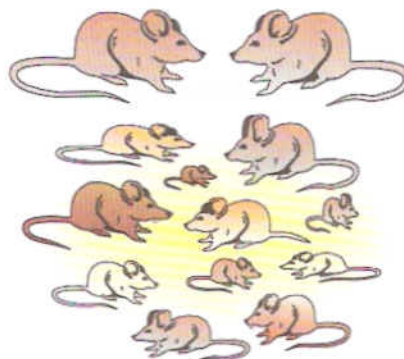


Species Evolve Over Time

In 1859, an English naturalist called **Charles Darwin** published a book that **revolutionized** the way we think of the world around us. He had the radical new idea that different species of plants and animals have **evolved**, over very long periods of time, through a process of **natural selection**.

Darwin made four important observations...

- 1) All organisms produce **more offspring** than could possibly survive.
- 2) But in fact, population numbers tend to remain **fairly constant** over long periods of time.
- 3) Organisms in a species show **wide variation** (due to different genes).
- 4) **Some** of the variations are **inherited and passed on** to the next generation.



...and then made these two deductions:

- 1) Since most offspring don't survive, all organisms must have to **struggle for survival**. (**Predators, disease, and competition** cause large numbers of individuals to die.)
- 2) The ones who **survive and reproduce** will **pass on their genes**.

This is the famous "**Survival of the fittest**" statement. Organisms with slightly less survival-value will probably perish first, leaving the **strongest** and **fittest** to pass on their **genes** to the next generation.

Mutations play a big part in natural selection...

...by creating a **new feature** with a **high** survival value. Once upon a time maybe all rabbits had **short ears** and managed OK. Then one day out popped a mutant with **big ears** who was always the first to dive for cover. Pretty soon he's got a whole family of **big-eared offspring**, all diving for cover before the other rabbits, and before you know it there are only **big-eared** rabbits left because the rest just didn't hear trouble coming quick enough.



This is how mutations are useful in evolution...

Some mutations result in a creature which is better at surviving (like our big-eared rabbit). This creature survives well so it passes its genes to the next generation and eventually the mutation becomes commonplace. Make sure you learn all the key facts about evolution on this page.