TOPIC 6: NATURAL AND ARTIFICIAL SELECTION

I Can…

- Distinguish between and give examples of natural and artificial selection

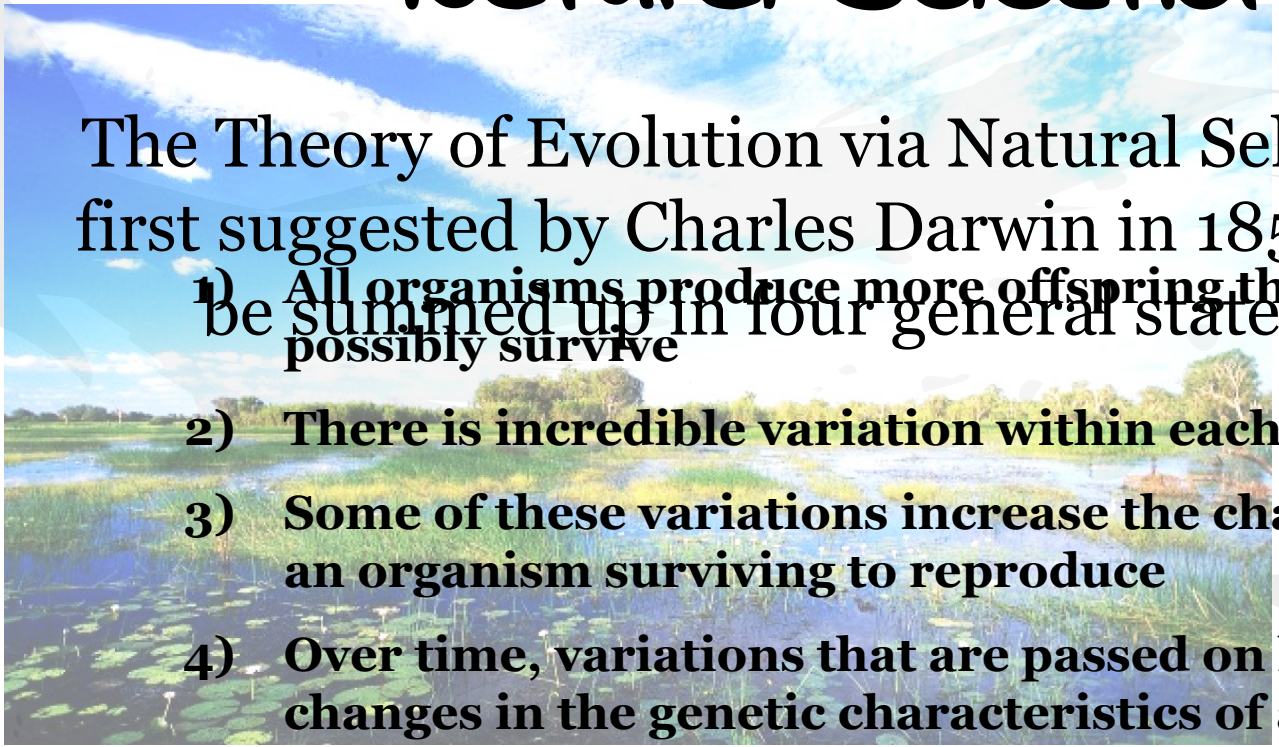
Natural Selection

At the beginning of this unit, we discussed how diversity aids in species survival through the process of *natural selection*.

To review…

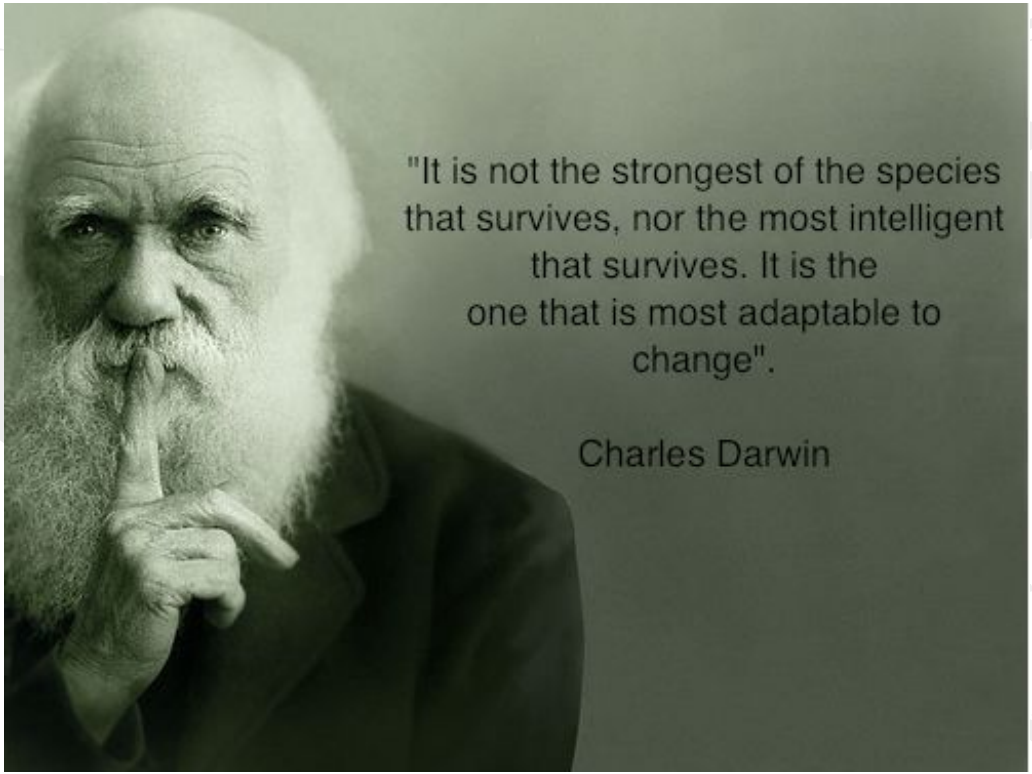
- Natural selection simply means that organisms with variations that help them survive in a particular environment will be more likely to reproduce, passing those variations on to offspring.
- This is where the term "survival of the fittest" comes from. However, it is important to note that it is not always the strongest, fastest, "fittest" organisms that survive; it is those with variations best suited to their environment at a specific period in time. If the environment changes, new variations will be "selected for".
- Over time, certain variations may become more common in a given

Natural Selection



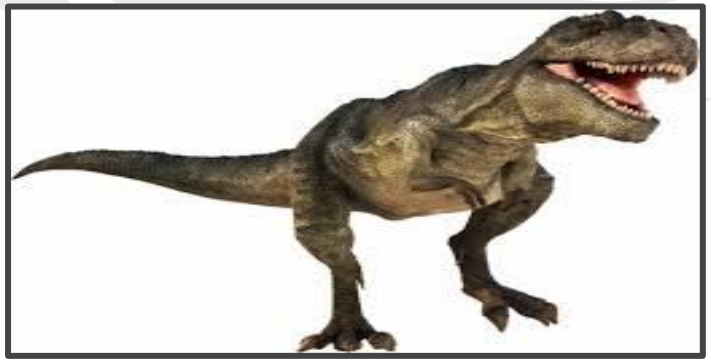
The Theory of Evolution via Natural Selection was first suggested by Charles Darwin in 1859, and can be summed up in four general statements:

1) **All organisms produce more offspring than can possibly survive**
2) **There is incredible variation within each species**
3) **Some of these variations increase the chances of an organism surviving to reproduce**
4) **Over time, variations that are passed on lead to changes in the genetic characteristics of a species**



https://www.youtube.com/watch?v=AYBRbCLI4zU

Example: Could natural selection really be responsible for the evolution of dinosaurs into what we refer to today as birds?



Fossil evidence of small, feathered dinosaurs and transitional species indicate that modern-day birds did, in fact, evolve from this one species of raptor-like dinosaur:

Notice any similar features?

If the “fittest” organisms in each species have a greater probability of surviving, how do we end up with animals like this?

What kind of environment would possibly favour these characteristics???

Artificial Selection

Through selective breeding, we can actually produce offspring with desired traits that would not necessarily have an advantage in nature. This process is referred to as *artificial selection*, and has many uses other than cing super-c .

Selective breeding has given us dairy cows (cows that produce large amounts of milk)

Through selective breeding, we can produce strains of wheat that grow better in cold weather

Artificial selection produces changes faster than natural selection because we essentially force the mating of two individuals that may not necessarily mate in nature

Artificial Selection

Artificial selection is not always beneficial…

- Before the effects of inbreeding were understood, it was common practice for cousins to marry, especially in royal families (wanted to "preserve the bloodline")
- This lead to a high incidence of haemophilia, a fatal blood condition, in Britain's royal family during the mid 1800's

(Pictured above: Queen Victoria and her husband/cousin, Prince Albert. One son and two of their five daughters carried the gene for haemophilia)