

Phylogeny and the history of life

Phylogeny

The history of life

Processes of diversification

Outline

Phylogeny

Interpreting phylogenetic trees

Constructing phylogenetic trees

Example: the evolution of whales

The history of life

The shape of the tree

The fossil record

Putting the timeline together

Processes of diversification

Adaptive radiations

Mass extinctions

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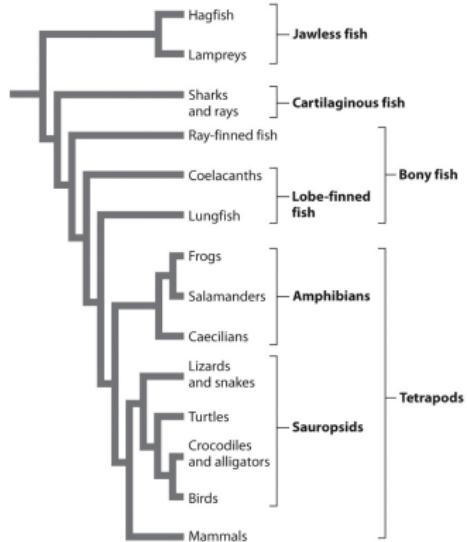


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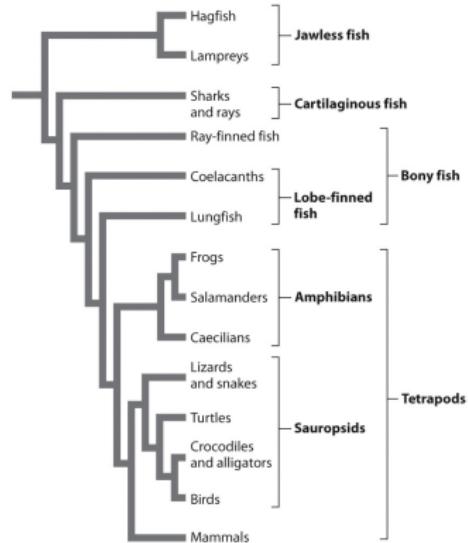


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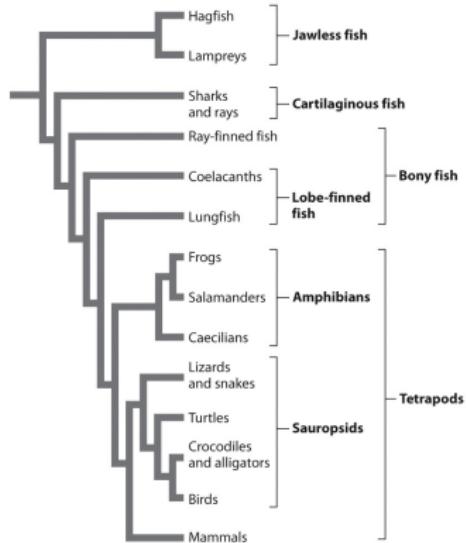


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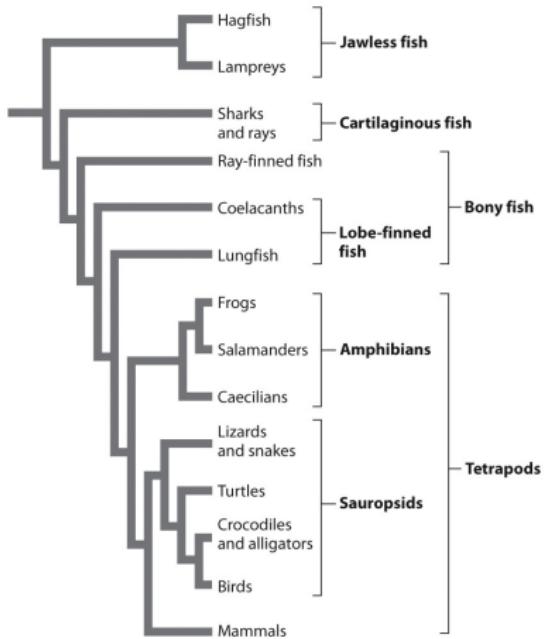


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Sister taxa

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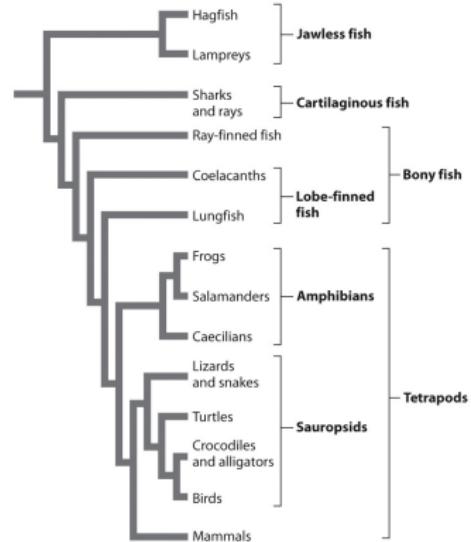


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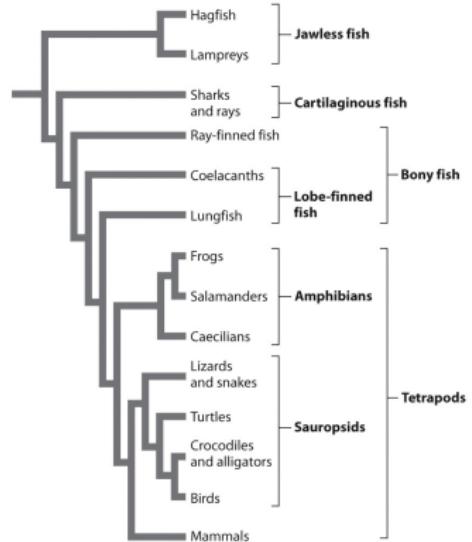


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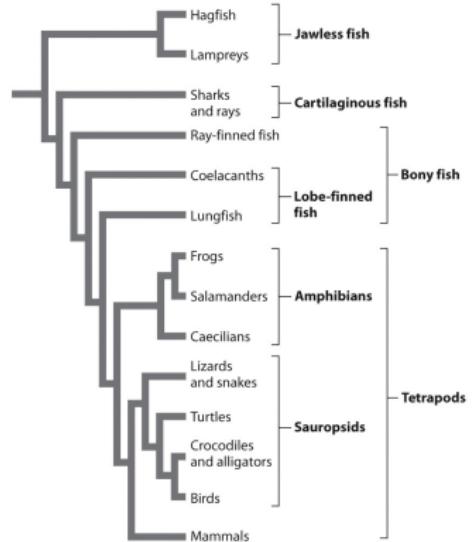


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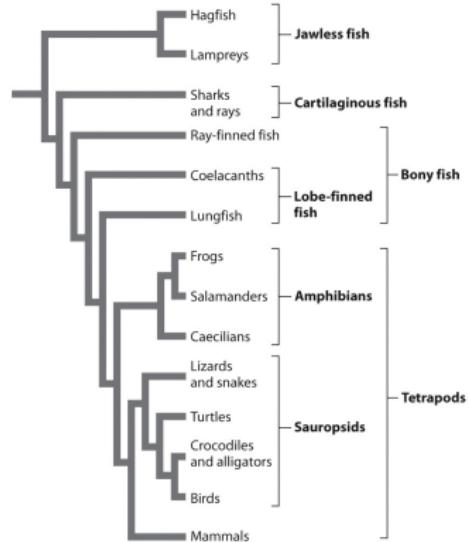


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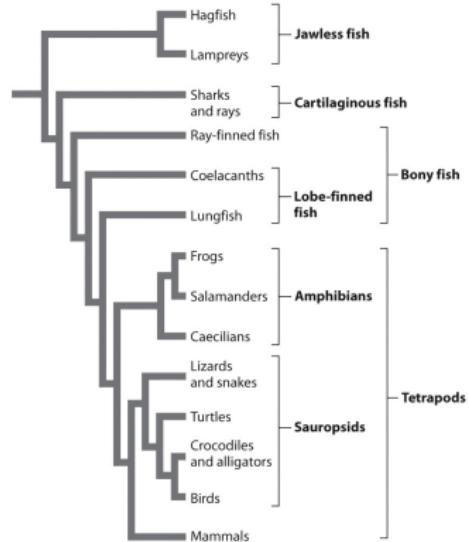


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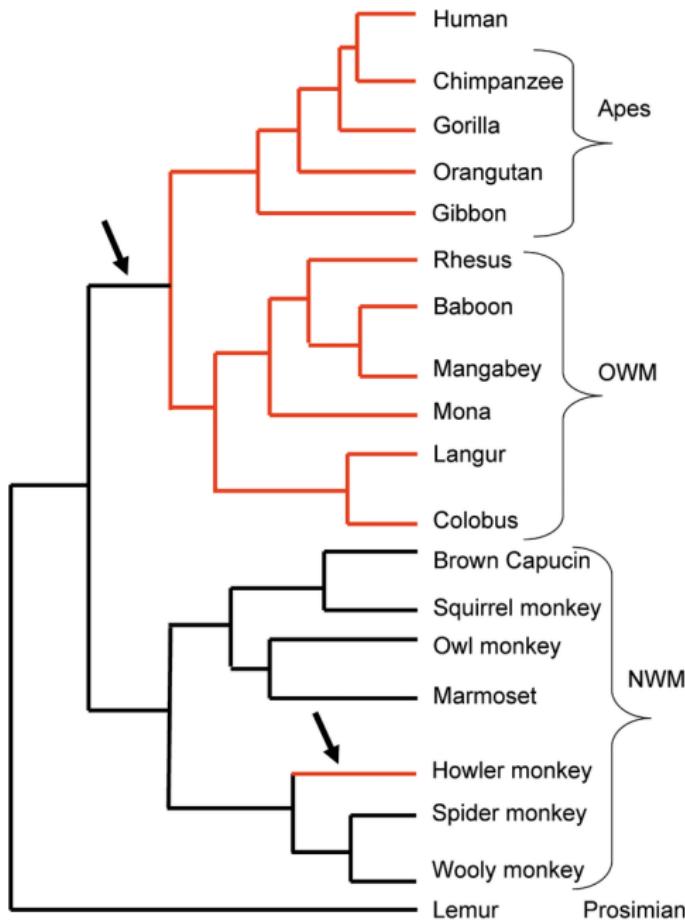
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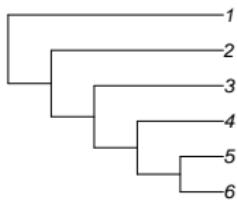
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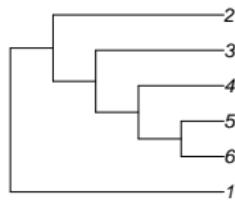
Wikimedia commons: Phylogenetic Tree of Primates

Activity: which of these things is not like the others?

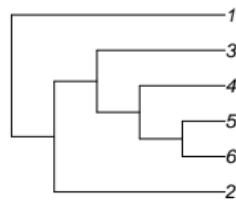
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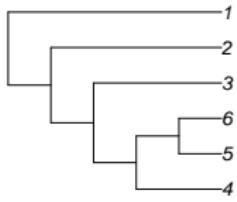
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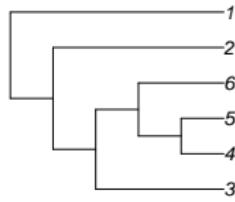
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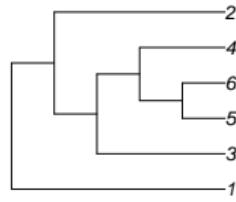
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E



F



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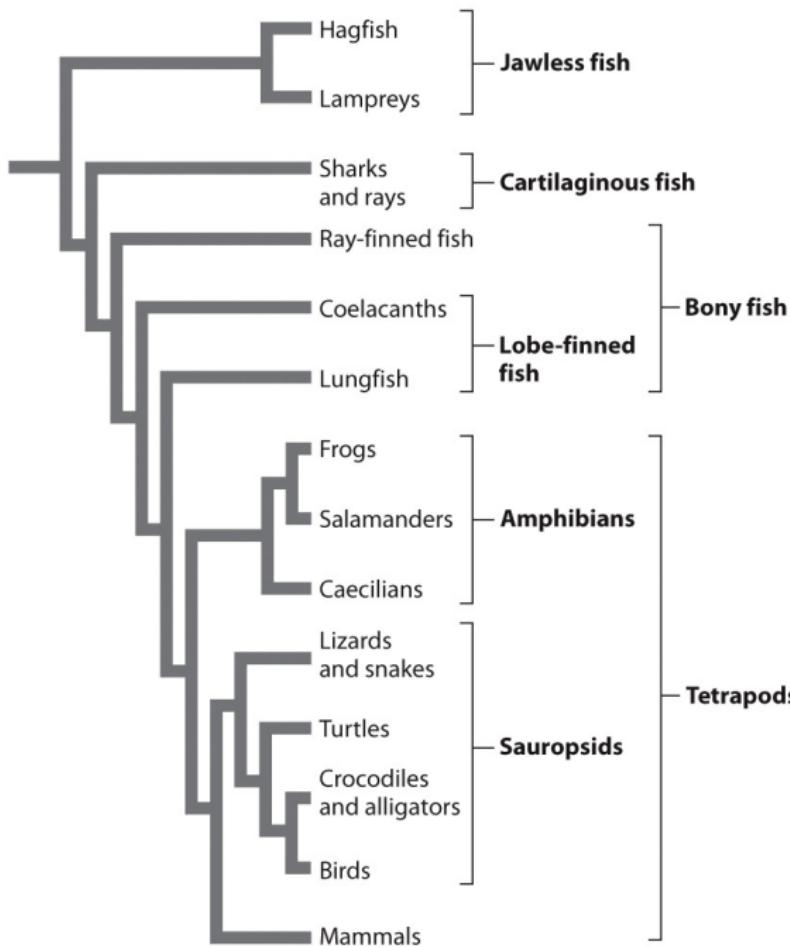
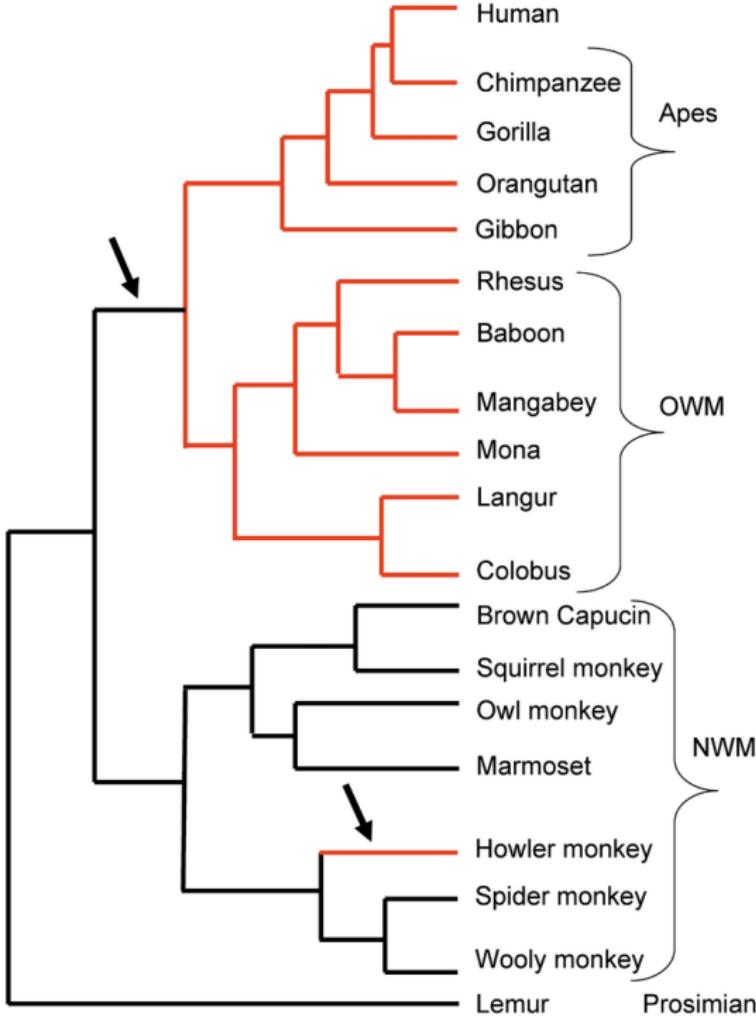


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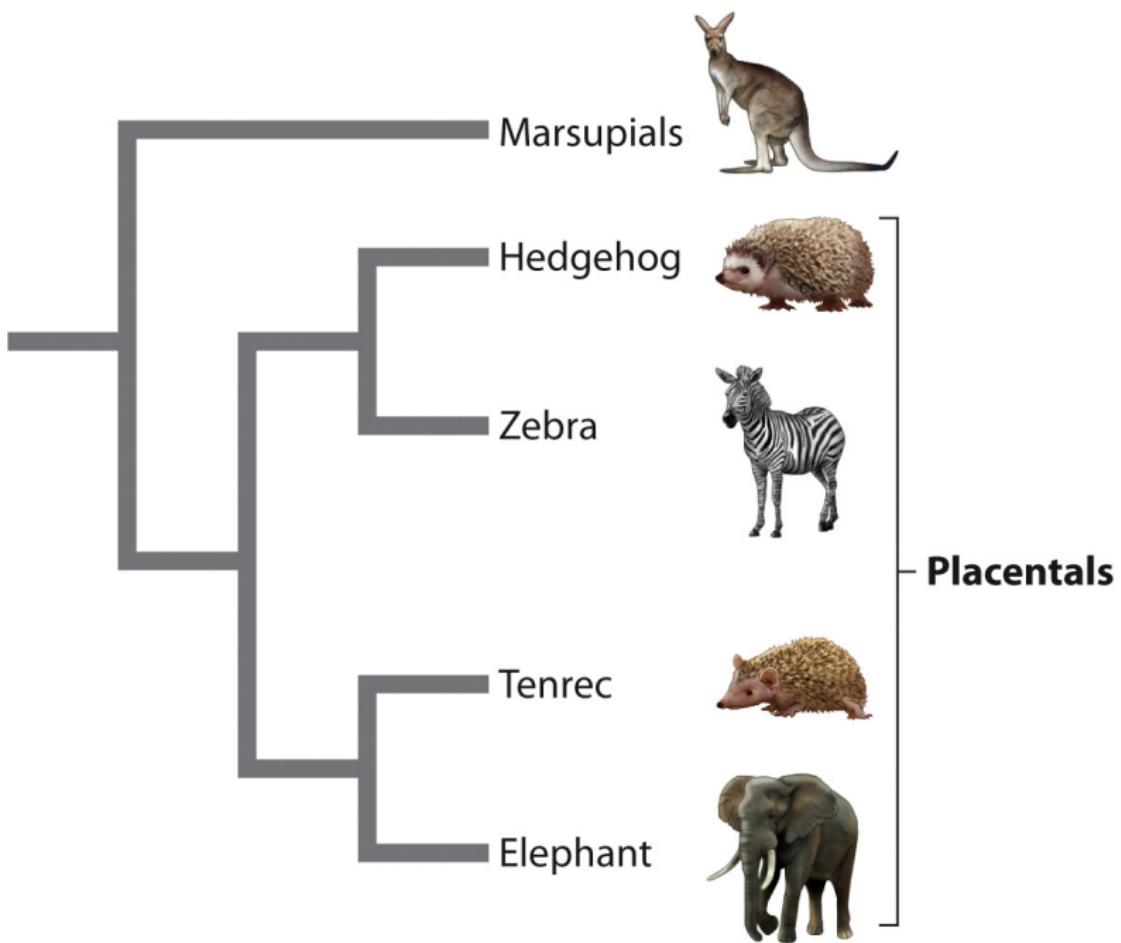


Figure 22.7
Biology: How Life Works
© Macmillan Learning





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Outline

Phylogeny

Interpreting phylogenetic trees

Constructing phylogenetic trees

Example: the evolution of whales

The history of life

The shape of the tree

The fossil record

Putting the timeline together

Processes of diversification

Adaptive radiations

Mass extinctions

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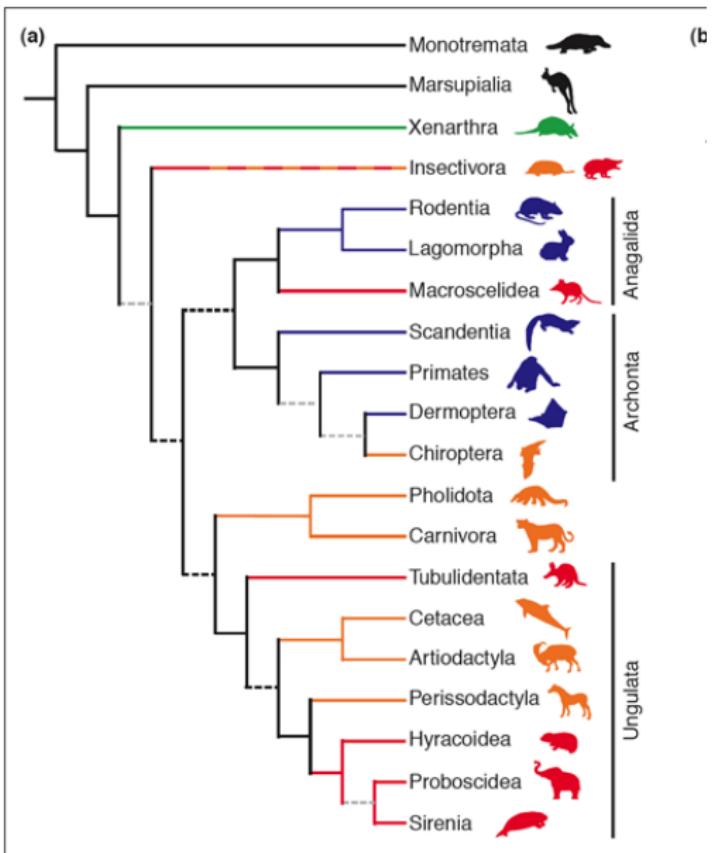
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Morphological tree



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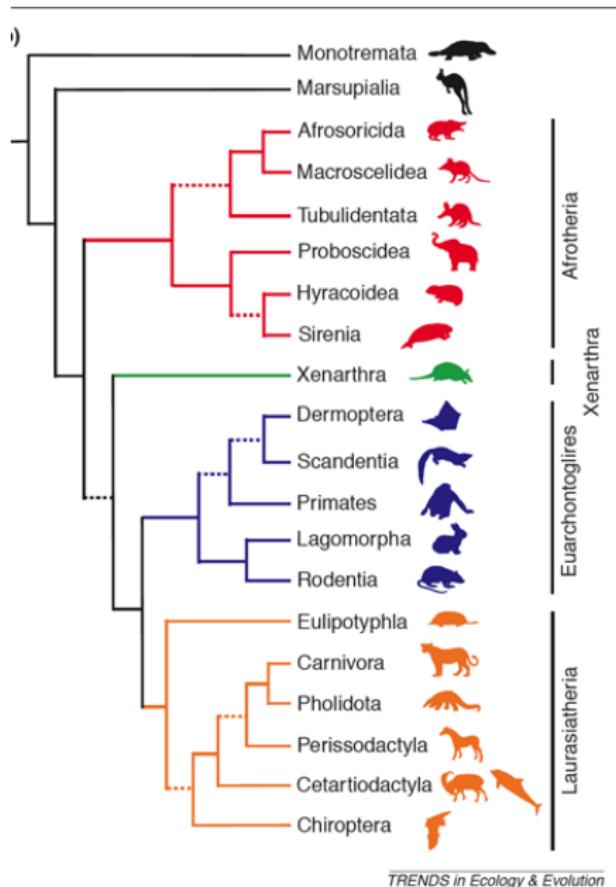
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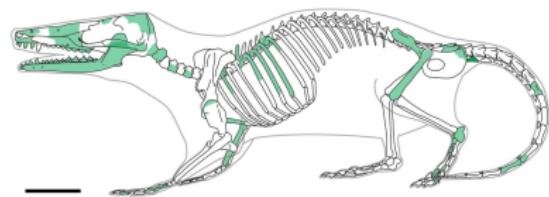
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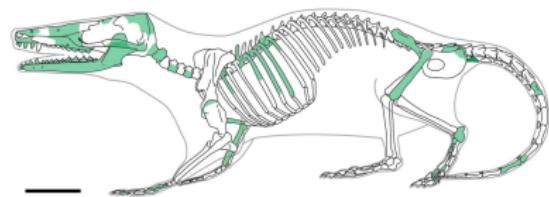


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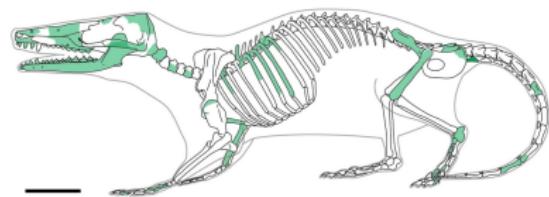
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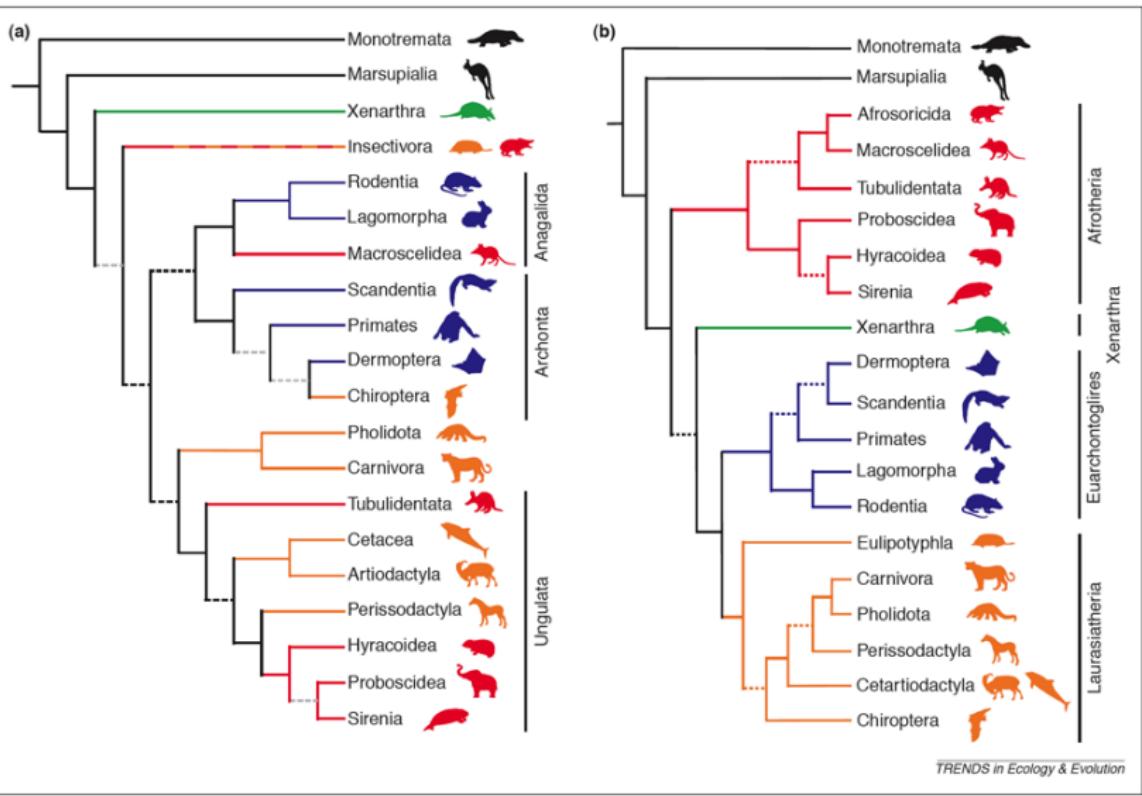
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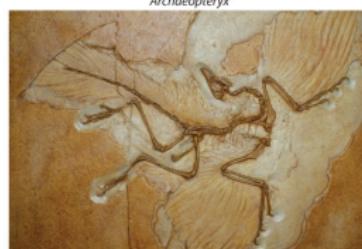
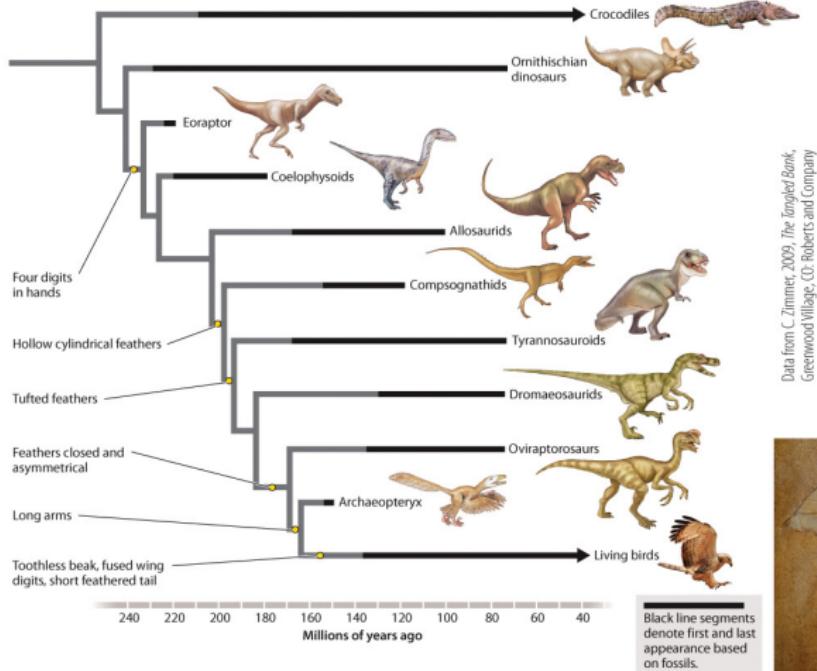


Figure 22.21
Biology: How Life Works
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Data from C. Zimmer, 2009, *The Tangled Bank*, Greenwood Village, CO: Roberts and Company

Jason Edwards/National Geographic/Getty Images

Outline

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Interpreting phylogenetic trees

Constructing phylogenetic trees

Example: the evolution of whales

The history of life

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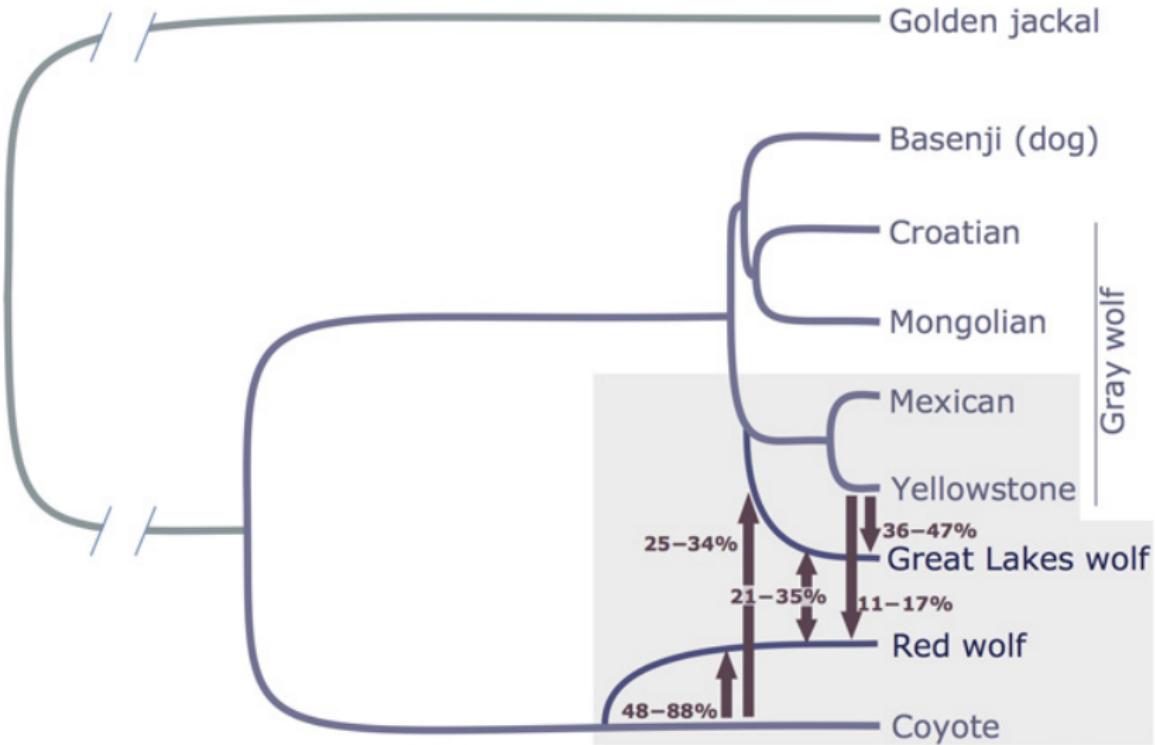
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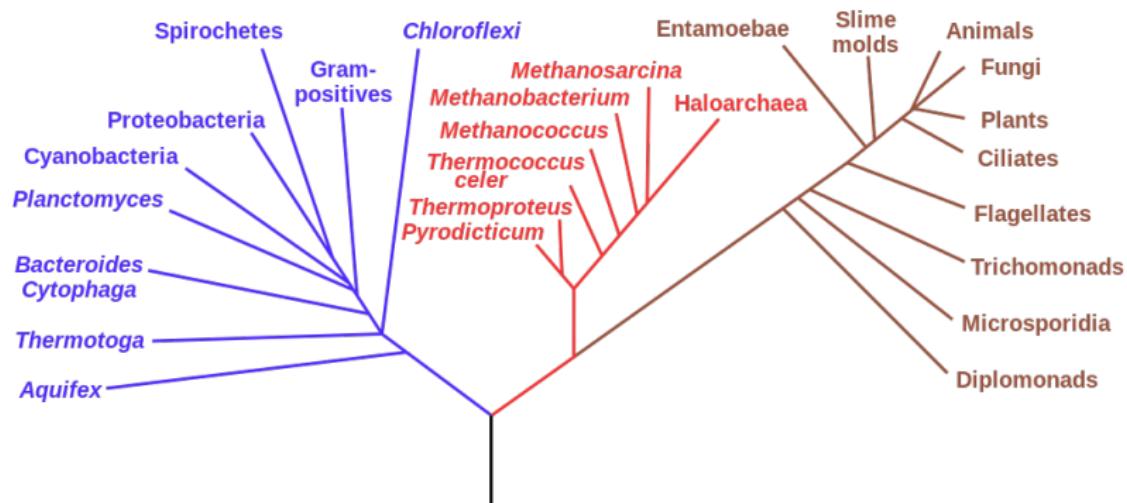
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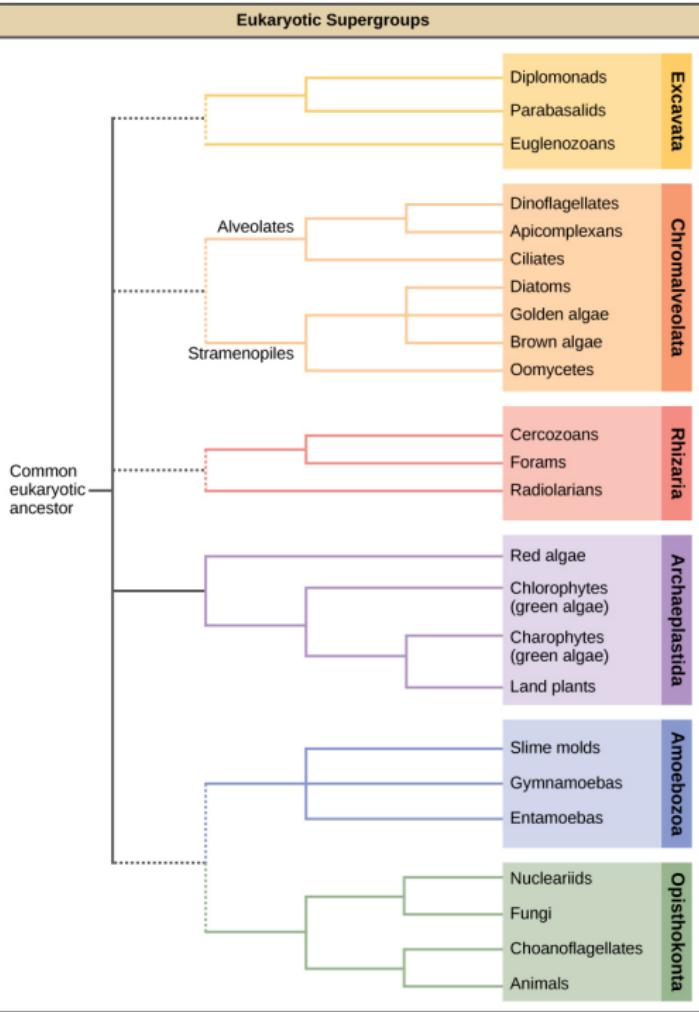
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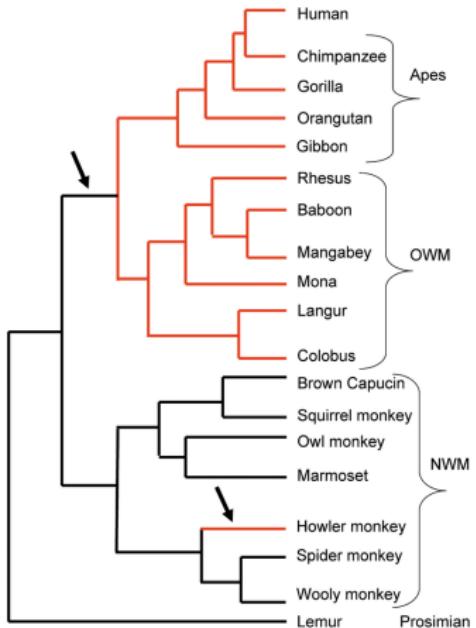
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Eukaryotic Supergroups

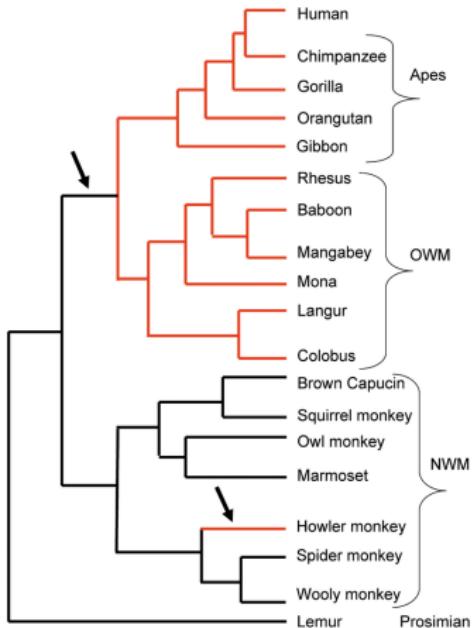


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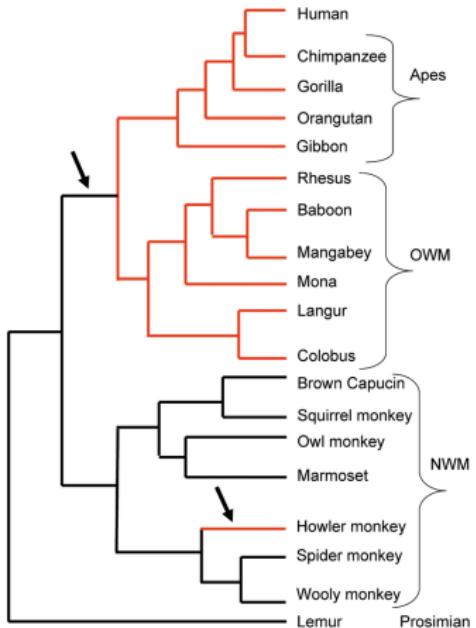
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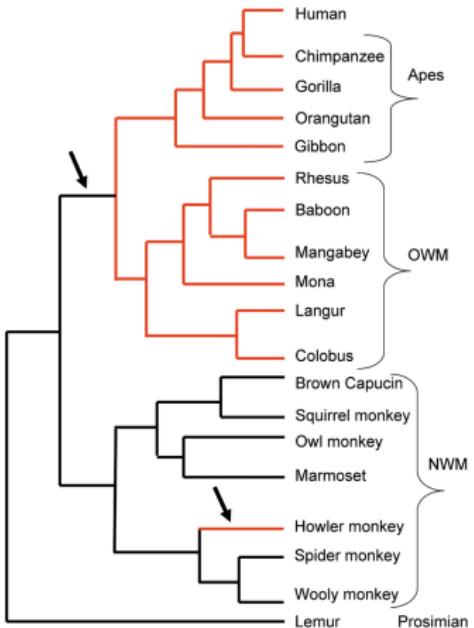
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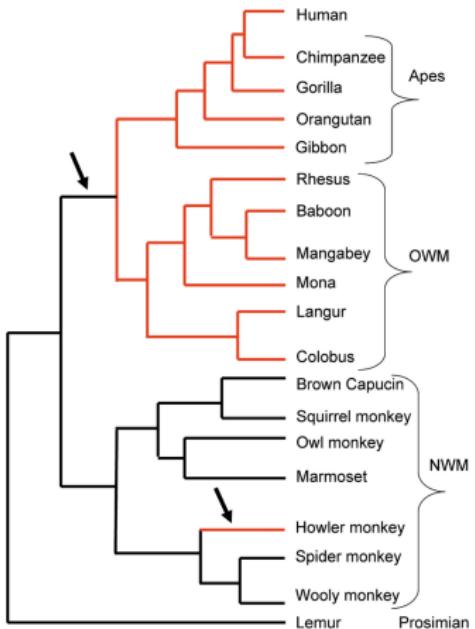
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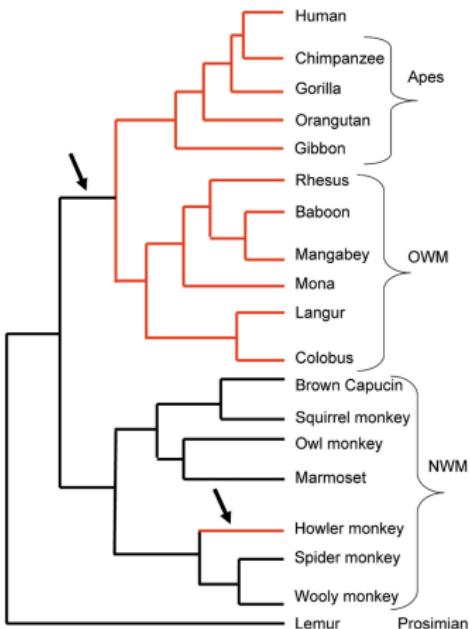
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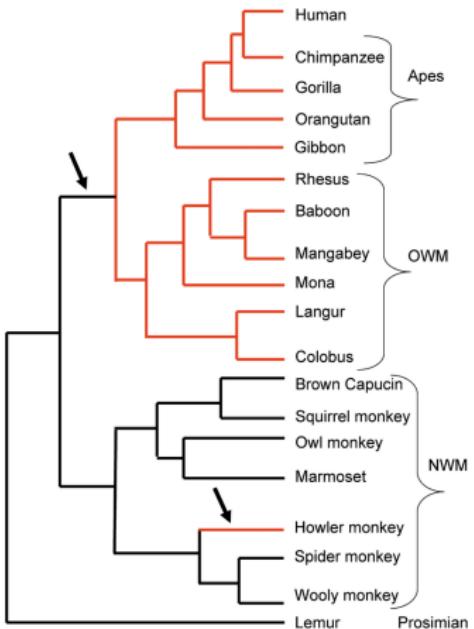
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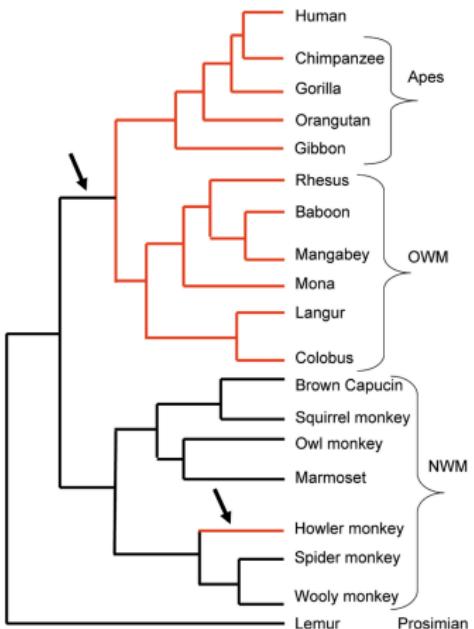
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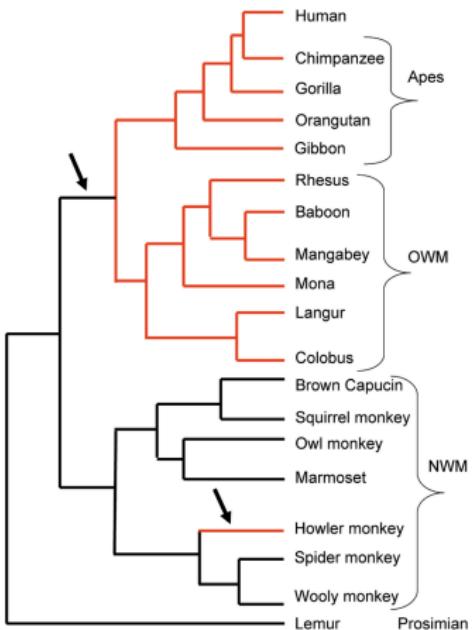
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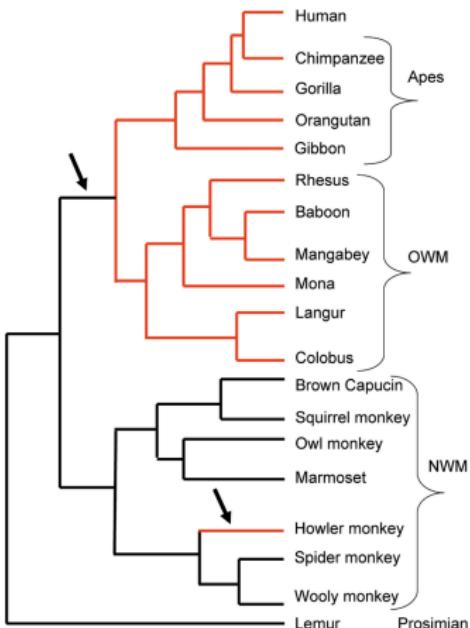
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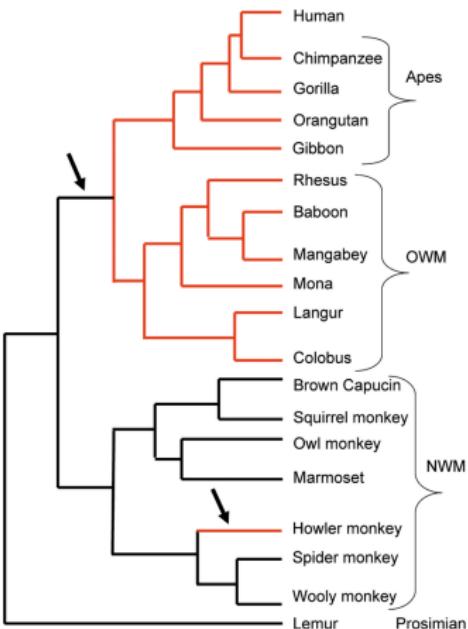
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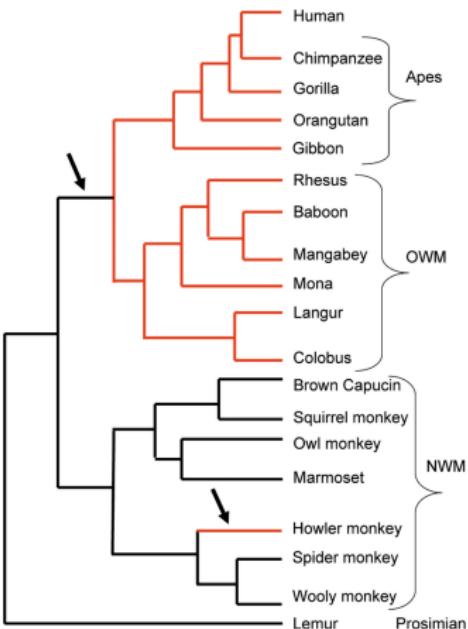
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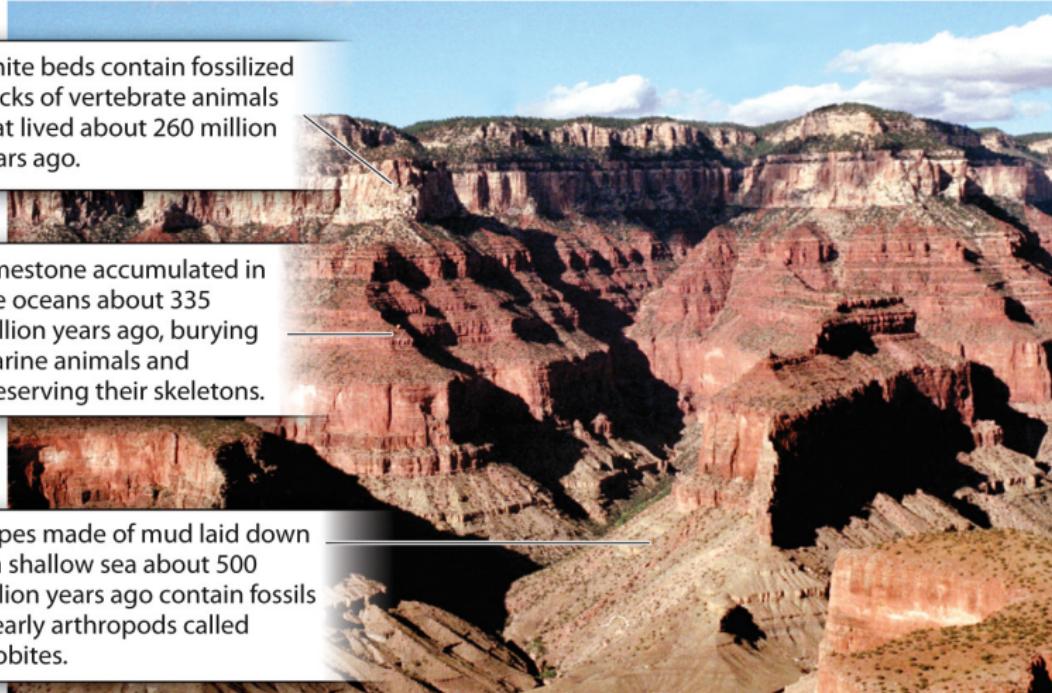
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White beds contain fossilized tracks of vertebrate animals that lived about 260 million years ago.

Limestone accumulated in the oceans about 335 million years ago, burying marine animals and preserving their skeletons.

Slopes made of mud laid down in a shallow sea about 500 million years ago contain fossils of early arthropods called trilobites.



National Park Service

Figure 22.14

Biology: How Life Works
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Figure 22.15
Biology: How Life Works
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José Antonio Hernáiz/AGENCE FOTOSTOCK



Figure 22.16
Biology: How Life Works
© Macmillan Learning

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Wild Horizon/Getty Images



Figure 22.17
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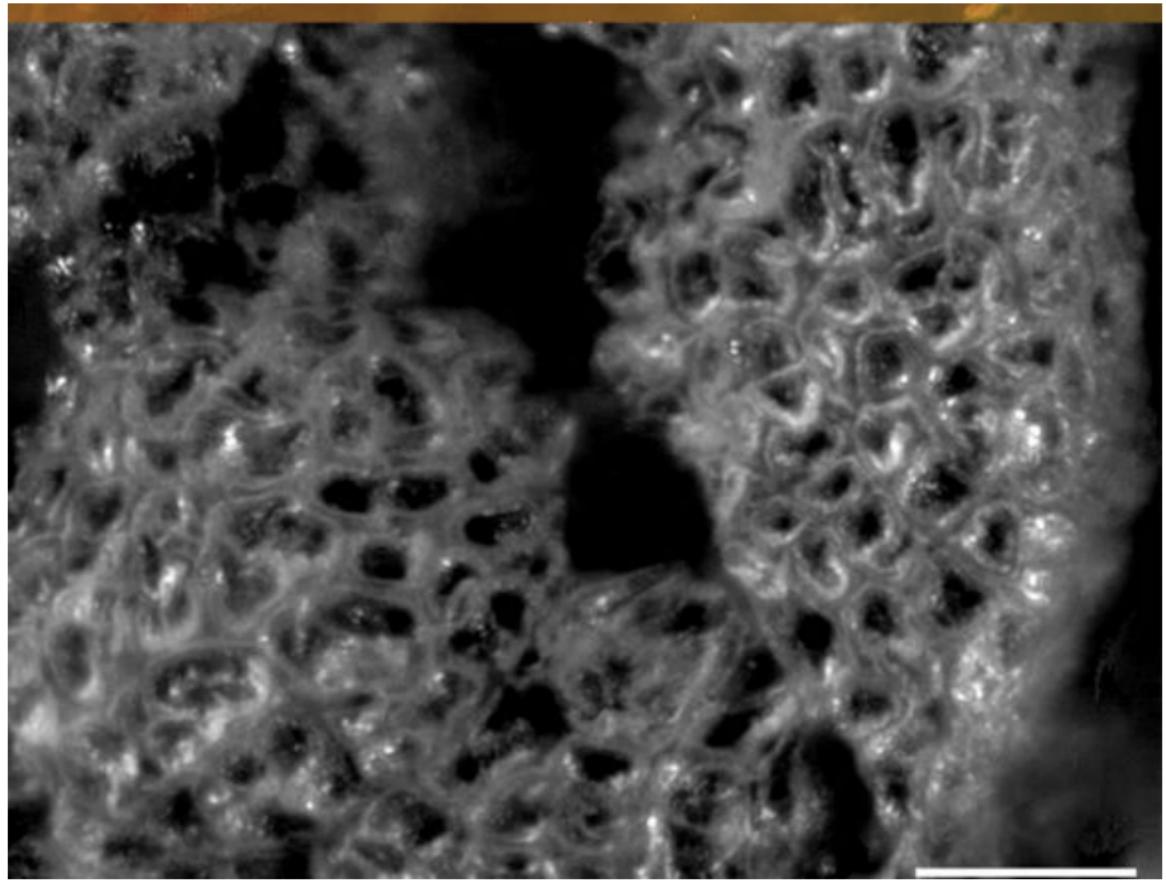
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