

Animals/ Creatures

- Evolution (What is..., How does it work, ...)

<https://www.pbs.org/wgbh/evolution/library/faq/cat01.html#:~:text=Biological%20evolution%20refers%20to%20the,passed%20on%20to%20future%20generations.> - Frequently asked questions about Evolution.

Meaning of Evolution - Cumulative changes that occur in the population over time. Changes are produced at the genetic level as organisms' genes mutate and/ or recombine in different ways during reproduction and are passed onto future generations.

Sometimes, individuals inherit new characteristics that give them a survival and reproductive advantage in their local environment; these characteristics tend to increase in frequency in the population, while those that are disadvantageous decrease in frequency. Known as Natural Selection.

<https://study.com/learn/lesson/evolution-animals-stages-examples.html#:~:text=membrane%2Dbound%20organelles.-,Animals%20evolved%20through%20a%20process%20known%20as%20evolution%20which%20is,Animalia%20which%20are%20multicellular%20eukaryotes.> - The evolution of Animals

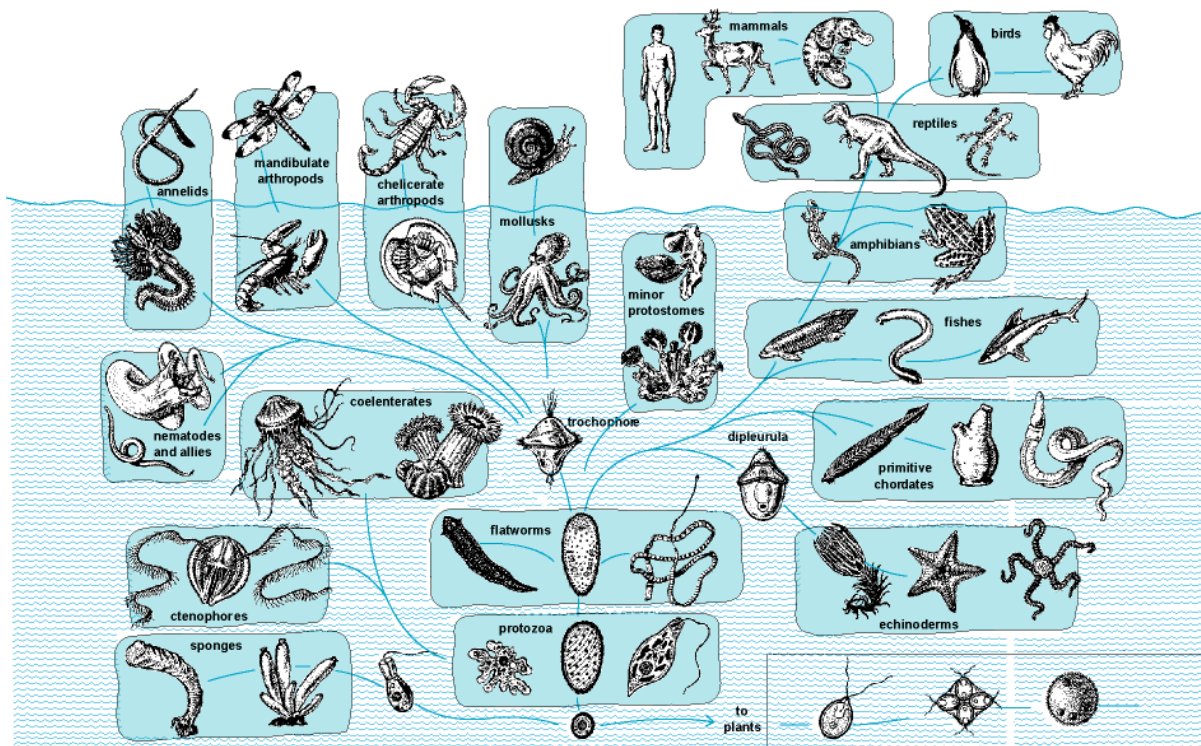
Evolution can be caused by:

- Mutation - Change in genetic material in an organism
- Migration - Organisms move/ relocate to a different geographical area
- Natural Selection - Organisms which are best suited to their environment survives, which passes on to their offspring
- Genetic Drift - Traits of species that are more/ less prominent, known as Allele frequency
- Non-random mating - Species choose mates based on specific traits.

"Animalia or animals are extremely diverse and contain birds, mammals, insects, fish, reptiles, and many more. Animals originally evolved from prokaryotic organisms somewhere around 2.5-1 billion years ago. Both plant and animal cells use mitochondria to give their cells energy. This process is called aerobic respiration where oxygen is taken and made into energy and expelled as carbon dioxide. Scientists believe that these specialised mitochondria evolved from single-celled bacteria."

Microbes being the first organism to live on earth (3.7 billion years old)

<https://www.accessscience.com/content/article/a035500> - Animal Evolution



Evolution of animal groups, showing hypothetical relationships.

- Are there any animals/creatures that we don't know exist?

(Searches come up with “30 weird animals that you don’t know exists” or something similar to that - which means that someone does know it exists)

Maybe look at Supernatural Creatures (ET, Half-Human Half-Animal)

Fabulous Creatures and other Magical Beasts - (Can’t find author at this point)

Evidence for life outside of Earth? What do they look like?

<https://science.howstuffworks.com/life/biology-fields/what-large-completely-undiscovered-animals-still-exist.htm> - Do large undiscovered species still exists?

Recent discovery of new species over the world, mainly small animals, fish, insects, and microbes. Currently 8.7 million classified species in the world - yet scientists figure that there are 5 million left. With Microbes and bacteria - 1 trillion more.

<https://www.scientificamerican.com/article/the-search-for-extraterre/> - The search for Extraterrestrial Intelligence

Detection of unseen companion bodies in orbit.

3 miniature ‘solar systems’ - satellite systems of the planets Jupiter, Saturn, and Uranus (However the amount of known satellites has increased greatly since the article was written)

<https://astrobiology.nasa.gov/about/> - No clear evidence that there is life beyond earth, but that doesn't mean that there isn't any out there. Hence, Astrobiology.

Leads to the question, "What is Life?" - Finding the answer becomes increasingly difficult until we find an alternative to the basic structure found on Earth - the same DNA. ET could tell us what life is really like.

Rover/ Lander has , or will, come across an example or signature of life present or past and we don't know it.

NASA - pretty much a business in searching for life beyond Earth is by now well known to the public.

- How did we get names for animals?

<https://simplescium.wordpress.com/2016/02/28/how-do-animals-get-their-names/#:~:text=The%20naming%20system%20we%20use,of%20creature%20in%20that%20family> . -

How did animals get their names?

Taxonomy - the science of classification, but more strictly the classification of living and extinct organisms. Things are organised into groups/ types.

Carolus Linnaeus - Idea to give creatures two part names: a species name and a genus name. Genus = family that the creature belongs to, Species name = unique type of creature in that family.

Example:

"To give an example, let's think about cats. Small and medium-sized cats belong to the genus *Felis* (a name that comes from the latin word for cat). Within this genus, there are eight species of cats, two of which are extinct:

- *Felis bieti* – the Chinese mountain cat
- *Felis catus* – the domestic cat (or pet cat)
- *Felis chaus* – a jungle cat that lives in Asia
- *Felis margarita* – the sandcat
- *Felis nigripes* – the black-footed cat or small-spotted cat that lives in Africa
- *Felis silvestris* – the wildcat
- *Felis attica* – an extinct cat that was a bit like a lynx
- *Felis lunensis* – an extinct wildcat "

- What are their common behaviours/ actions?

<https://sciencing.com/list-types-animal-behavior-6567011.html> - List of Types of Animal Behaviour

Ethology - Scientific study of animal behaviour, focussing under natural conditions, and viewing behaviour as an evolutionary adaptive trait.

Instinctual Behaviour: 1 type = Fixed Action Patterns - behaviours the animal is compelled to engage in. I.e. Birds raise chicks of other birds if the eggs are put in their nests during nesting season, since caring for an egg is a fixed action. Imprinting - baby animal accepts a person, or an item, as its surrogate mother.

Learned Behaviour: Important for wild animals as they learn specific and new ways to survive, domestic animals that we seek to train. Their actions will have a predictable outcome through trial and error, such as the sound of a metal food bowl being moved, signalling food being served (associative learning). Also learn through observing others and mimicry. These behaviours allow the animals to adapt to new situations and problems.

Abnormal Behaviour - Enables us to determine whether the animals are behaving abnormally. Can be annoying to animal owners, but can also be dangerous for the animal or threaten their very survival. I.e. Inappropriately aggressive dogs, suffering from disease or trauma, are potentially dangerous to themselves and others. Abnormal behaviours could happen because of the lack to mate/ care for offspring - can present a threat to an animal's long-term survival.

<https://www.khanacademy.org/science/ap-biology/ecology-ap/responses-to-the-environment/a/intro-to-animal-behavior> - Intro to Animal Behaviour

- Mating/Breeding (How does it work, What do they do,...)

<https://vikaspedia.in/agriculture/livestock/general-management-practices-of-livestock/animal-breeding#:~:text=Basically%2C%20there%20are%20two%20methods,is%20known%20as%20out%20breeding.> - Animal Breeding

Mating system -

- “Natural propagation/mating : Mating of animals by natural means.
- Artificial insemination (AI) : Mating is done through artificial means by collecting semen from male and then inseminating the females. This method helps in the use of outstanding males for mating of a large number of females thereby producing a large number of highly productive and performing progenies.”

Two Methods of Breeding:

Inbreeding - Breeding related animals as sire (male) and dam (female).

Close breeding - very closely related animals (like Brother to sister, Man to Daughter, etc.). Most intensive breeding.

Line Breeding - Distant relatives (Cousins Grandparents to Grand Offspring, etc.). Increases genetic purity amongst the animals of progeny generations

Outbreeding - Breeding unrelated animals as male and female.

Cross Breeding - Mating of 2 different animals of different breeds.

Grading Up - Breeding of 2 different animals of 2 different breeds. Indigineous breed/ genetic group is mated by improved pure breed for several generations towards attaining the superior traits of the improved breed. Continuous use of pure breeds, by 5th gen, graded animals may reach purebred levels.

Breeding/ Mating improves the abilities of animals for certain traits; entire populations can be enhanced, creating benefits for farmers, consumers, and the environment. Continuation of a particular species.

- Why do animals exist? What does it look like to live without them? Can we live without them?

Why do animals exist - linking back to evolution

Can we live without them?

<https://www.worldatlas.com/articles/do-humans-need-animals-to-survive.html> - Do humans need animals to survive? - Obvious answer is yes

Eating Animal Flesh. However there are other diet alternatives such as going vegan or being vegetarian.

We do reshape the land, disrupting the balance in nature. But we still depend on animals, since they serve a role within their ecosystem and construct the notion of life as we know it.

Ants - Help with decomposition of Soil by digging tunnels, providing oxygen and recycling nutrients they find along the way. Diet is based on different types of wood, roots, and bark (making holes through walls and such)

Bees - Honey, Help with pollination of plants. Otherwise plants will not grow, no food for animals, no food for us.

Plankton - Source of food for fish, plankton, dolphins, whales. In the process of photosynthesis, oxygen comes out from it. Sustains all marine life

And many more examples of why we need animals.