

# Theory of Evolution

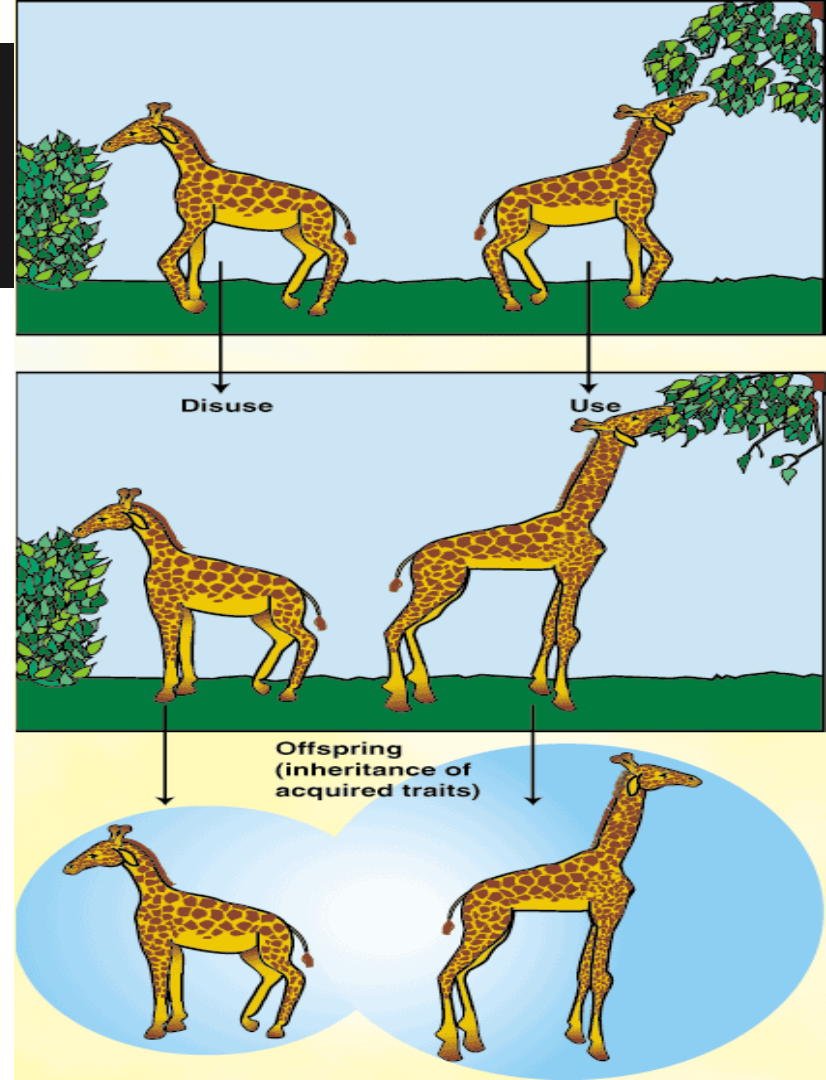
**Mr. Rafferty 5-19**

# Theories of Evolution

Theories of Evolution attempt to explain how the similarities and differences among species came about.

Early theories stated that new species evolved from pre existing species and these changes occurred because organisms needed to adapt to changes in their environment

Look at picture 1, what animal do we see? Whats going on? What's your prediction? for pic 2?



# Components of the Theory

## USE OR DISUSE Theory:

The parts/organs used become stronger and more developed (Brain) . The parts you don't use become weaker and less pronounced (tail bone, what's another \_\_\_\_\_.)

## INHERITANCE OF ACQUIRED CHARACTERISTICS:

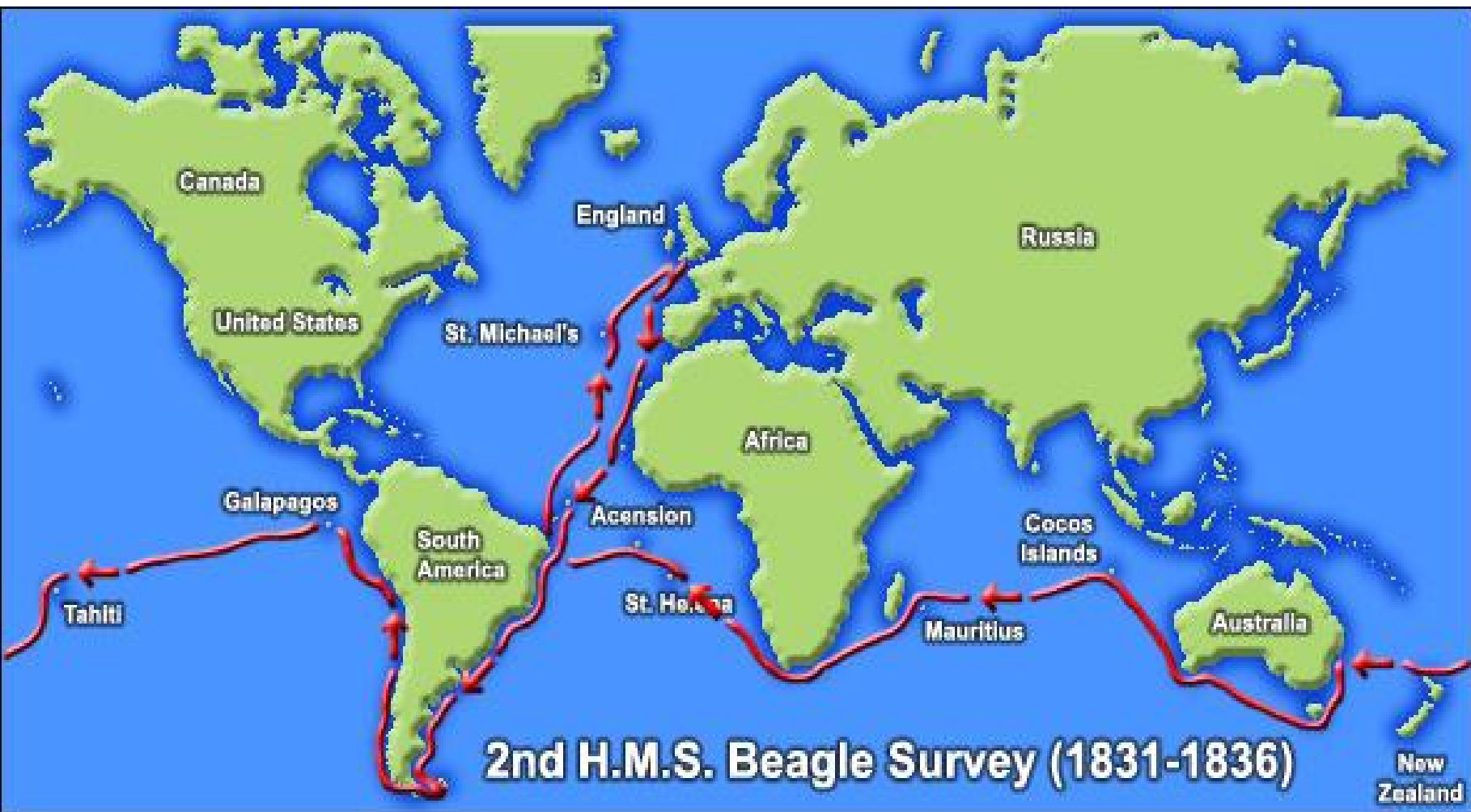
The things changed by use and the ones disused are passed down through the generations.

# Charles Darwin

The name who is famously known as the **FATHER OF Modern Evolution** is Charles Darwin.

Darwin was a **naturalist** who went on a expedition **to see new organisms in 1831 on the HMS Beagle all around the world!**





# What did he Find

Darwins most compelling discovering came at the **Galapagos Islands** in the Pacific Ocean 



# Darwin's New Theory

When Darwin returned to England he had come up with an addition to the Theory of Evolution.

Darwin said that organisms with favorable variations would be better able to survive and to reproduce.



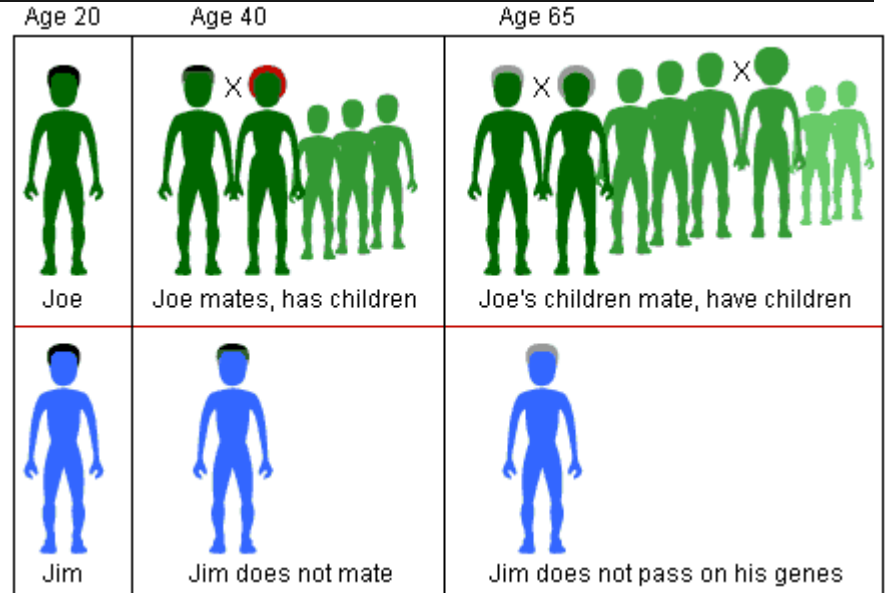
# Natural Selection

Natural Selection: the process where organisms with favorable variations survive and produce more offspring than less well adapted organisms.

EX/ ( long necks in giraffes vs. short neck giraffes)

# Activator ?

Based on the Picture,  
what skin color is  
desirable? What did  
this end up resulting  
in?



# Darwin's Theory of Evolution

Darwin published a book called *The Origins of Species by Means of Natural Selection.*

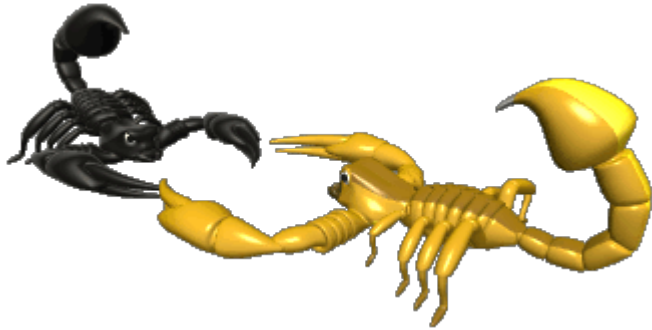
Darwins Theory of Evolution contained 6 main points

# Overproduction

1. Most species produce more offspring than are needed to maintain their population.

Population remain balanced because only a small amount of offspring live long enough to reproduce.

# Competition



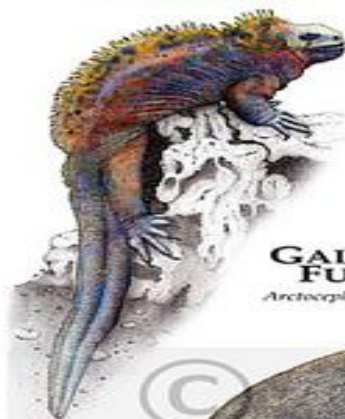
Offspring in each generation must compete for the limited amount of resource to survive. Only a small % can make it to adulthood.

# ANIMALS OF THE GALAPAGOS ISLANDS

**FLIGHTLESS CORMORANT**  
*Phalacrocorax harrisi*



**MARINE IGUANA**  
*Amblyrhynchus cristatus*



**GALAPAGOS FUR SEAL**  
*Arctocephalus galapagoensis*



**GALAPAGOS TORTOISE**  
*Geochelone elephantopus*



**SALLY LIGHTFOOT CRAB**  
*Geophus graysoni*

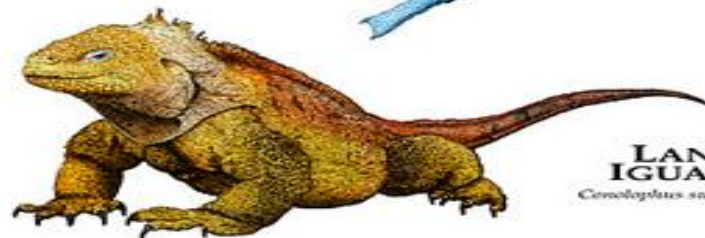
**GALAPAGOS PENGUIN**  
*Spheniscus mendiculus*



**BLUE-FOOTED BOOBY**  
*Sula nebouxi*



**LAND IGUANA**  
*Crotaphytus subcristatus*




©  
inkart.net

# Variation



Any two species are never identical.

 Variations are **differences between organisms** like size, shape, strength, running speed, resistance to a particular disease. , bright colors



These variations may be the difference in organisms obtaining food, escaping enemies, or finding a mate.



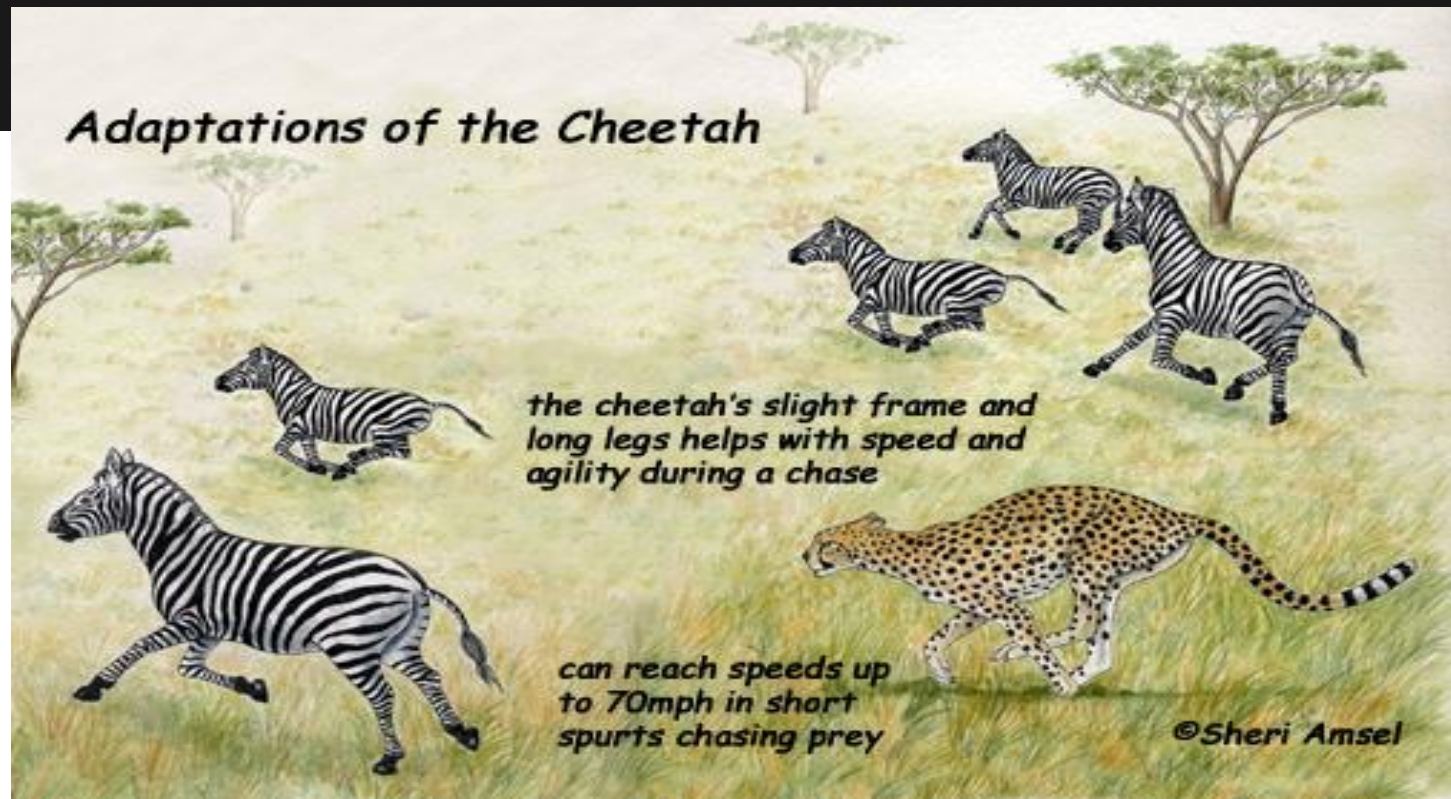
# Adaptations

These variations may allow some individuals a better chance for survival.

An adaptation is any kind of variation that is an inherited trait that has improved the organism's chance for survival.



## *Adaptations of the Cheetah*



*the cheetah's slight frame and long legs helps with speed and agility during a chase*

*can reach speeds up to 70mph in short spurts chasing prey*

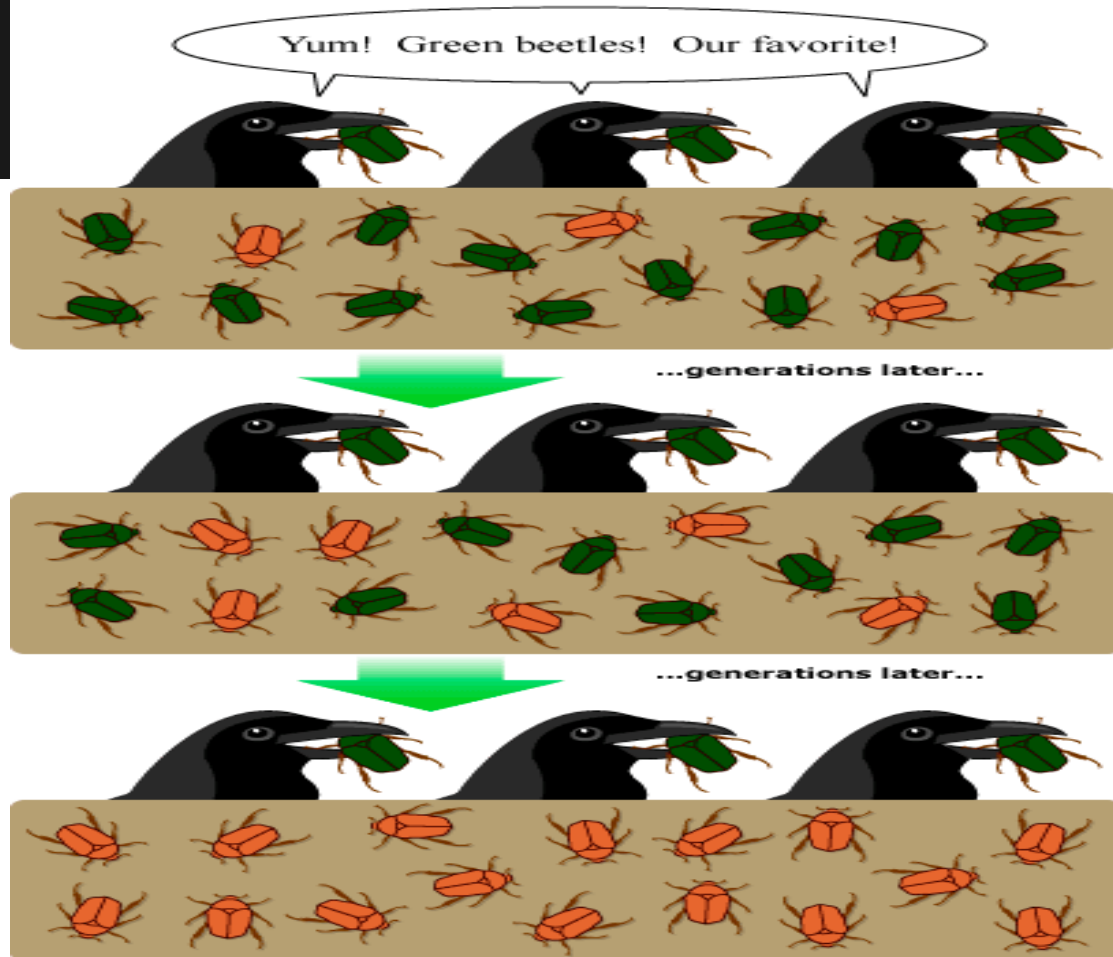
*©Sheri Amsel*

# Natural Selection

Nature Selects the organisms with the best traits to reproduce the next generation.

These offspring will have better chances for survival and then will pass down the traits

## Natural selection, in a nutshell:



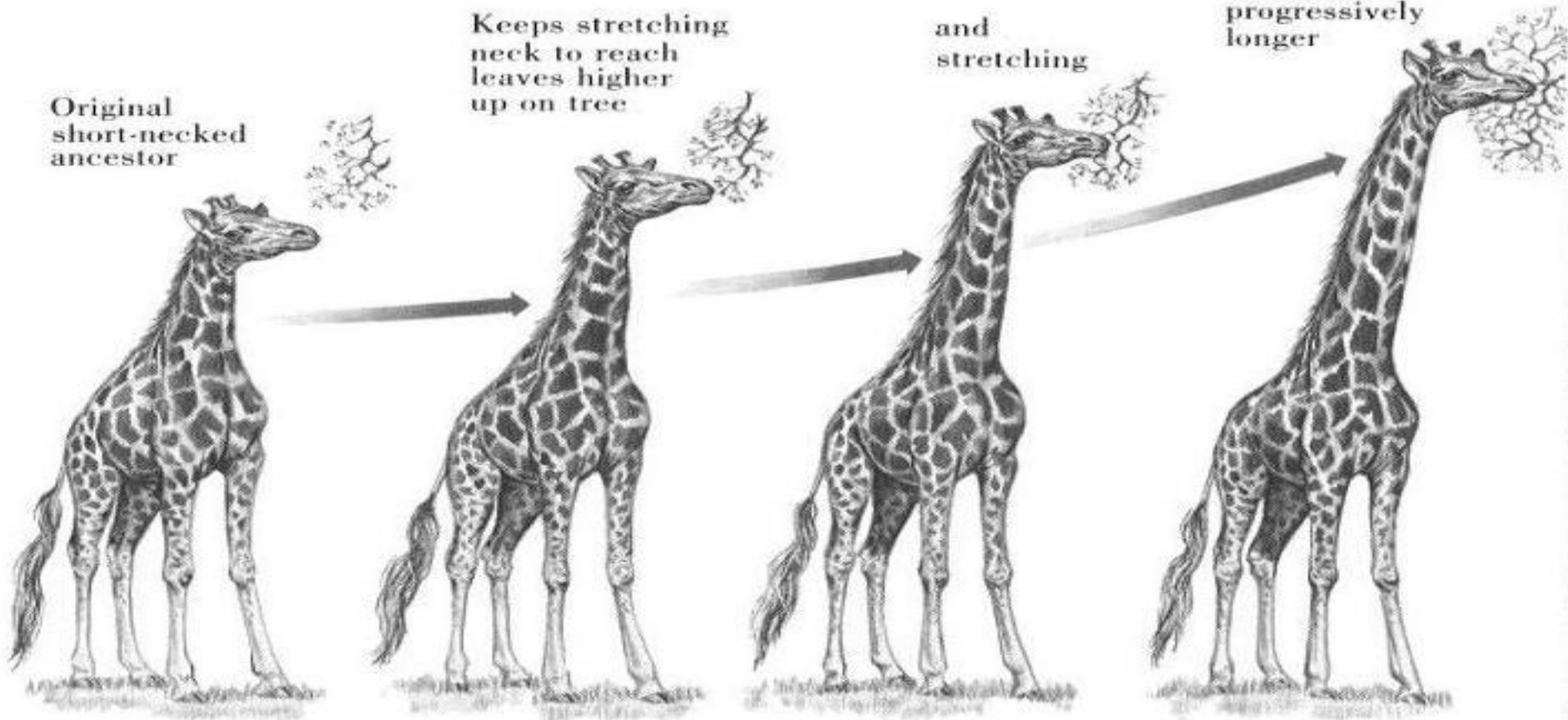
## LAMARCK'S GIRAFFE

Original  
short-necked  
ancestor

Keeps stretching  
neck to reach  
leaves higher  
up on tree

and  
stretching

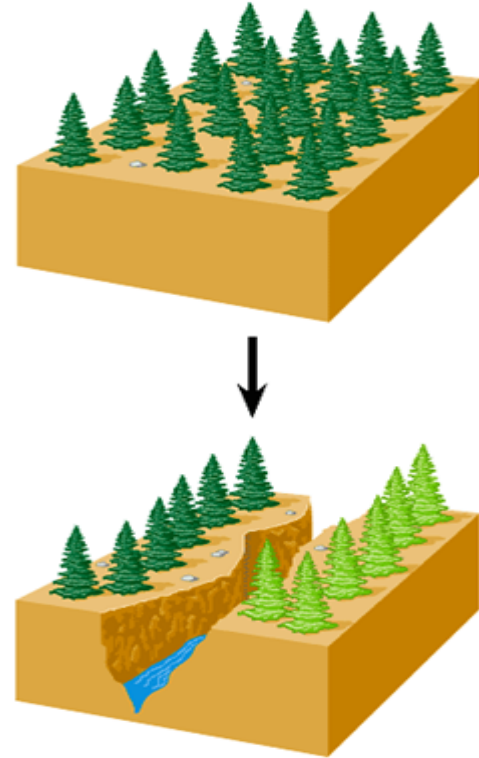
and stretching  
until neck  
becomes  
progressively  
longer



Driven by inner "need"

Speciation is often the result of  
**GEOGRAPHIC ISOLATION**

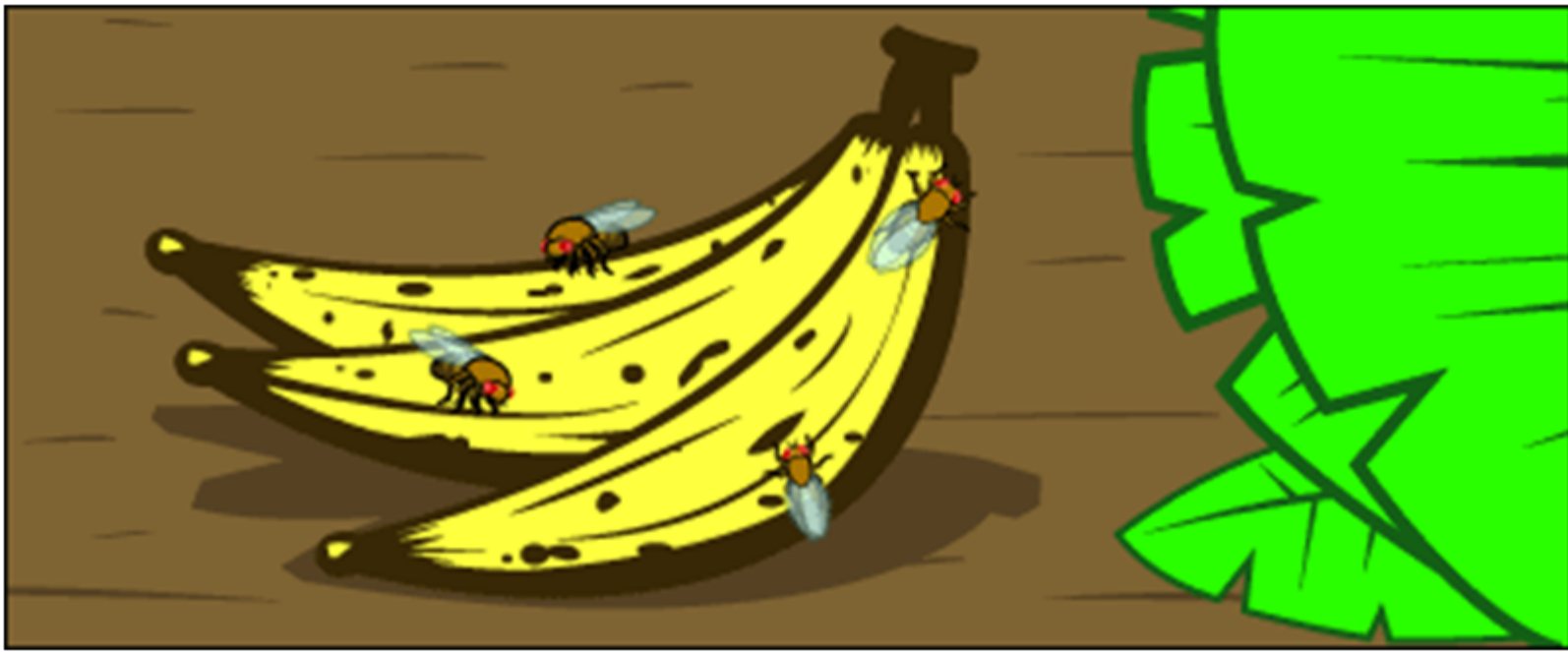
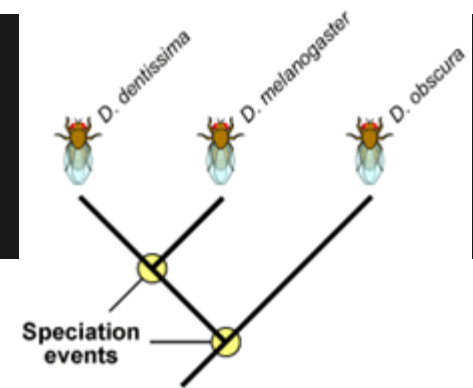
**GEOGRAPHIC ISOLATION**-  
when a population is divided into  
two groups that are prevented  
from mating with each other.



# What can we tell about the Galapagos Islands?

Perhaps thousands of years ago, the Islands broke away from South America and similar animals became very different over time





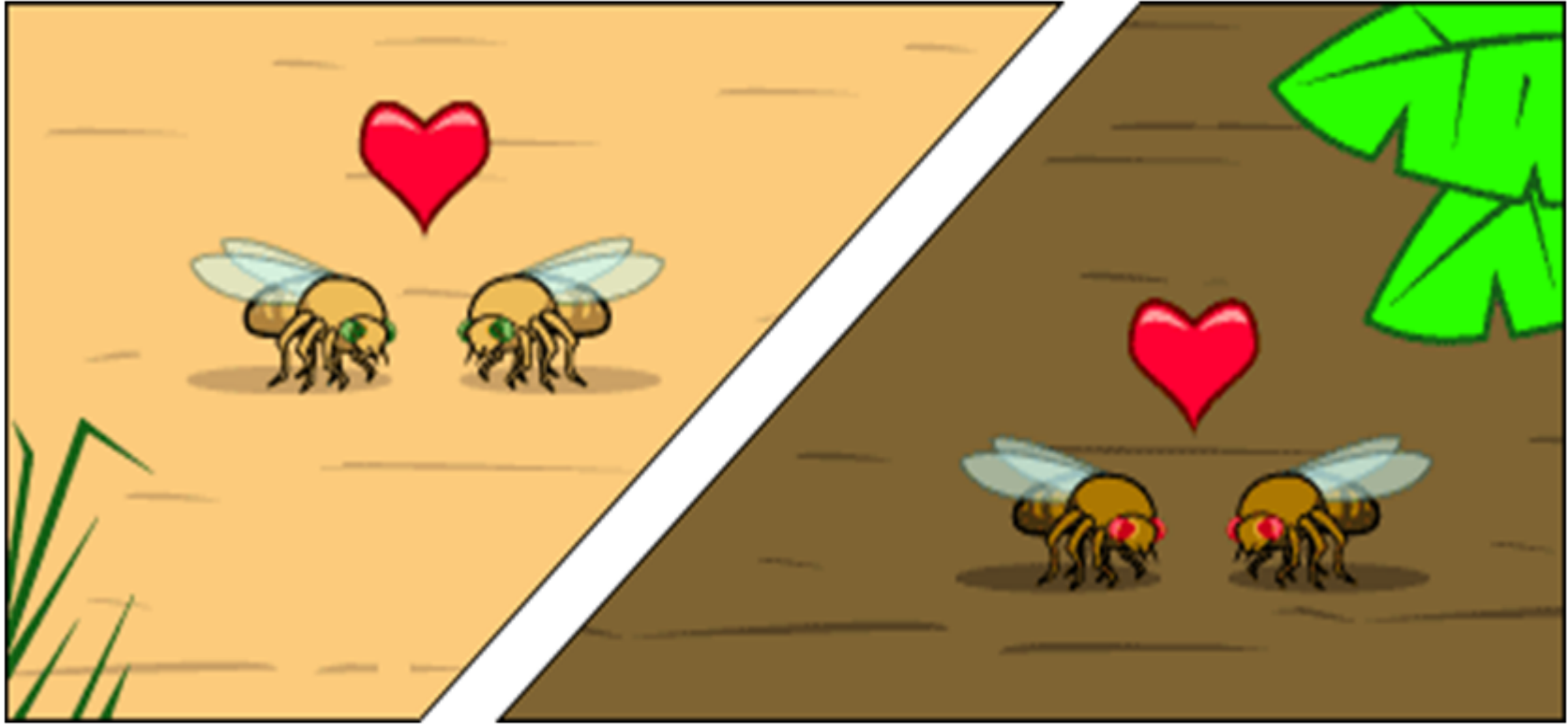


# A Storm Isolates the fruit & flys





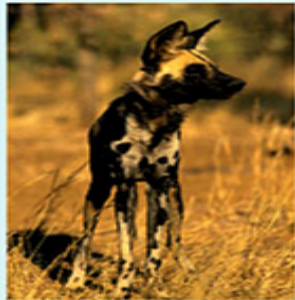
Mating rituals change over time –  
leading to different behavior in each population.



When reunited, the flies do not recognize members of the other population as the same species.



# Natural Selection has created millions of different species on Earth



**African wild dog**



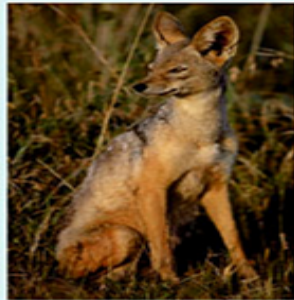
**Coyote**



**Fox**



**Wolf**



**Jackal**

**Thousands to  
millions of years  
of natural selection**

**Ancestral canine**

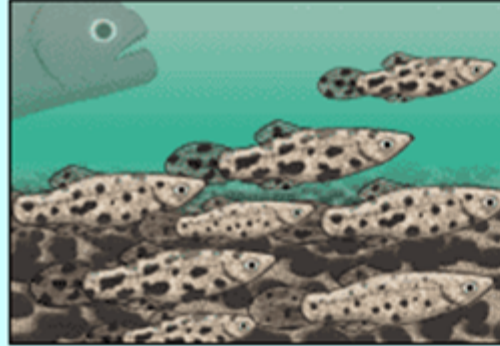
# People have influenced the development of organisms in the same way through **ARTIFICIAL SELECTION**



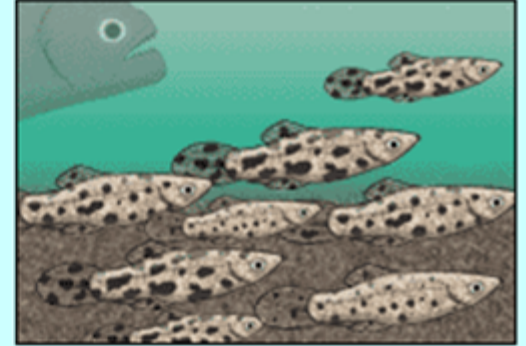
What is happening  
in this experiment?

### Initial set-up:

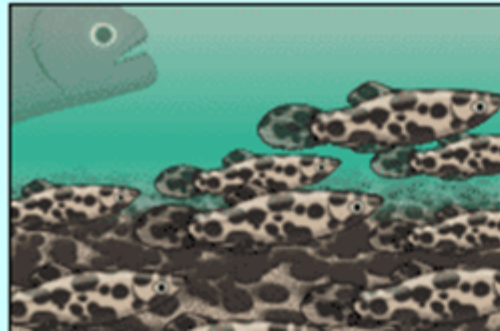
course gravel, predator present



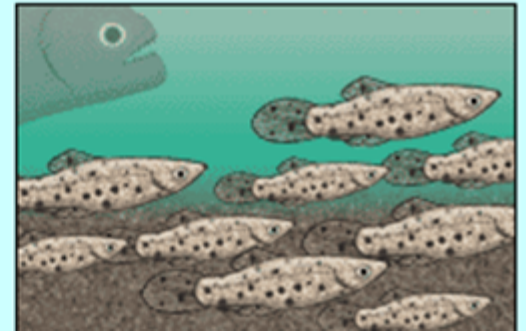
fine gravel, predator present



fewer than 15  
generations of selection



fewer than 15  
generations of selection

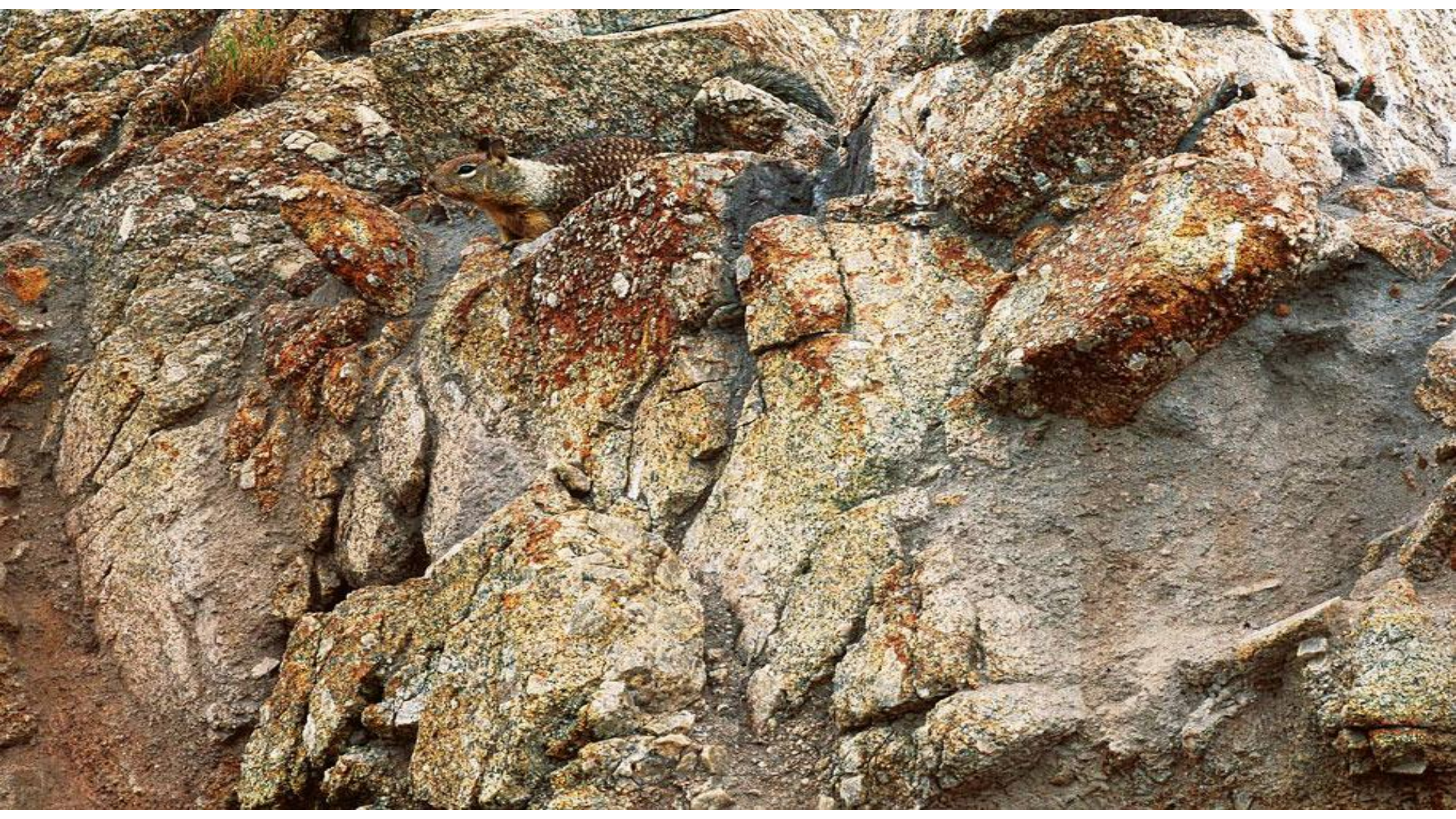


# Types of Adaptations?

Animals have evolved using different adaptations to survive.

Some include camouflage ( blending in the background) , warning colors (bright colors to say “Stay Away” , and mimicry ( resembling another species),

























(Conant 1958)



Eastern Coral Snake  
(venomous)

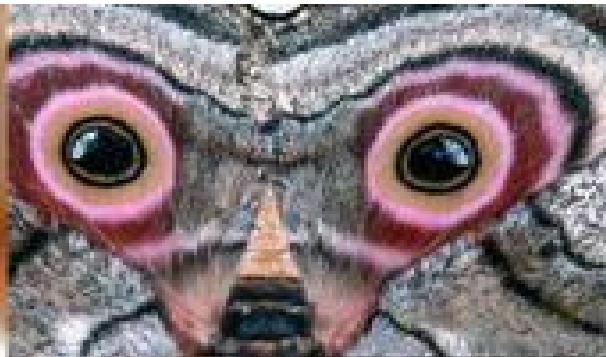


Scarlet King Snake  
(non-venomous)



To this....





**Moths & Owls**



# Mutations

You have to be careful about the way you think about mutations.

Mutations occur **RANDOMLY**.

They are **not** CAUSED by exposure to chemicals.

Resistance only becomes apparent because of the chemical exposure.





# Elephants (Elepante)

\*Pinapakita sa tsart ang mga pagbabagong anyo ng Elepante sa pag-lipas ng mga Panahon.

\* The chart shows the Evolution of Elephants in in the dawn of time.



Moeritherium



Amebelodon



Deinotherium



Gomphotherium



Stegotetrabelodon

\* Paleocene

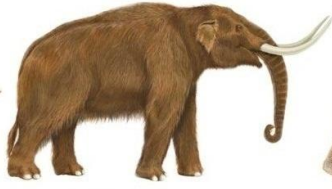
Eocene

Oligocene

Miocene



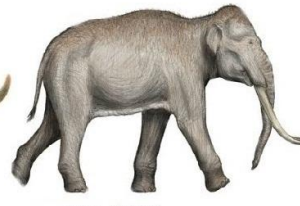
Stegodon



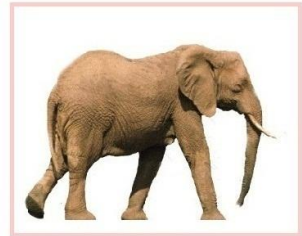
Mastodon



Mammothus



Elphas antiquus



Loxodonta (Modern Elephant)

Pliocene

Pleistocene

Holocene



youtube

natural selection

Human Evolution