Heredity & Evolution

Look over the images below and create a list of similarities and differences that you find. YOU MUST HAVE ATLEAST THREE OF EACH.

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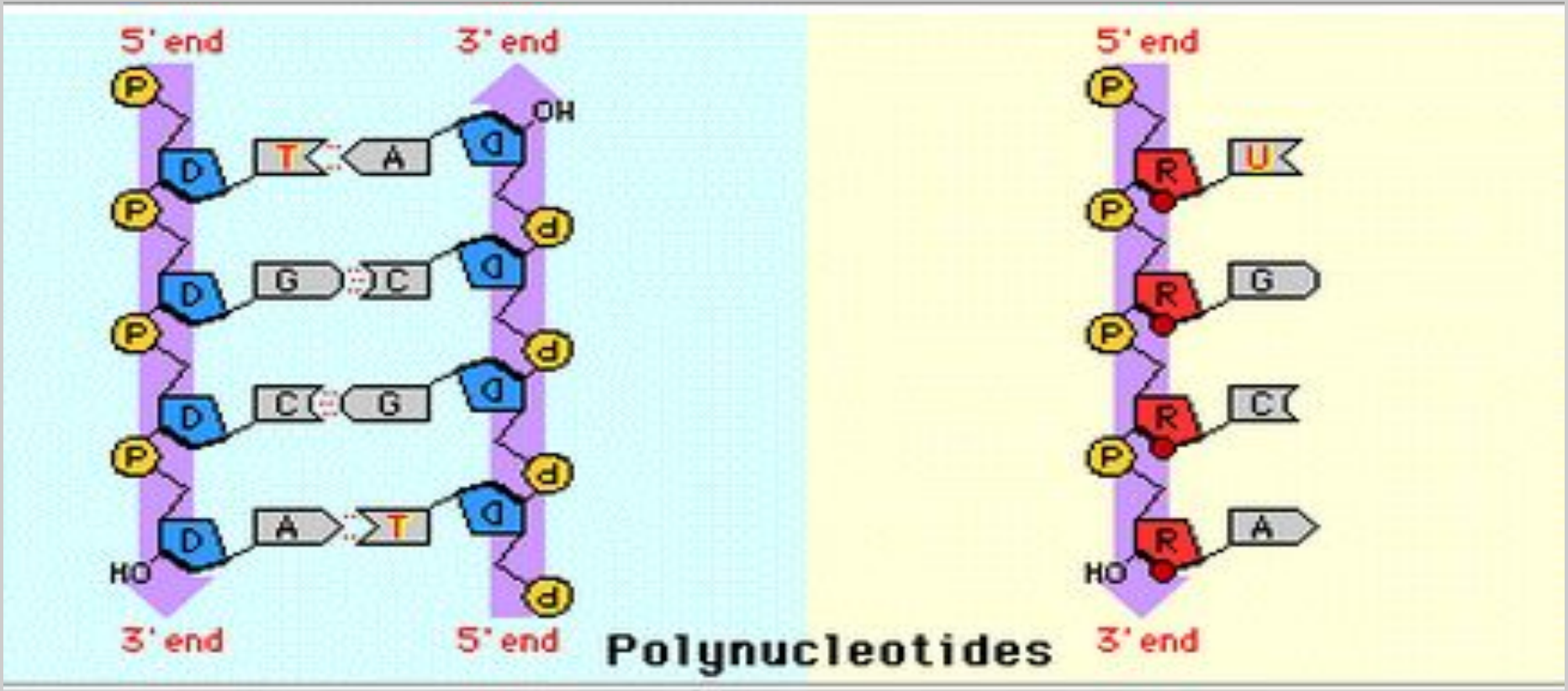
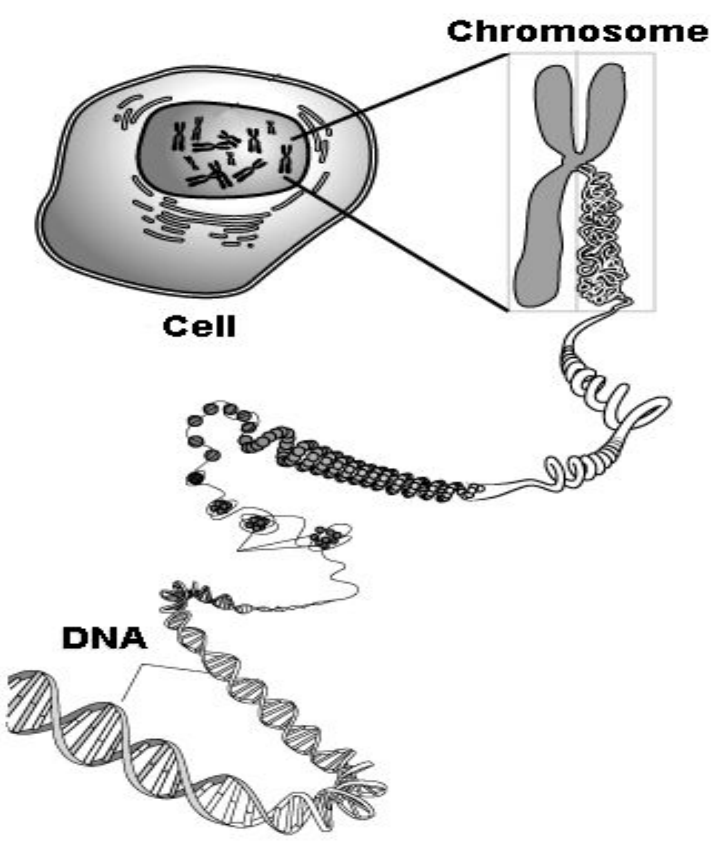


DEOXYRIBONUCLEIC ACID



Nucleus

Chromosomes

Genes

Segments of DNA

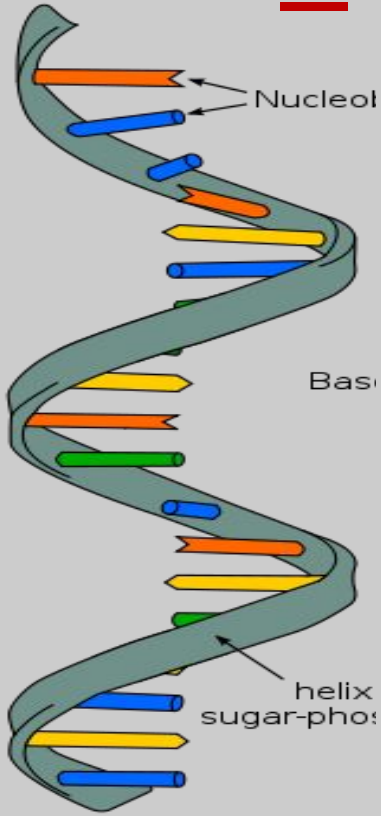
Portions of DNA are called genes.

DNA is tightly wound into chromosomes and located in the nucleus of cells.

DNA cannot leave the nucleus.

DNA is **DOUBLE STRANDED**(**2** sides)

RIBONUCLEIC ACID



RNA
Ribonucleic acid

RNA is **SINGLE STRANDED** and does not have to stay in the nucleus!

RNA is not found in chromosomes because it does not carry the genetic code, however it can read the **DNA code and take the information out of the nucleus.**

RNA's main job is to build proteins!

Understanding Protein Synthesis.

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A **cell** is like a *restaurant* – differentiated cell types are like restaurants specialising in different cuisines

The **DNA** is the set of instructions for the cell – like a *cook book* is the set of instructions for a restaurant

A single DNA instruction is a **gene** – this is akin to a single *recipe* in a cook book

Transcription is the process of making an RNA copy of a gene – RNA polymerase is like a photocopy machine

The **mRNA** transcript (i.e. *photocopied recipe*) is transported to the **ribosome** – which functions as the *cook*

The ribosome reads the mRNA one codon at a time – as a cook would read the recipe one step at a time

Each codon corresponds to an **amino acid** – just like each step in a recipe refers to a *specific ingredient*

The amino acids are brought to the ribosome by **tRNA** – these tRNA molecules are like *kitchen hands*

The ribosome joins the amino acids together to make a **polypeptide** – just like a cook mixes ingredients to make *food*

Trick to remember Protein Synthesis

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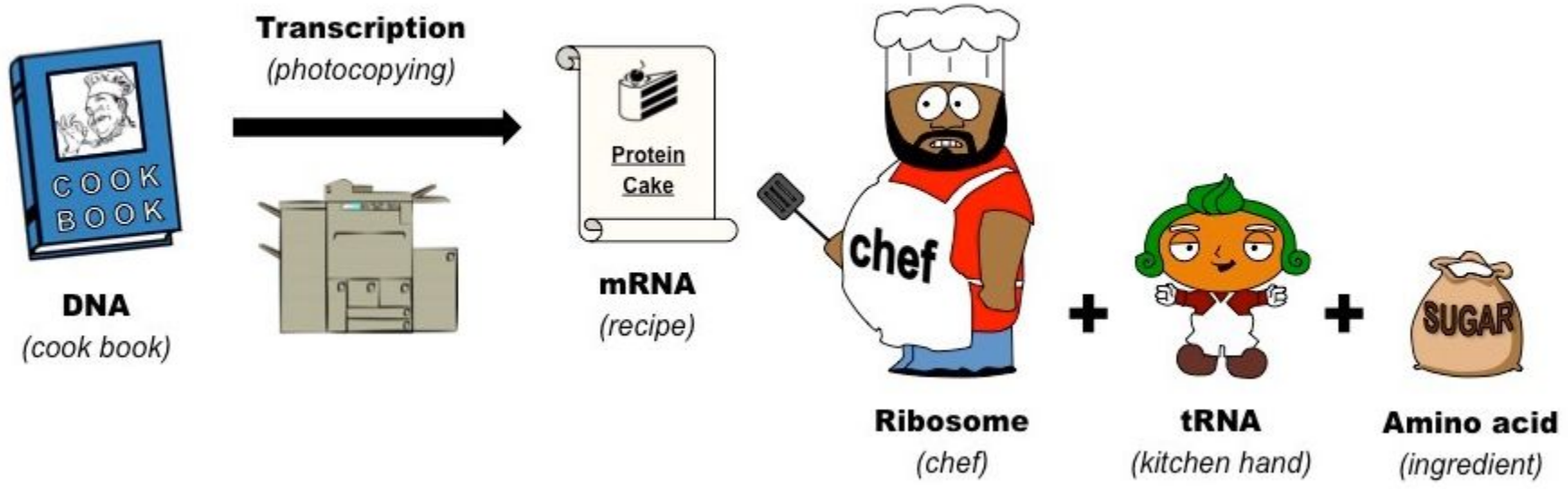


https://www.youtube.com/watch?v=zGCj6dfLh-A

Supporting Videos

https://www.youtube.com/watch?app=desktop&v=wfaoOYlyz2A

(English)

https://www.youtube.com/watch?v=taSeLsrHC_c

https://www.youtube.com/watch?v=DZv8VyIQ7YU

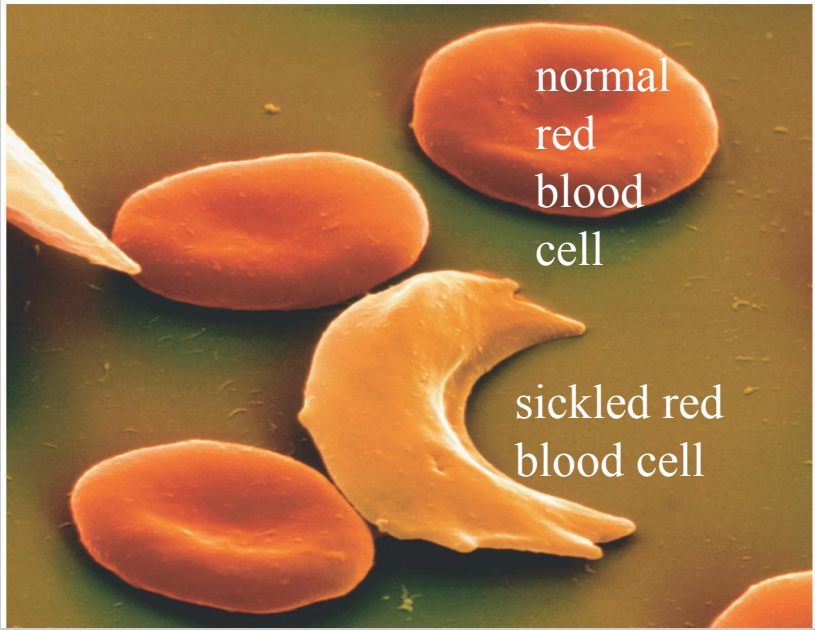
Mutation

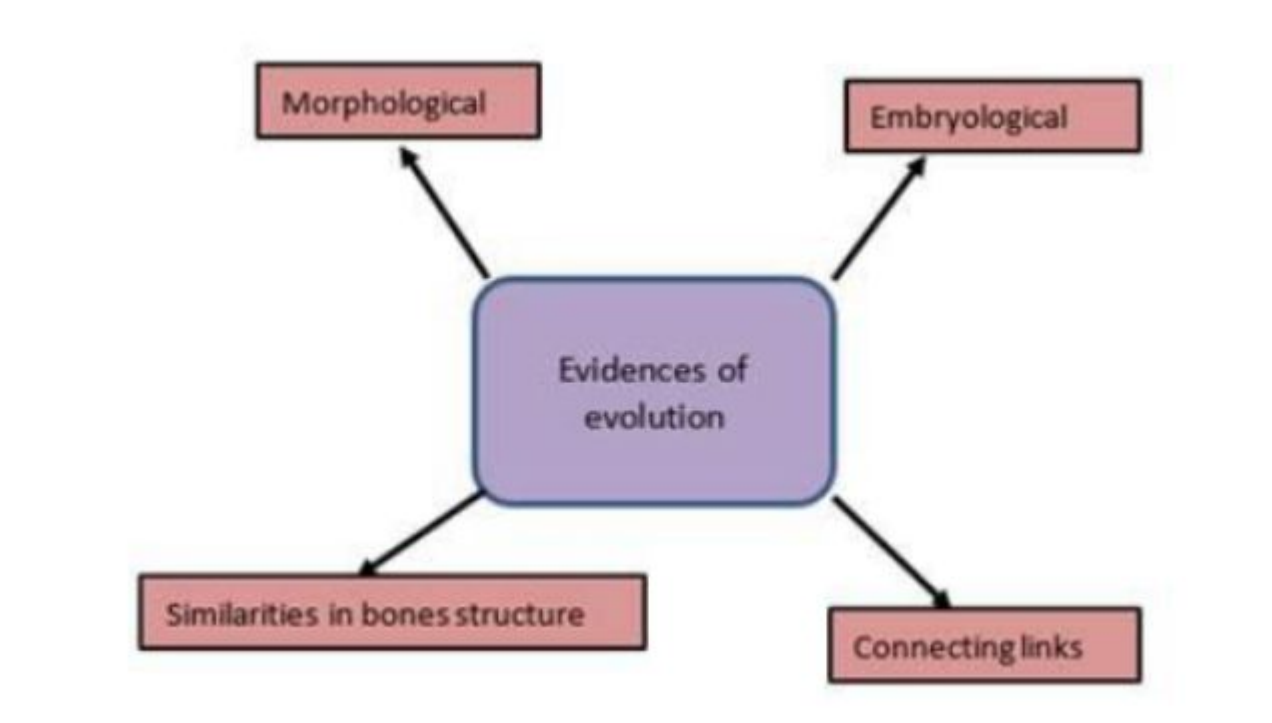
https://www.youtube.com/watch?v=mCOMD291oBM

Evolution:

https://www.youtube.com/watch?v=sBn7RDMbrM0

https://www.youtube.com/watch?v=1JOl58j1vJ8




Morphological
Embryological
Evidences of evolution
Similarities in bones structure
Connecting links

Lamarckism- According to Jeane Baptiste Lamarck organism can pass on to its offspring physical characteristics that the parent organism acquired through use or disuse of organs during its lifetime.

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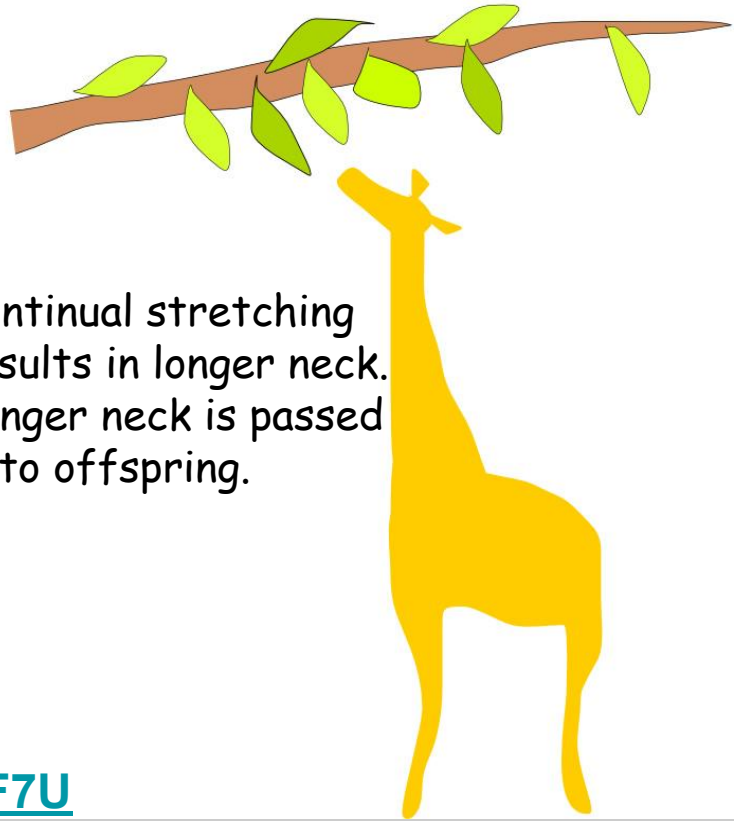

https://www.youtube.com/watch?v=_QtMWPcLF7U

Evolution

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Darwin's Theory through story

https://www.youtube.com/watch?v=4Dm7l7U0KBE

Natural Selection:
https://phet.colorado.edu/sims/html/natural-selection/latest/natural-selection_en.html

Explaining Homologous Analogous Organs.

http://www.olabs.edu.in/?sub=79&brch=16&sim=132&cnt=1

(You can use language preference on top right)

Vestigial Organs

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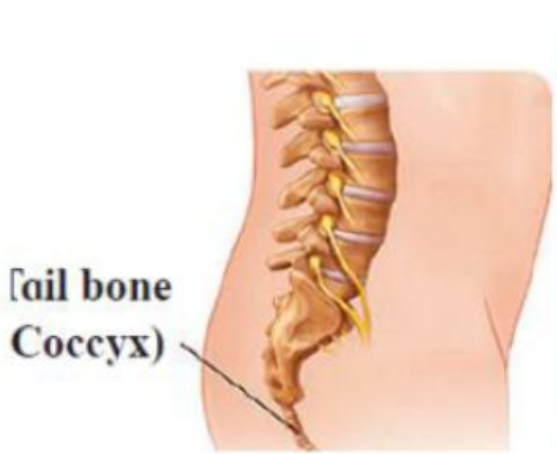
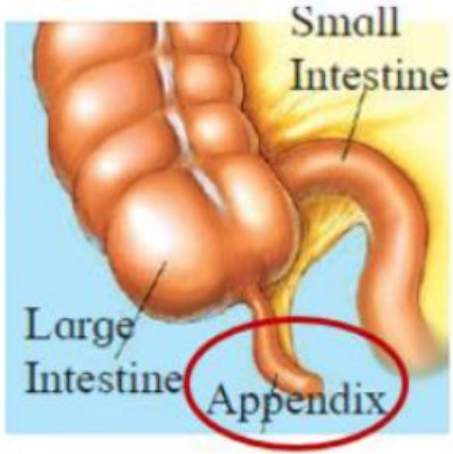
Underdeveloped, Useless organs in an organism is called Vestigial organ. They are useless in one organism but useful in other.





Vestigial organs in human body	Functional in other organism
Vermiform appendix	In cows, buffalos
Ear pinna muscle	In monkeys for moving ear pinna
Tail bone (coccyx)	Useful in all tailed animals

What is Central Dogma

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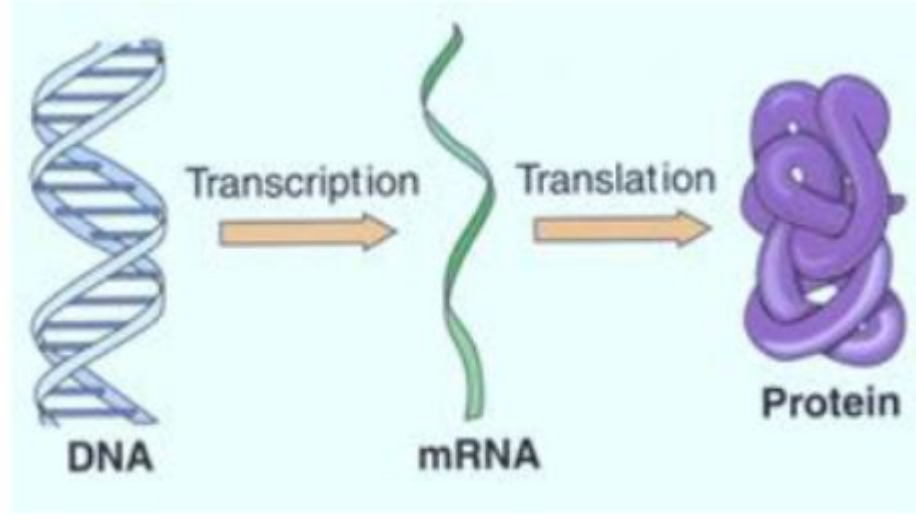
DNA forms mRNA and mRNA forms protein. This process is called Central Dogma.



FOSSILS

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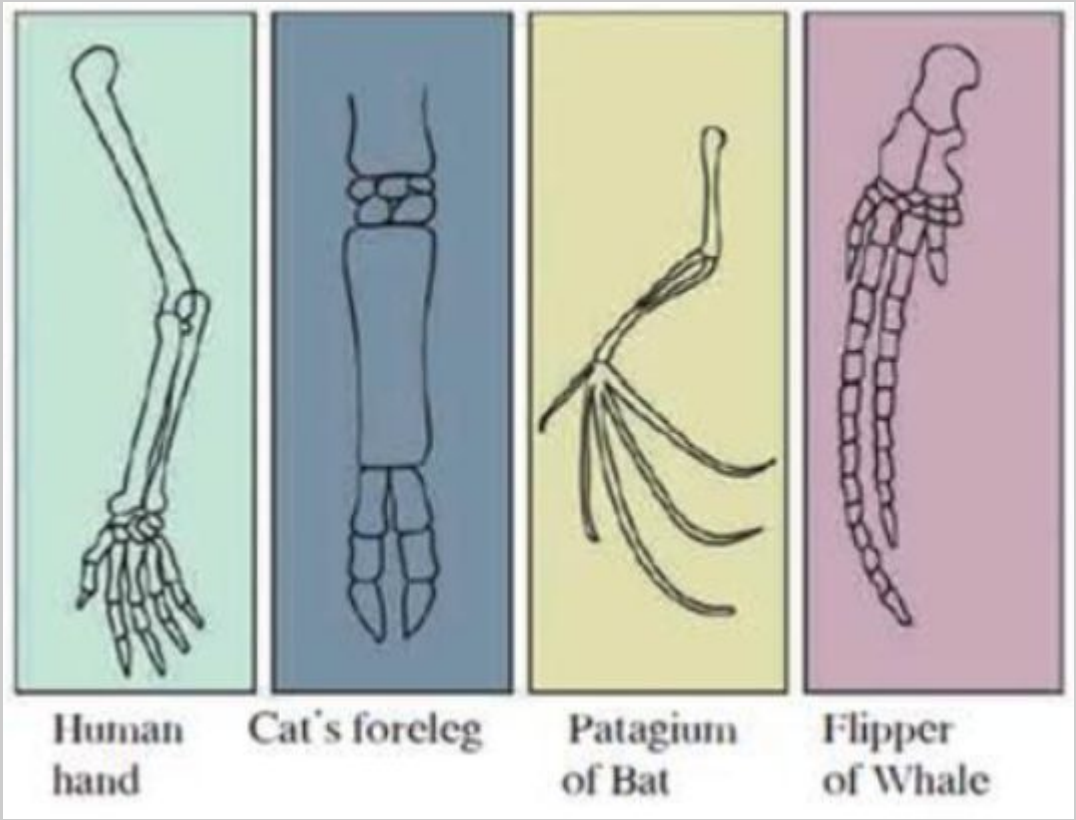
Define Fossils: Any previous remains, impressions or trace of organisms that lived in past is called a fossil. Examples of Fossil: bones, shells, exoskeleton, stone imprints of animals

The time of death of an organism can be calculated by measuring the radioactivity of C-14 and ratio of C-14 and C-12 present in the body of the organism. This is called **Carbon Dating**

Homologous organs



Homologous organs are defined as the **organs** of different animals that are having a similar structure but differ in their functions.

Analogous organs are the **opposite of** homologous organs, which have similar functions but different origins. An example of an analogous trait would be the **wings** of insects, bats and birds