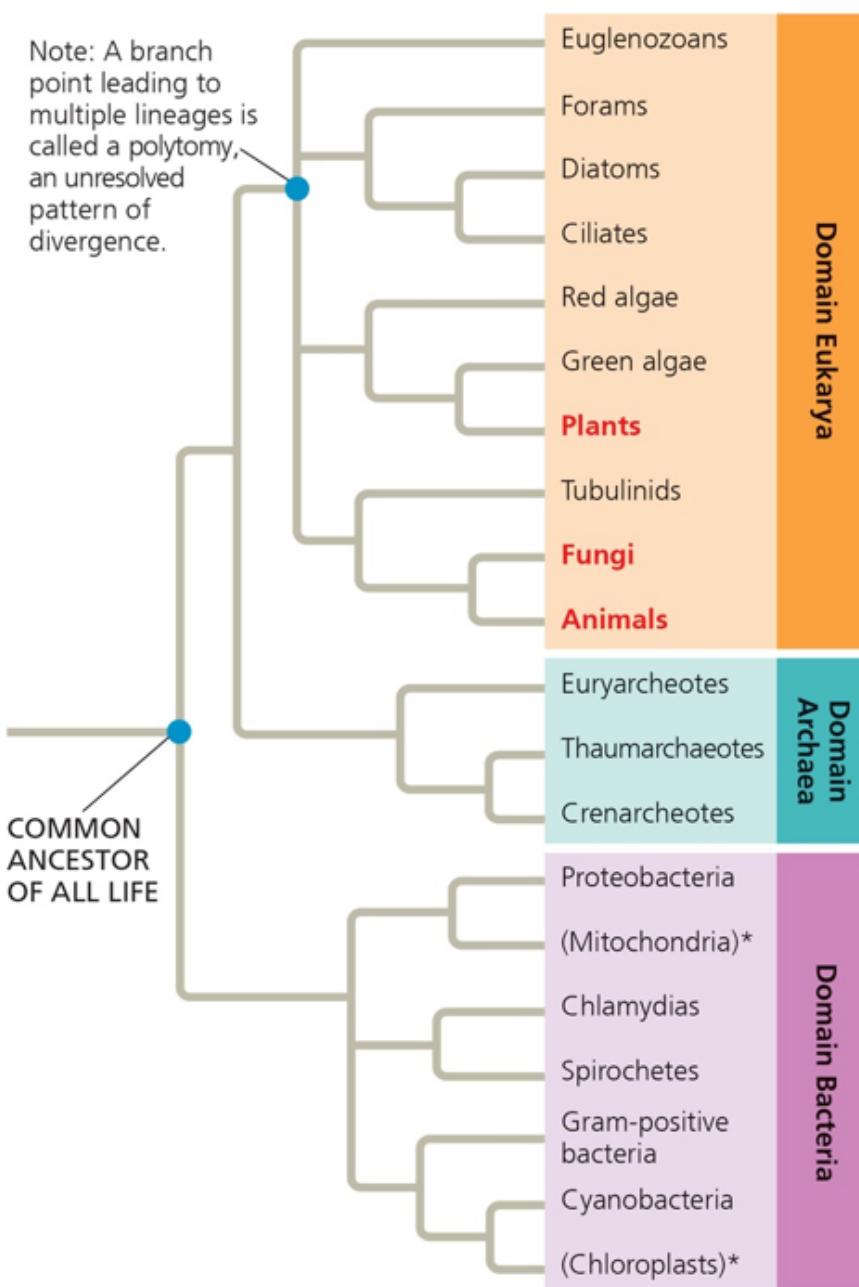


These two graphs show the same phylogenetic relationship

- True
- False

Question 24

0 / 1 point

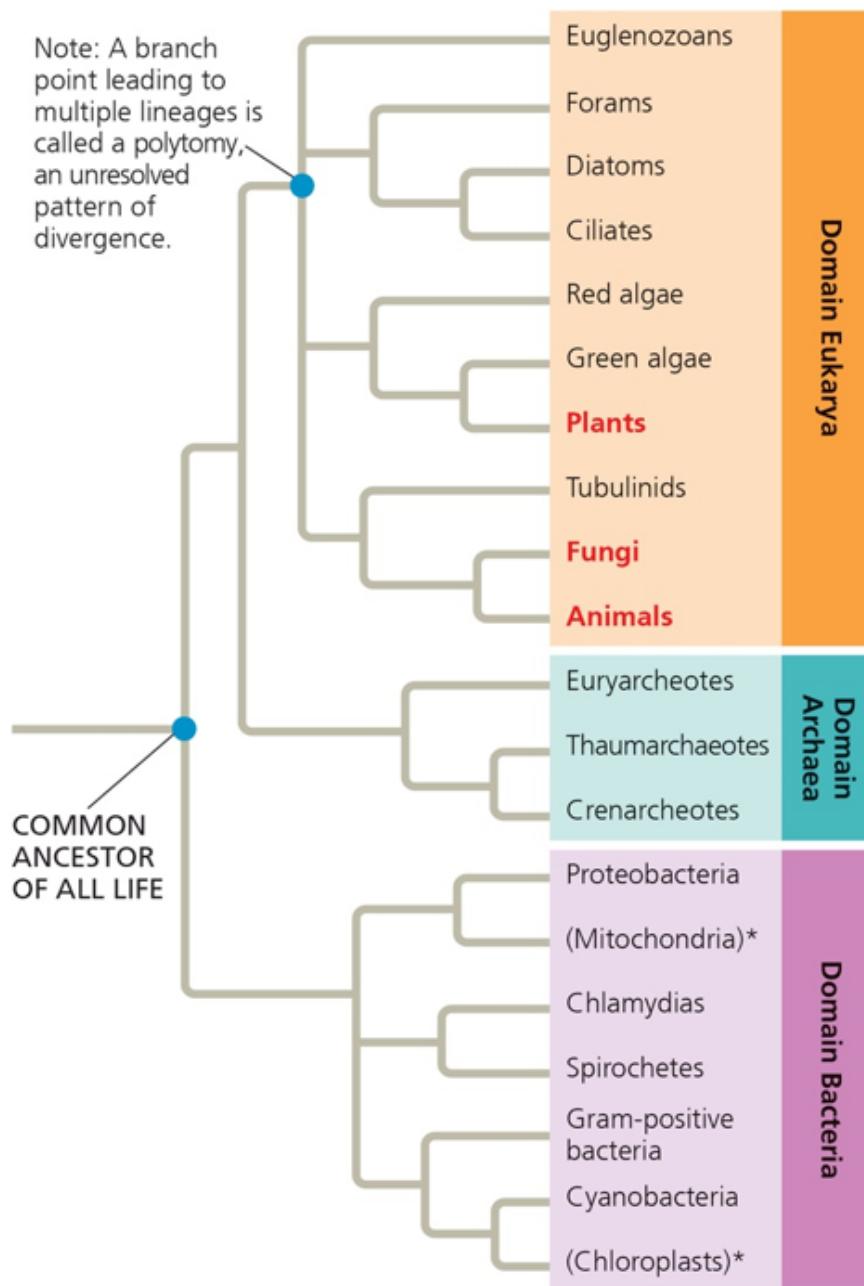


Dr. Rachel Larsen has an expertise in the metabolic diversity of microbes. A wicked important variant of respiration is the ability to reduce O₂ and synthesize ATP using the energy of a proton gradient ("proton-motive force"). The proton gradient is powered by electrons transferred from the Citric Acid Cycle.

This metabolic pathway for reducing O₂ and synthesizing ATP is found in which Taxon in the above graph?

- Proteobacteria
- Cyanobacteria
- Spirochetes
- Crenarcheotes
- Clamydias
- Thaumarcheotes
- Euryarcheotes

Question 25**0 / 1 point**



Old biologists that teach and write textbooks (like all old humans) have a hard time with tree thinking and still organize textbook content of the Tree of Life around old, outdated concepts. For example, your textbook has a whole chapter on an artificial grouping of organisms best defined as "A eukaryote that is not a plant, or fungi, or animal". What is the name given to this group?

➡ protists

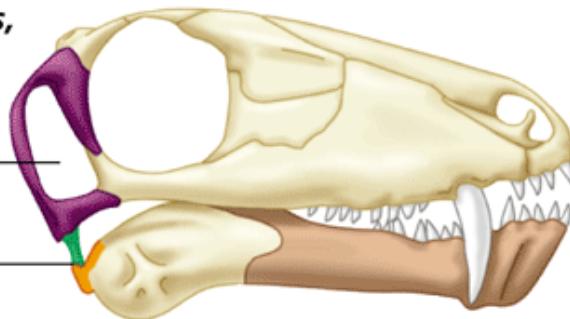
- prokaryotes
- archaea
- metazoa
- eubacteria

Question 26**0 / 1 point**

Biarmosuchus,
an extinct
synapsid

Temporal
fenestra

Jaw joint

**Key**

Articular
Quadrata
Dentary
Squamosal

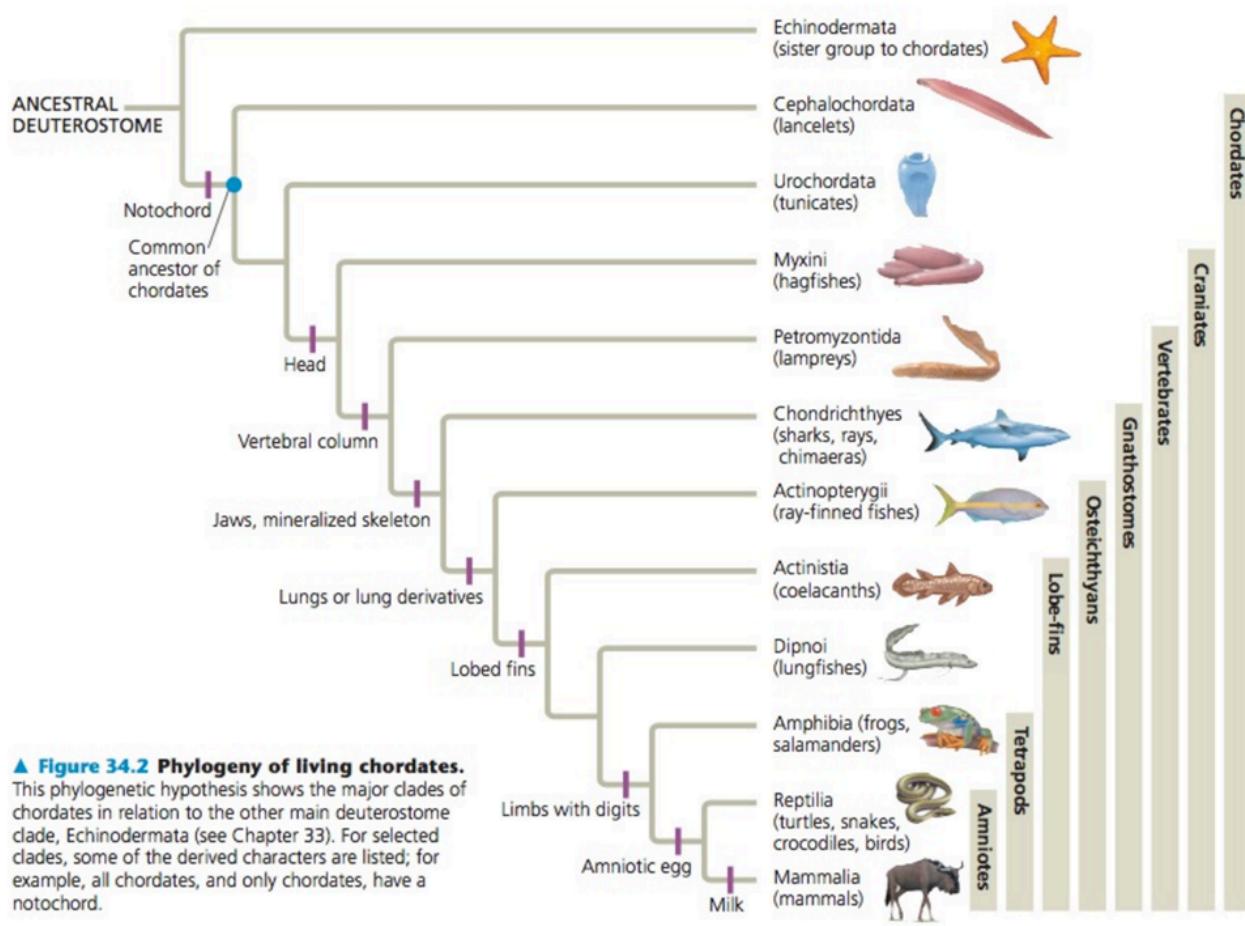
(a) In *Biarmosuchus*, the meeting of the articular and quadrate bones formed the jaw joint.

The picture above shows the ancestral arrangement of jaw bones in Tetrapods. The origin of mammals is characterized by a rearrangement of this geometry.

In the ancestral condition, the upper and lower jaws join by which bones?

- articular and dentary
- squamosal and quadrate
- quadrata and articular
- squamosal and dentary
- quadrata and dentary

Question 27**0 / 1 point**



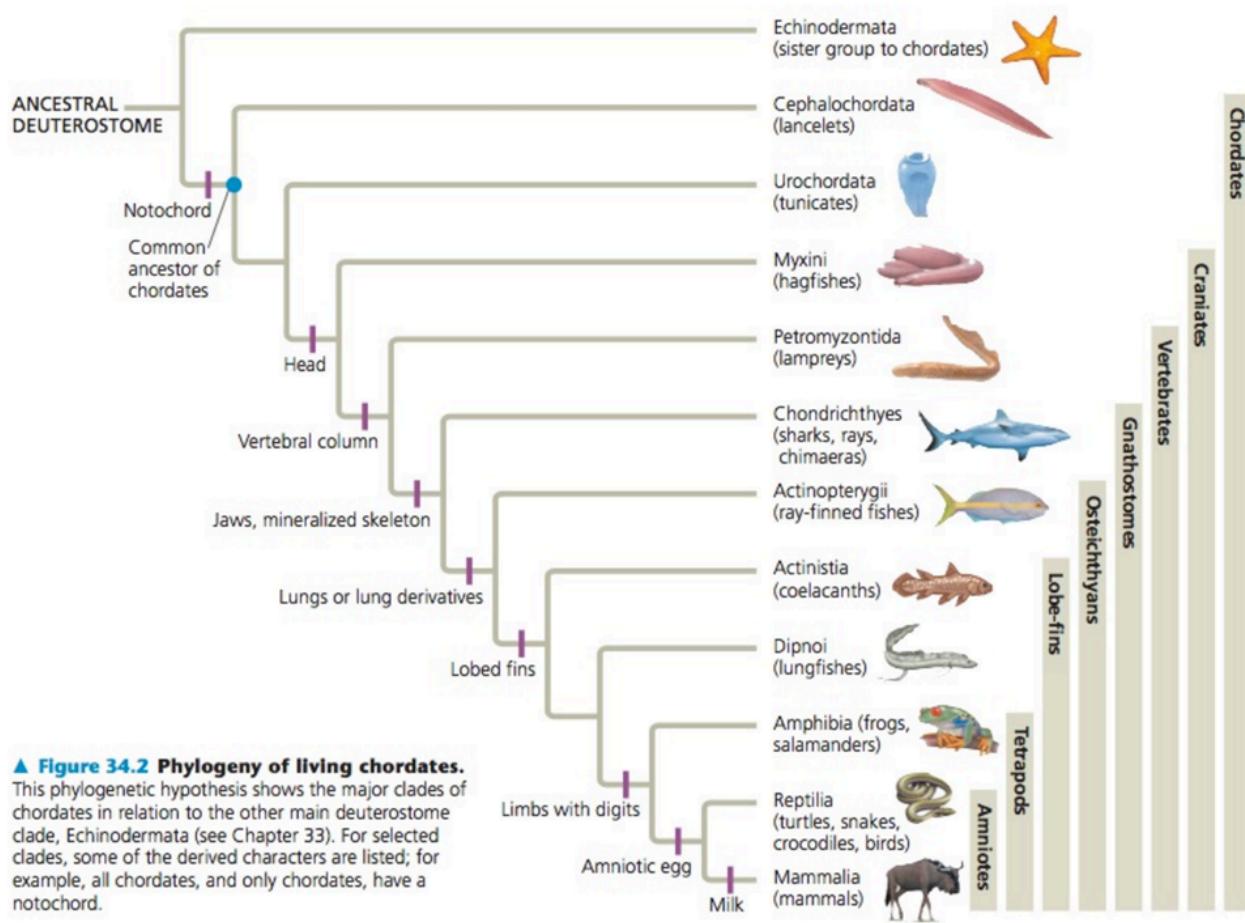
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Using this graph, we can conclude that the Mammalia have the most complex morphology of the chordates

- True
- False

Question 28

0 / 1 point

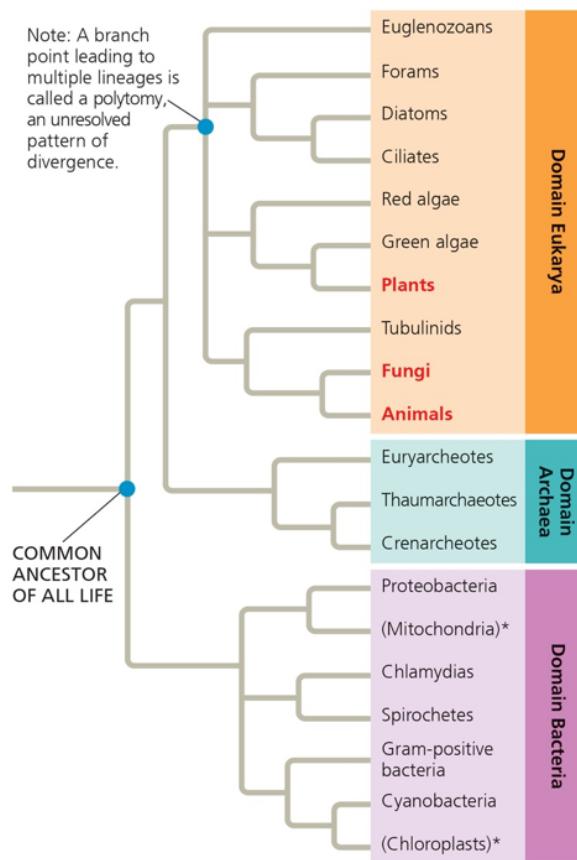


Using this graph, we can conclude that stickleback share more derived traits with mammals than they do with sharks

- True
 False

Question 29

0 / 1 point



The image to the right shows the fruiting body (reproductive structure) of a common forest organism in Maine. To which clade in the graph at left does this organism belong?

- Eukarya
 Archaea
 Bacteria

Question 30

0 / 1 point



We had a nice Better Know a Clade presentation in the Thursday lab on the clade that includes the animal above, which is *Ophiarachna incrassata* (green brittle star).

This species is in the clade

- Chordata
- Annelida
- Mollusca
- Cnidaria
- Nematoda
- Arthropoda
- Echinodermata

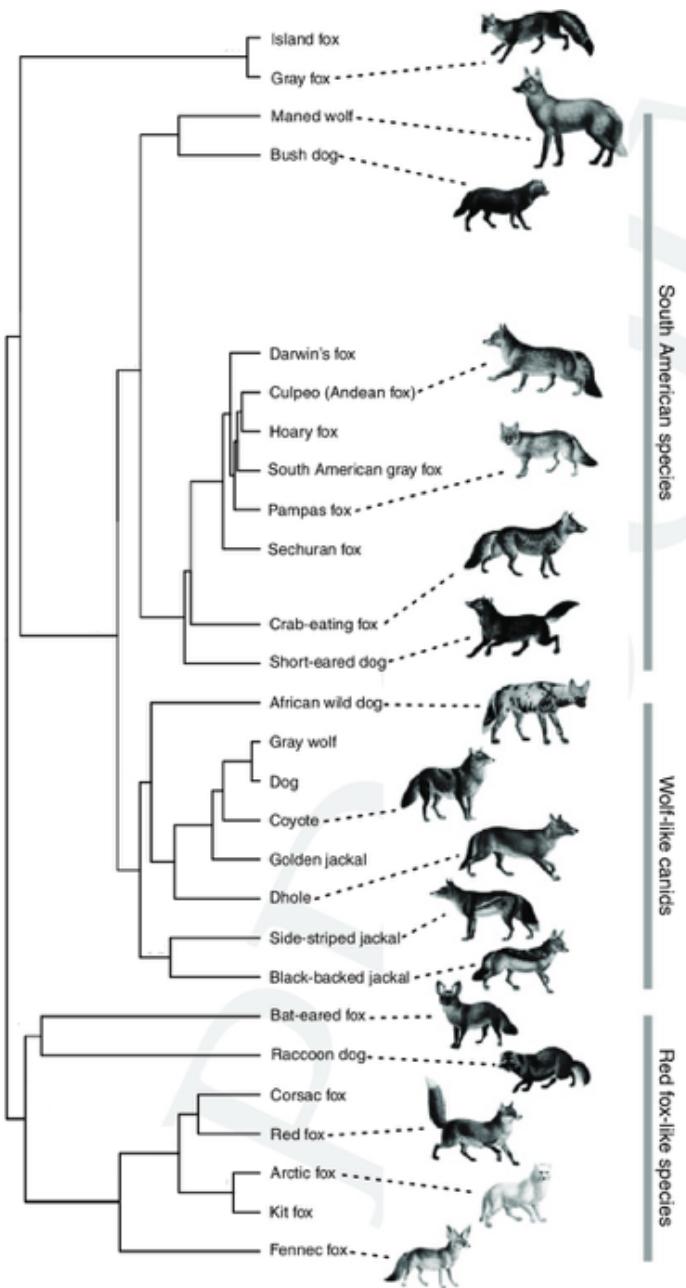
Question 31**0 / 1 point**

The image to the left is the caterpillar of *Manduca sexta* (tobacco hornworm), the model organism that Dr. David Champlin uses in his research on the regulation of development.

This species is in the clade

- Chordata
- Echinodermata
- Annelida
- Cnidaria
- Mollusca
- Nematoda
- Arthropoda

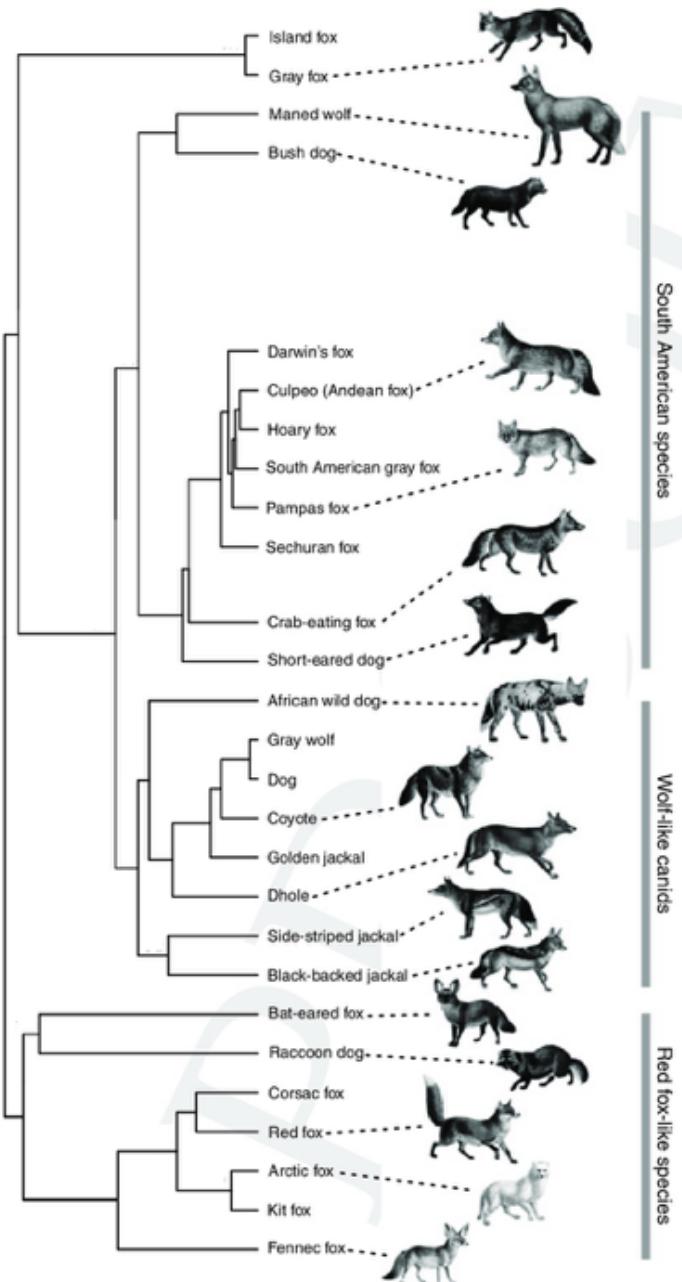
Question 32**0 / 1 point**



The graph in the figure above shows

- the relative level of morphological similarity among species of Canidae
- the absolute level of morphological similarity among species of Canidae
- the relative level of phylogenetic relatedness among the species of Canidae

- the approximate age of the common ancestors of the species of Canidae
- the absolute level of genetic similarity among species of Canidae

Question 33**0 / 1 point**

The graph in the figure above is known as a

→ cladogram

- directed acyclic graph
- cluster analysis
- variogram
- network structure

Question 34

0 / 1 point

When referring to the human species in writing using the scientific name, you should write this as

- Homo Sapiens
- Homo sapiens
- sapiens*
- *Homo sapiens*
- Sapiens

Done