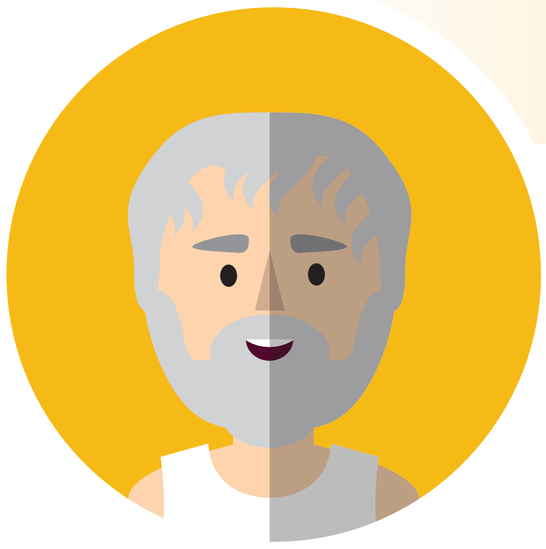
Evolution before Darwin

Before **Darwin** there were other individuals
who tried to formulate **evolutionary theories**



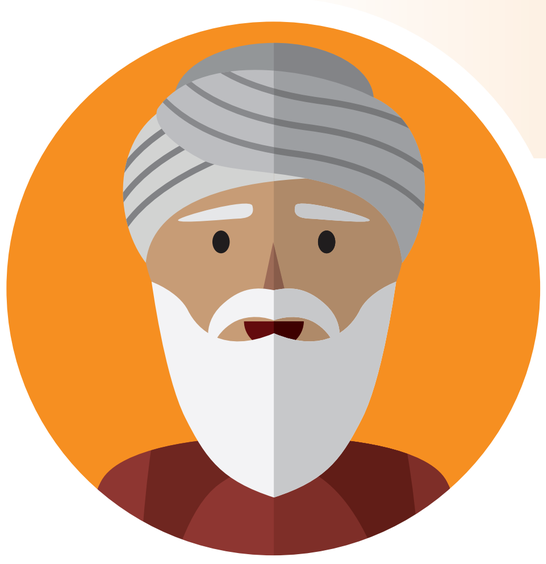
Aristotle
(384 BCE-322 BCE)

Aristotle collected the courses he gave to his students in hundreds of papyrus rolls, which later became his books **History of Animals**, **Generation of Animals** and **Parts of Animals**. These books are the first empirical and systematic attempt to understand nature.

Aristotle´s world view was entirely different from that of his teacher **Plato**. According to him, our world consisted only of observable facts; it was the world of "down here". For him, **the world had not been created by any god**. He perceived all species as a continuum, where the differences among them were only minor changes and adaptations.

He conceived all species as if they were eternal. He claimed that there was a continuum from the non-living to the living, from plants to animals. He never imagined something equivalent to evolution or natural selection.

He classified correctly the approximately 500 known species of animals at the time, into **animals with blood** (vertebrates) and **animals without blood** (invertebrates). Animals with blood were either those **born from eggs** (birds and fish) or those **born alive** (mammals). **Bloodless animals were insects**, **crustaceans**, and **mollusks**.

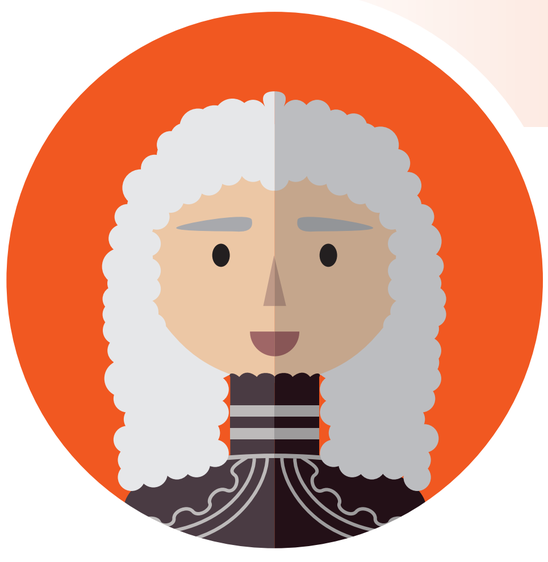


Al-Jahiz
(781 - 868)

Al-Jahiz was an Arab scholar who lived in the city of **Basra**, **Iraq**, probably of African descent. As a child, he worked selling fish on the banks of the channels to help support his family. He became one of the most prolific and versatile writers of the Abbasids, **producing more than 200 books** during his lifetime. He wrote **literature**, **biology**, **zoology**, **history**, **rhetoric**, **psychology**, **theology**, and **polemic**. In his **Book of Animals**, written probably between 847 and 867, Jahiz produced **the first extensive study on animals ever published in the islamic world**, where he comes close to suggesting a **theory of evolution** and **natural selection** that Darwin was going to match one thousand years later.

His vision of nature is that of an **interconnected world** through **networks** and **webs**. He handled the concept of an **ecosystem**, understood the idea of the **survival of the fittest**, and even conceived of adaptations.

Like **Aristotle**, he believed in **spontaneous generation**. Unlike Darwin, **who saw a ruthless nature**, Jahiz **saw a perfect and divinely balanced universe**.

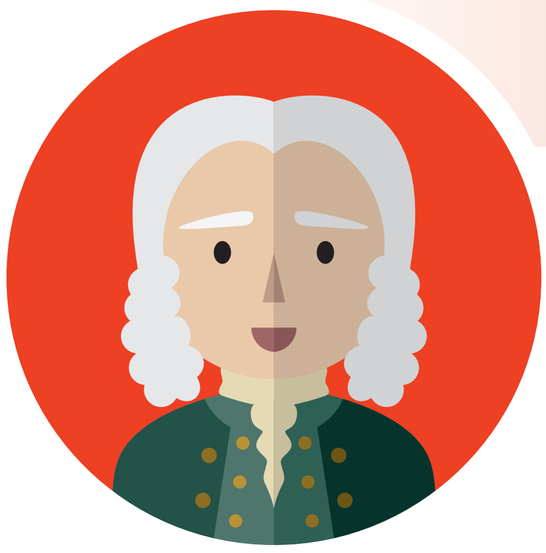


Benoit de Maillet
(1656-1738)

Maillet was born in France and grew up with a grandfather who used to say that, during his lifetime, he had seen the sea level drop considerably. This fact undoubtedly influenced the adult Maillet, who remained passionate about natural history while working in Egypt as a diplomat. He used to observe the **geology of the Earth**, and this convinced him that its history was much older than what religions told. He **developed a theory of evolution**, which he did not dare to publish under his name. What he did was attribute it to an Indian philosopher named Telliam (Maillet spelled backward). **He suggested the Earth was two billion years old** and originally completely covered with water. The water level decreased one meter every thousand years and allowed mountains to appear. He said that when the mountains dried, plants and grasses started growing.

The air at the time must have been very humid, so flying fish tolerated being out of the water for long periods. These fish **used their fins to move around on land. The fins eventually became legs. From those fish with legs appeared the animals and then humans, around 500,000 years ago.**

The general reaction to this theory was terrible. The public accused him of putting pagan ideas into the mouth of an Indian. **Voltaire** did not support him, even though he knew Maillet's ideas were already in the minds of many.



Carl von Linné
(1707-1778)

Carl von Linné (Linnaeus in English), a Swedish naturalist, **was in 1735 the first in the Western world to attempt a naming system of species.**

He used a **binomial** or **two-name system** to recognize each animal and plant species. Despite being a creationist, he realized that all species had several **anatomical similarities**. This system is still in use today. **The first name is the genus** to which several different species belong. **The second name refers to the proper name of the species**. The first letter of the genus is always capitalized in writing while that of the species is not. Genera are in turn grouped into **major categories**: **family**, **order**, **class**, **phylum**, and **kingdom**.

Consider three species as an example: ***Homo sapiens***, ***Homo erectus***, and ***Homo habilis***. ***Homo sapiens*** means "**wise man**" and it is the species to which **we all humans belong**.

The other two species, ***Homo erectus*** (**upright man**) and **Homo habilis** (***handy man***), are extinct hominid species very well known due to individual remains found in the last decades in Africa and Asia. **These three species are hominids belonging to the genus Homo**, and each keeps its particular name. The genus ***Homo*** **belongs to the Hominidae family**, **Primate order**, **Mammalia class**, **Chordata phylum** and **Animalia kingdom**.