

10.4 Evidence of Evolution

KEY CONCEPT

Evidence of common ancestry among species comes from many sources.

This star-nosed mole has a pink **snout** that is especially good at finding food. The snout's 22 fingerlike **rays** can touch up to 12 objects in just one ~~second~~ **second**. The mole uses strong paddle-shaped **feet** for burrowing, and its large **ear openings** give it excellent hearing..



10.4 Evidence of Evolution

- ▶ Evidence for evolution in Darwin's time came from several sources.
- **Fossils** provide evidence of evolution.
- **Fossils** in older layers are more primitive than those in the upper layers.



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Mammoth excavated from the La Brea Tar Pits
By WolfmanSF (Own work) [CC-BY-SA-3.0 or GFDL], via [Wikimedia Commons](#)



"Sue" the T. rex discovered by Sue Hendrickson
Sue is a replacement fossil
Rklawton at the English language Wikipedia [GFDL], from Wikimedia Commons



A mold fossil of an ancient scallop
By Wilson44691 at en.wikipedia [Public domain], from [Wikimedia Commons](#)

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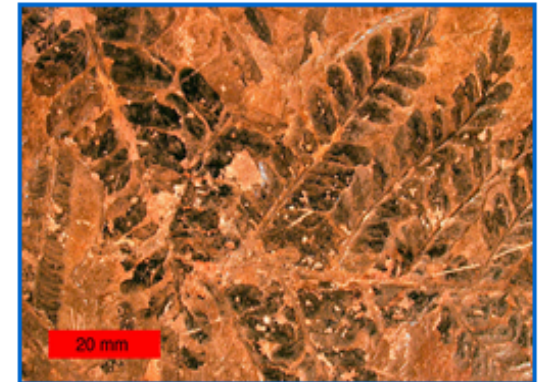
[Fossils embedded in a rock layer](#)

By Mila Zinkova (Own work) [[GFDL](#) or [CC-BY-SA-3.0-2.5-2.0-1.0](#)], via [Wikimedia Commons](#)



[Amber Fossil of Insect](#)

By [Leptofoenus_pittfieldae_\(male\).JPG](#): Michael S. Engelderivative work: Kevmin ([Leptofoenus_pittfieldae_\(male\).JPG](#)) [[CC-BY-3.0](#) or [CC-BY-3.0](#)], via [Wikimedia Commons](#)

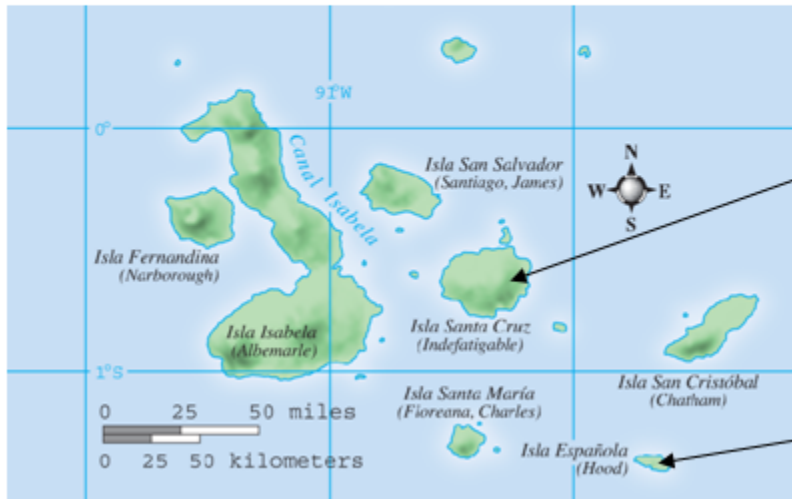


[Compression Fossil of Leaves](#)

By [Wilson44691](#) (Own work) [Public domain], via [Wikimedia Commons](#)

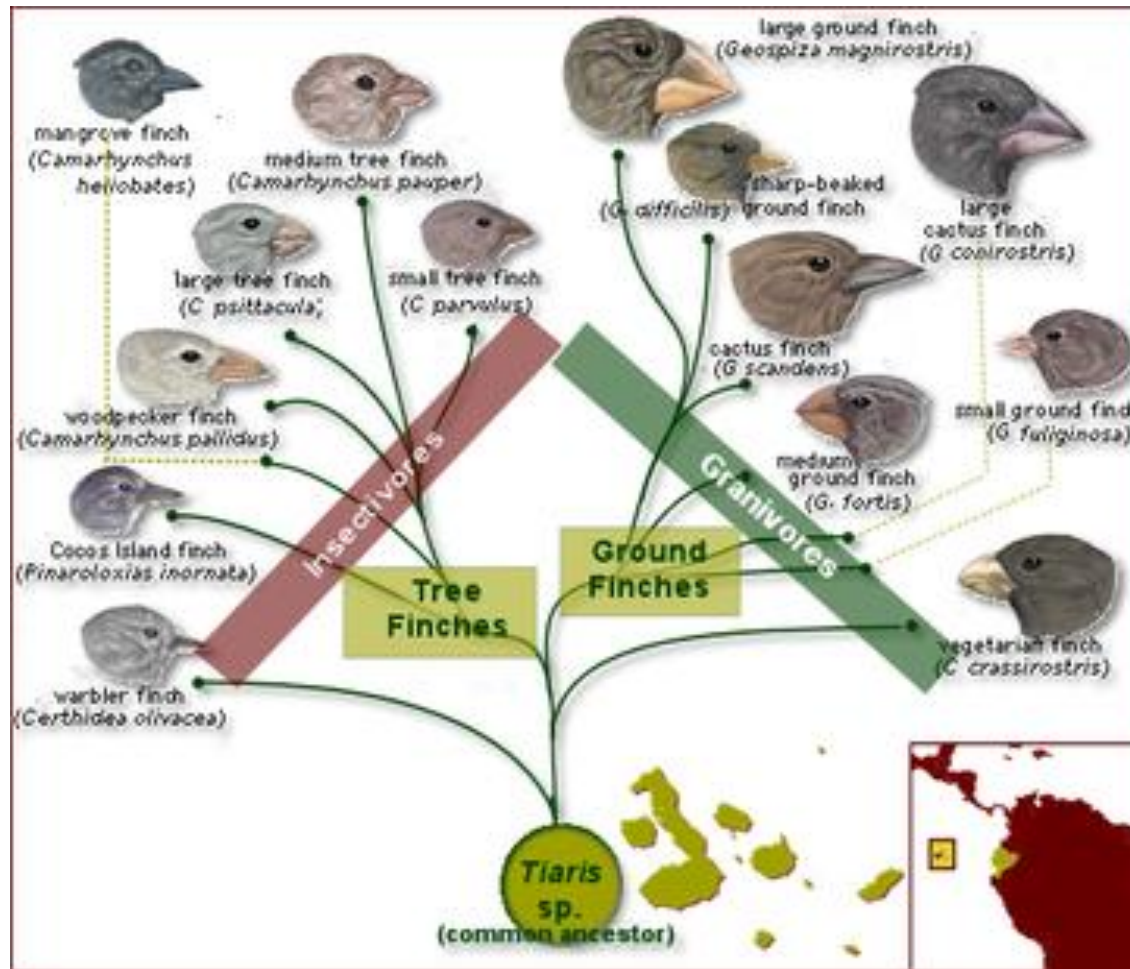
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- The **study of geography** provides evidence of evolution.
 - island species most closely resemble nearest mainland species
 - populations can show variation from one island to another



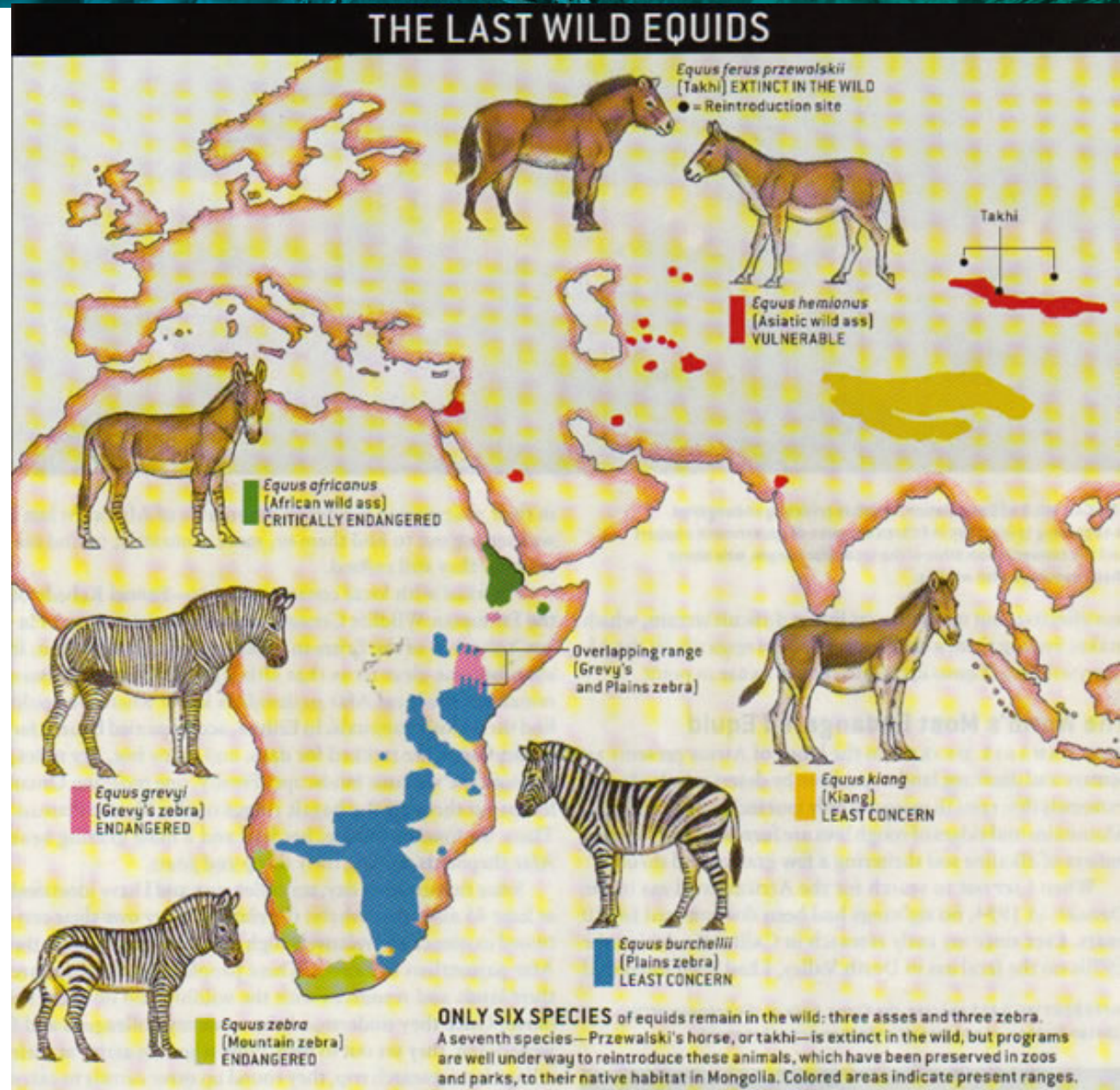
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- **Embryology** provides evidence of evolution.
 - identical larvae, different adult body forms
 - similar embryos, diverse organisms



Adult crab



Larva



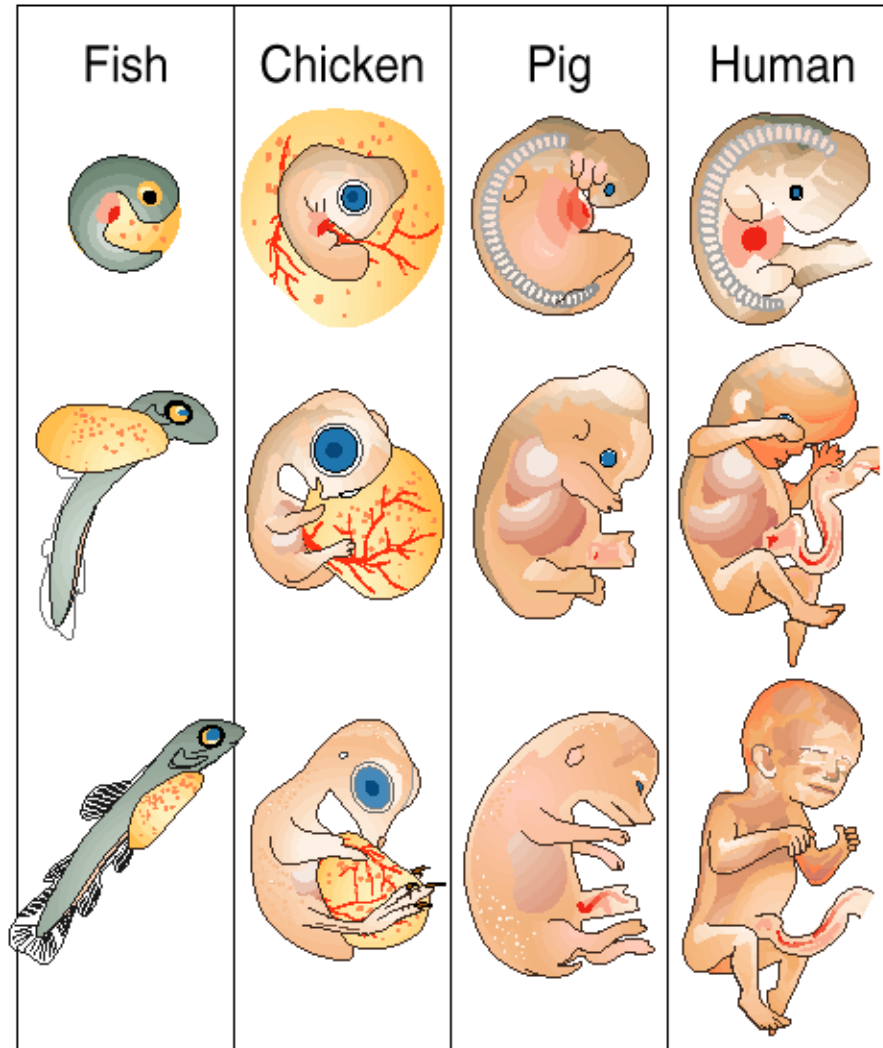
Adult barnacle



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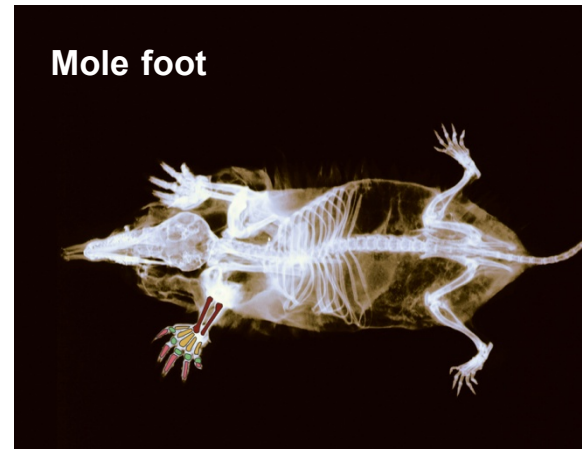
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Biology, Prentice Hall, 2000 edition, p283



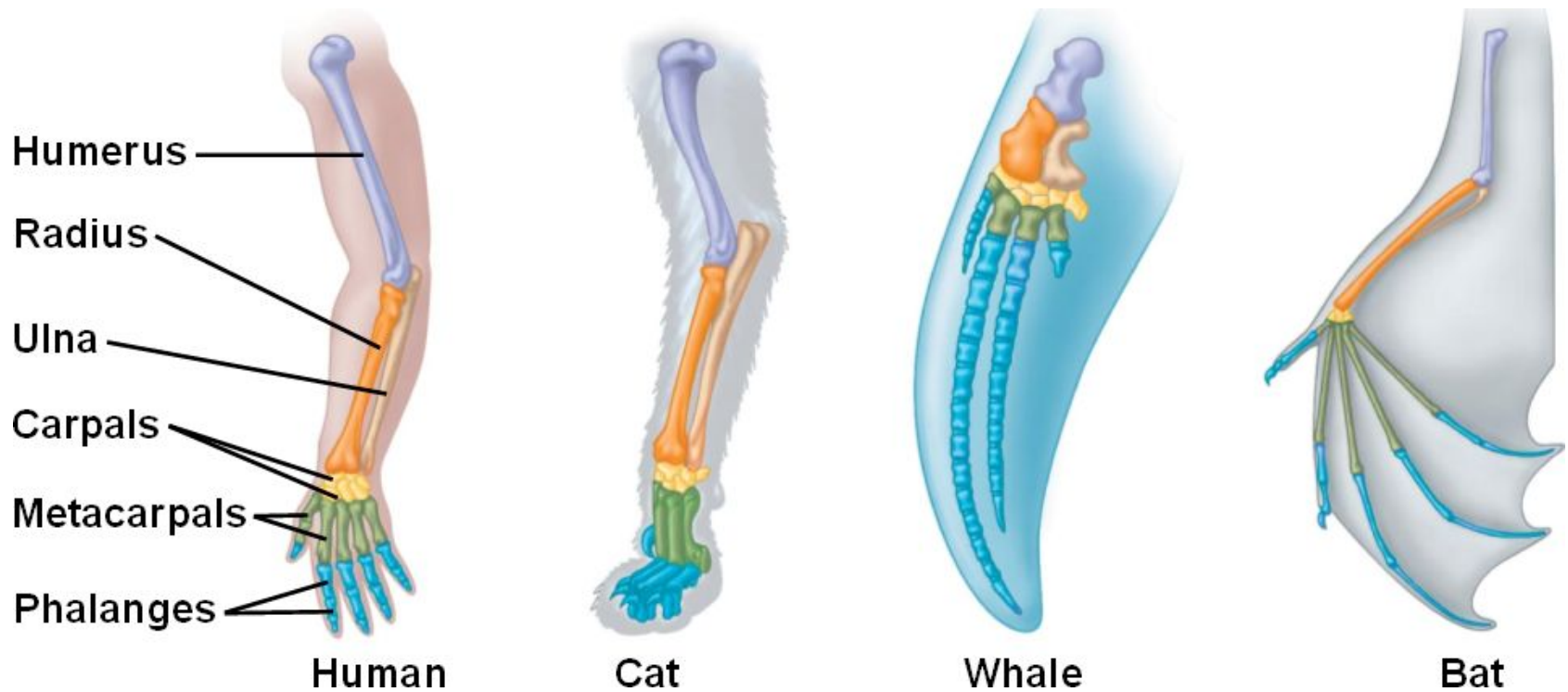
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- The study of **anatomy** provides evidence of evolution.
 - **Homologous structures** are similar in structure but different in function.
 - Homologous structures are evidence of a common ancestor.



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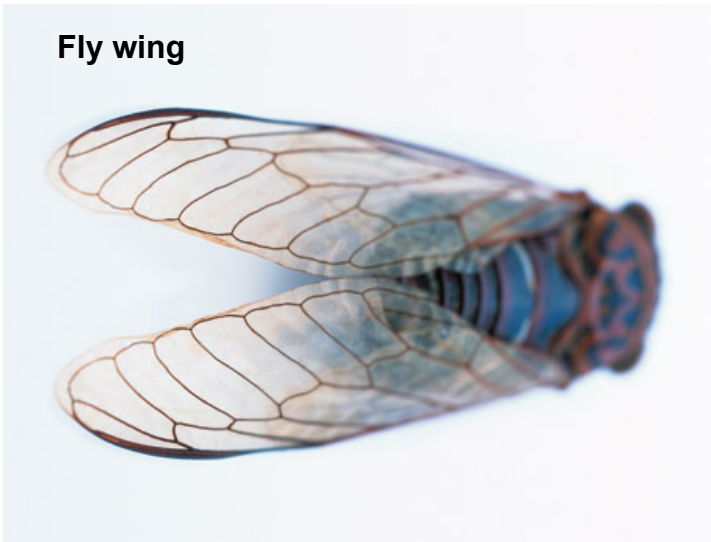
- The study of **anatomy** provides evidence of evolution.
 - **Homologous structures** are similarity in structure due to common descent (but different in function)



10.4 Evidence of Evolution

- The study of **anatomy** provides evidence of evolution.
 - **Analogous structures** have a similar function.
 - Analogous structures are not evidence of a common ancestor.

Fly wing

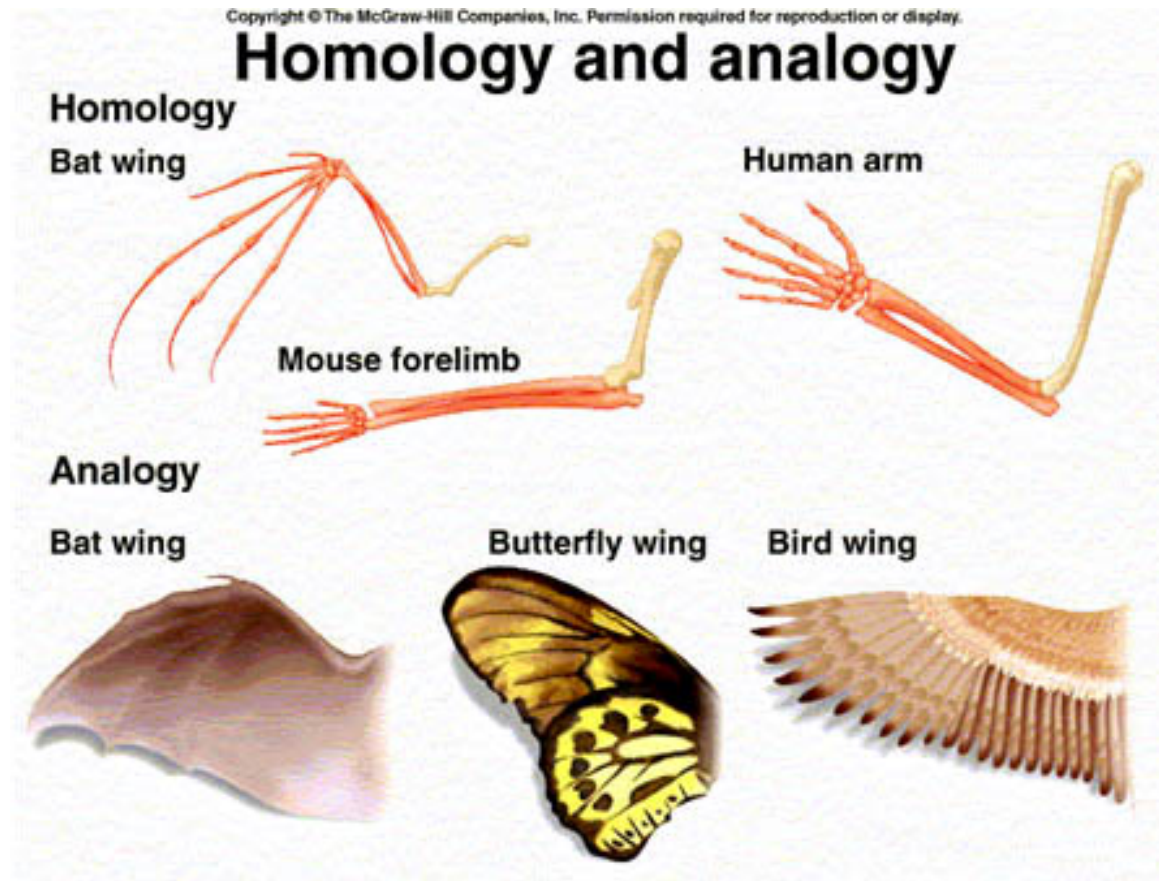


Bat wing



10.4 Evidence of Evolution

- **Homologous structures** vs **Analogous Structures**



10.4 Evidence of Evolution

- ▶ **Structural patterns are clues to the history of a species.**
 - **Vestigial structures** are remnants of organs or structures that had a function in an early ancestor.
 - Ostrich wings are examples of vestigial structures.



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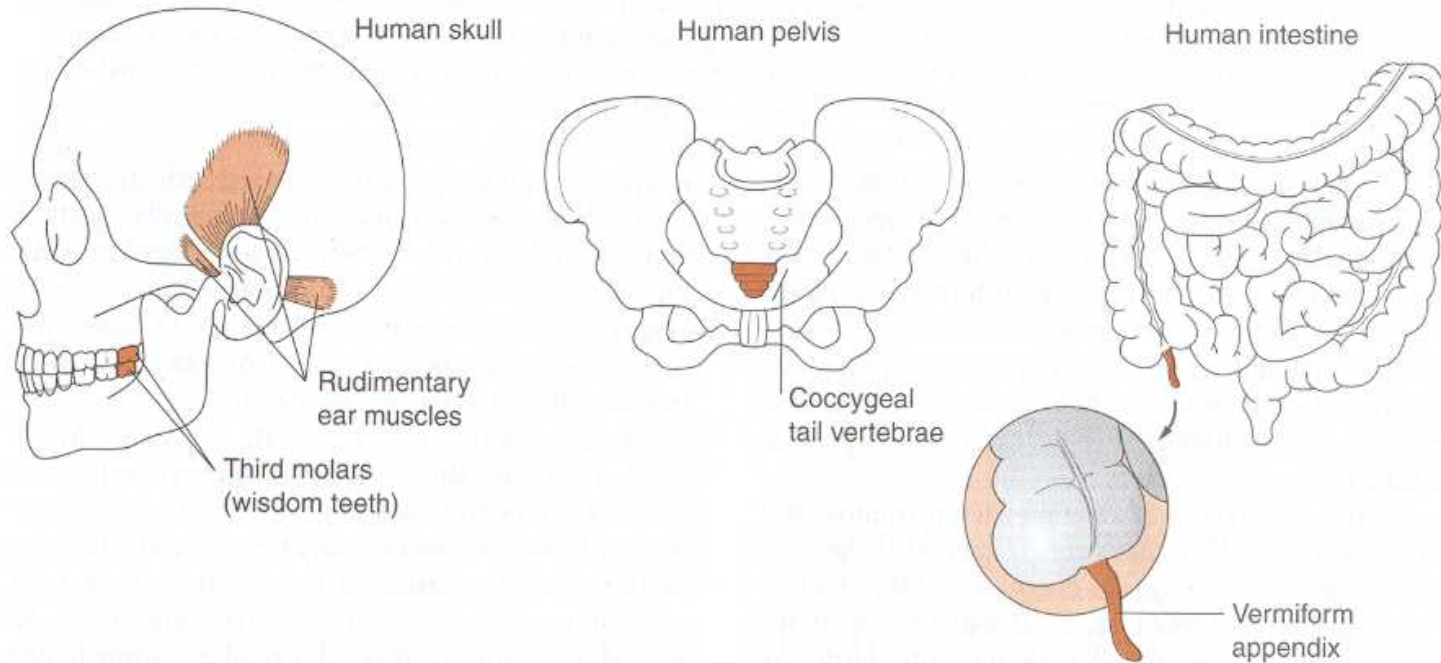


FIGURE 3-9 Some vestigial structures found in humans. (After Romanes, modified.)