**Notes: Evidence of Evolution**

**Evidence of Evolution**

* Remember, evolution is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, so there must be extensive evidence that supports it!
* Lines of evidence:
	1.
	2.
	3.
	4.

**Fossil Record**

* Show \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between extinct organisms and organisms living today
* Many types of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, imprints (footprints, leaves), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, plants, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, eggs, fossilized amber (insects)
* Transitional Species
	+ Show link between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of organisms
		- Example: Archaeopteryx–Link between reptiles and birds
* Shows \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ between living and extinct species
	+ - Example:

**Anatomical Features**

* Similarities in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ suggest common descent/ancestry among organisms
	1.
	2.

**Homology vs. Analogy**

* Homology- traits inherited by two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms from a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ancestor (forelimbs of a dog and human arm)
* Analogy- similarity due to convergent evolution \_\_\_\_\_\_\_\_\_\_ common \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (wings of a bird and wings of a butterfly)

**Convergent Evolution**

* Convergent evolution
	+ Two separate organisms evolve similar characteristics \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of one another
	+ Happens when two species are facing similar selective pressures/same \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressures



**Divergent Evolution**

* Divergent evolution is the accumulation of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_; results in different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



**Homologous Structures**

* Definition:
	+ Bones or organs that appear in different organisms but share a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ancestry
	+ Same basic \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ Example:
		- \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of vertebrates:
			*
			*
			*
			*
			* These bones are very similar but have **very different functions**

**Vestigial Structures**

* Definition
	+ Body structure that has been \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in size and function
	+ But, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ a fully functional structure in another organism
* Examples
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (coccyx) in humans
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in humans
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in flightless birds
		- Related to wings used for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fold in human eye
		- Remnant of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ membrane
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in humans
		- Attempt to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_ fur when cold

**Embryology**

* Embryology Definition:
	+ The study of embryos and their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Different organisms show very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ developmental patterns and structures
	+ Suggests \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ancestry between species
* Example:
	+ All vertebrates have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ at some point during development

**Biochemistry**

* Nucleic acids carry \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ information in all organisms
	+ \_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ genetic code
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ code and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ acids are the same for all organisms
	+ \_\_\_\_\_\_\_\_\_\_\_ sequences
	+ The more closely related organisms are, the more similar their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sequences
* Proteins
	+ Vital proteins are found in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ organisms
	+ Example:
* ATP
	+ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ source for all organisms