Evidence of Evolution

Lesson 2

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What evidence supports evolution?

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What evidence supports evolution.

Since Darwin's time, scientists have found a great deal of evidence that supports the theory of evolution

Fossils, patterns of early development, similar body structures, and similarities in DNA and protein structures all provide evidence that organisms have changed over time

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Fossils

By examining fossils, scientists can infer the structures of ancient animals

* fossils have shown that animals that lived in the past are very different from the animals that live today

*millions of fossils collected are called the fossil record

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*fossil record provides clues about how and when new species evolved and how organisms are related

* rock layers deposited more recently are more likely to contain fossils that resemble current organisms

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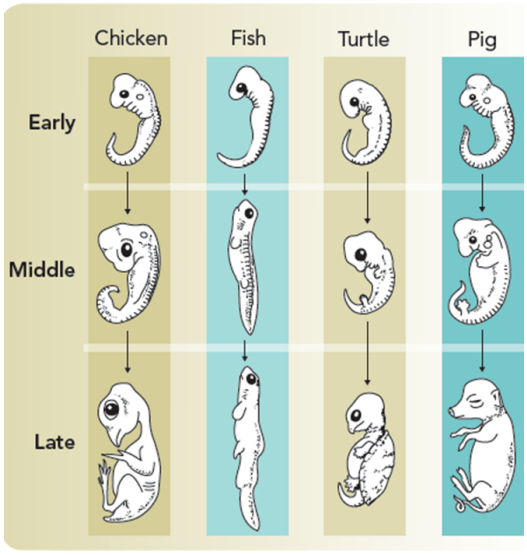
Similarities in Early Development

Scientists infer evolutionary relationships by comparing the development of different organisms

*Organisms in this figure look similar during early stages of development



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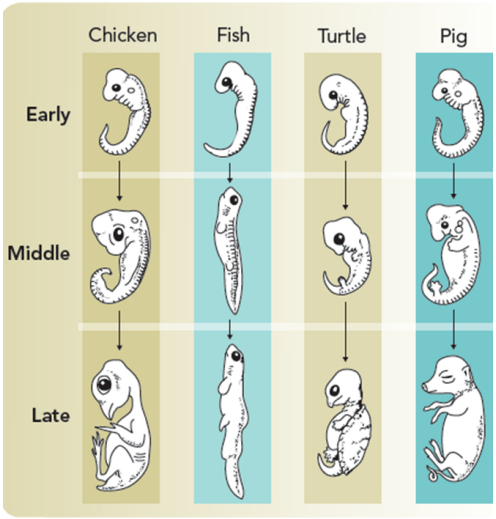
* All four organisms have a tail

* row of tiny slits along throat

* similarities suggests that the vertebrate species are related and have a common ancestor



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Similarities in Body Structure

An organism's body structure is its basic body plan, which in vertebrates, includes how its bones are arranged

*Fishes, birds, reptiles, amphibians, and mammals all have an internal skeleton with a back bone

*This similarity provides evidence that these animal groups all evolve from a common ancestor

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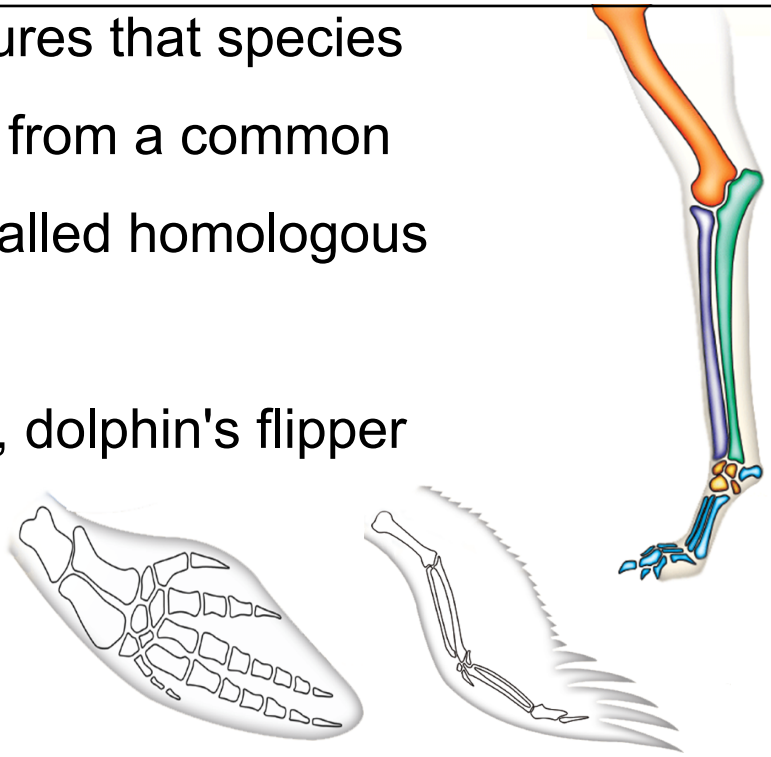
*Similar structures that species have inherited from a common ancestor are called homologous structures

ex. bird's wing, dolphin's flipper and dog's leg



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Similarities in DNA and Protein Structure

Scientists infer that species inherited many of the same genes from a common ancestor

*Recall that genes are segments of DNA

*Scientists compare the nitrogen bases of different species to see how closely related the two species are

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*The more similar the protein sequences are the more closely related

*DNA bases along a gene will determine protein produced.

*Scientists compare the order of amino acids

Section of Cytochrome c Protein in Animals

Animal	Amino Acid Position in the Sequence											
	39	40	41	42	43	44	45	46	47	48	49	50
Horse	N	L	H	G	L	F	G	R	K	T	G	Q
Donkey	N	L	H	G	L	F	G	R	K	T	G	Q
Rabbit	N	L	H	G	L	F	G	R	K	T	G	Q
Snake	N	L	H	G	L	F	G	R	K	T	G	Q
Turtle	N	L	N	G	L	I	G	R	K	T	G	Q

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Evidence from DNA and protein structure has confirmed conclusions based on fossils, embryos and body structure

ex. DNA comparison shows that dogs are more closely related to wolves than coyotes

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