

**Big Idea 4: Mutations**

Mutation definition: any change in sequence of DNA.

ORIGINAL SEQUENCE - The mRNA sequence reads: AUG CCA GCU AGG

The amino acid sequence reads: Met-

**TABLE:** Based on the original sequence, identify what happened to the mRNA code and what the resulting amino acids will be based on the type of mutation.

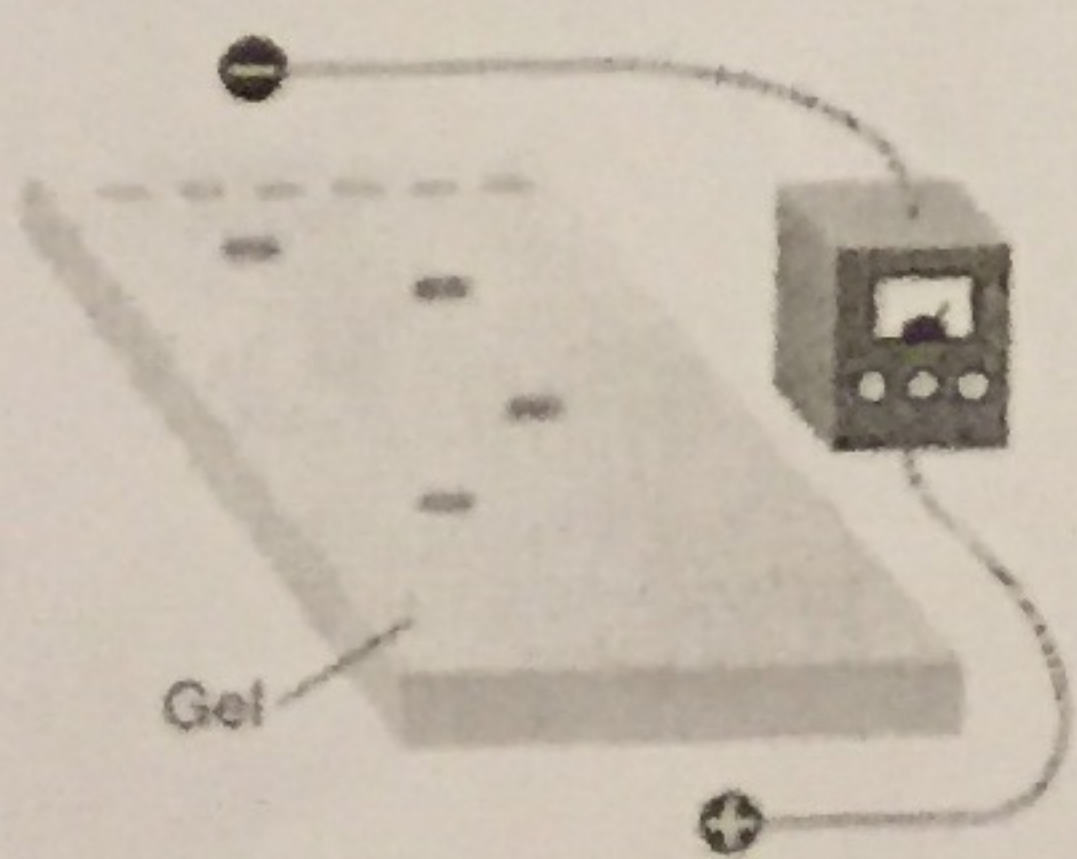
Sequence	Type of Mutation that occurred
AUG CC GCU AGG	Deletion
AUG CCU AGC UAG G	Insertion
AUG CCA GCU UGG	Substitution

**Big Idea: DNA Technologies**

Genetic engineering includes 3 parts:

1. DNA extraction
2. Cutting DNA
3. Separating

Gel Electrophoresis:



How do fragments get separated?

by size, bigger moves to bottom

GMOS: changing DNA of organism →

Transgenic Organism Benefits:

- more food supply
- better genes

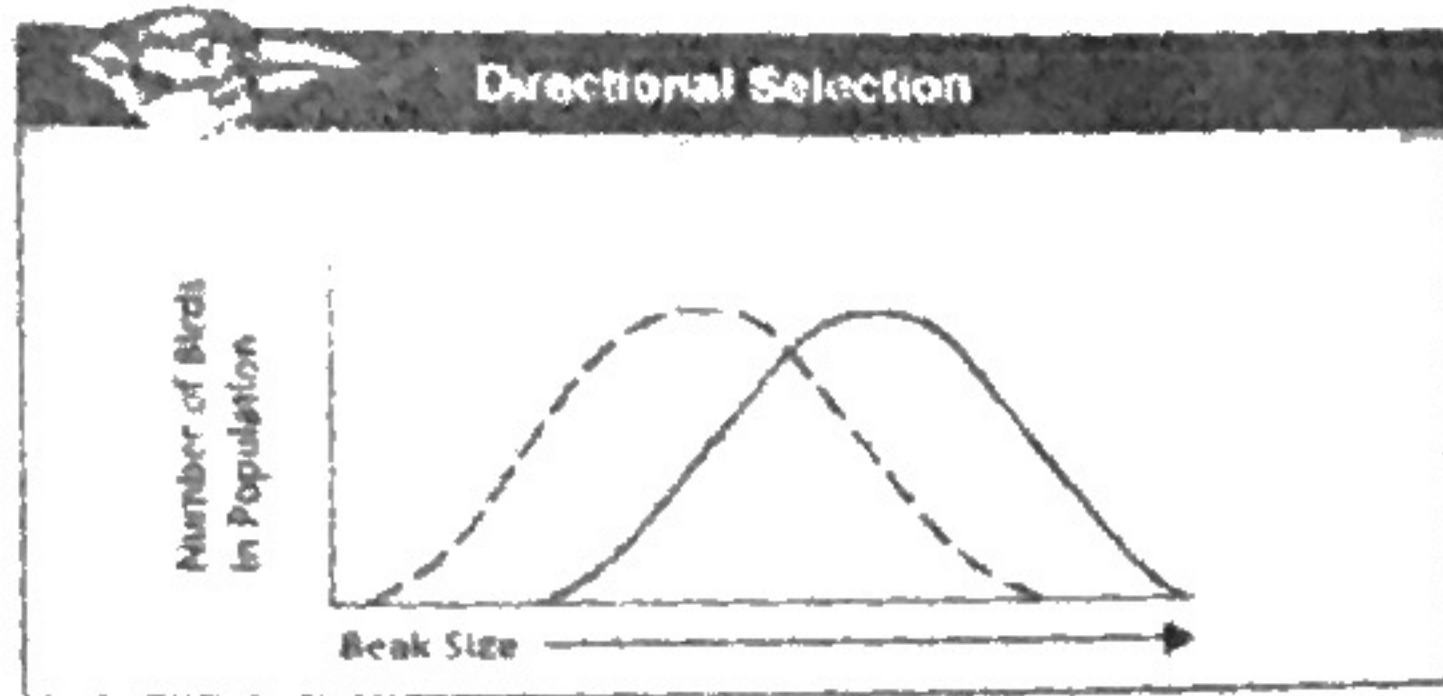


# Big Idea: Genetics and Evolution

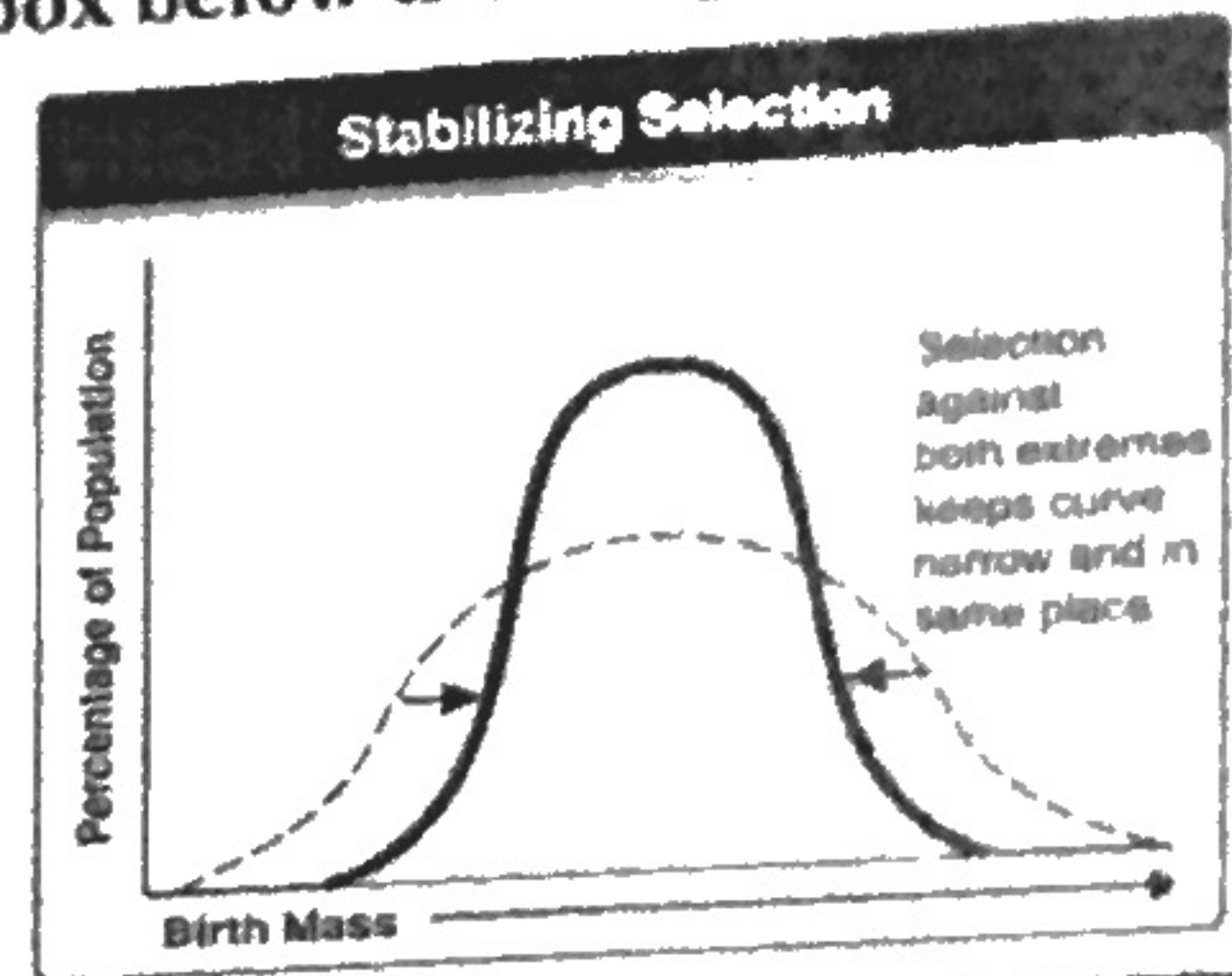
## Define:

1. gene pool: All alleles present for specific trait
2. relative frequency: number of times an allele occurs in a gene pool compared with the number of times other alleles occur
3. genetic drift: movement of alleles within a pop.
4. founder effect: species separated & move to new locations

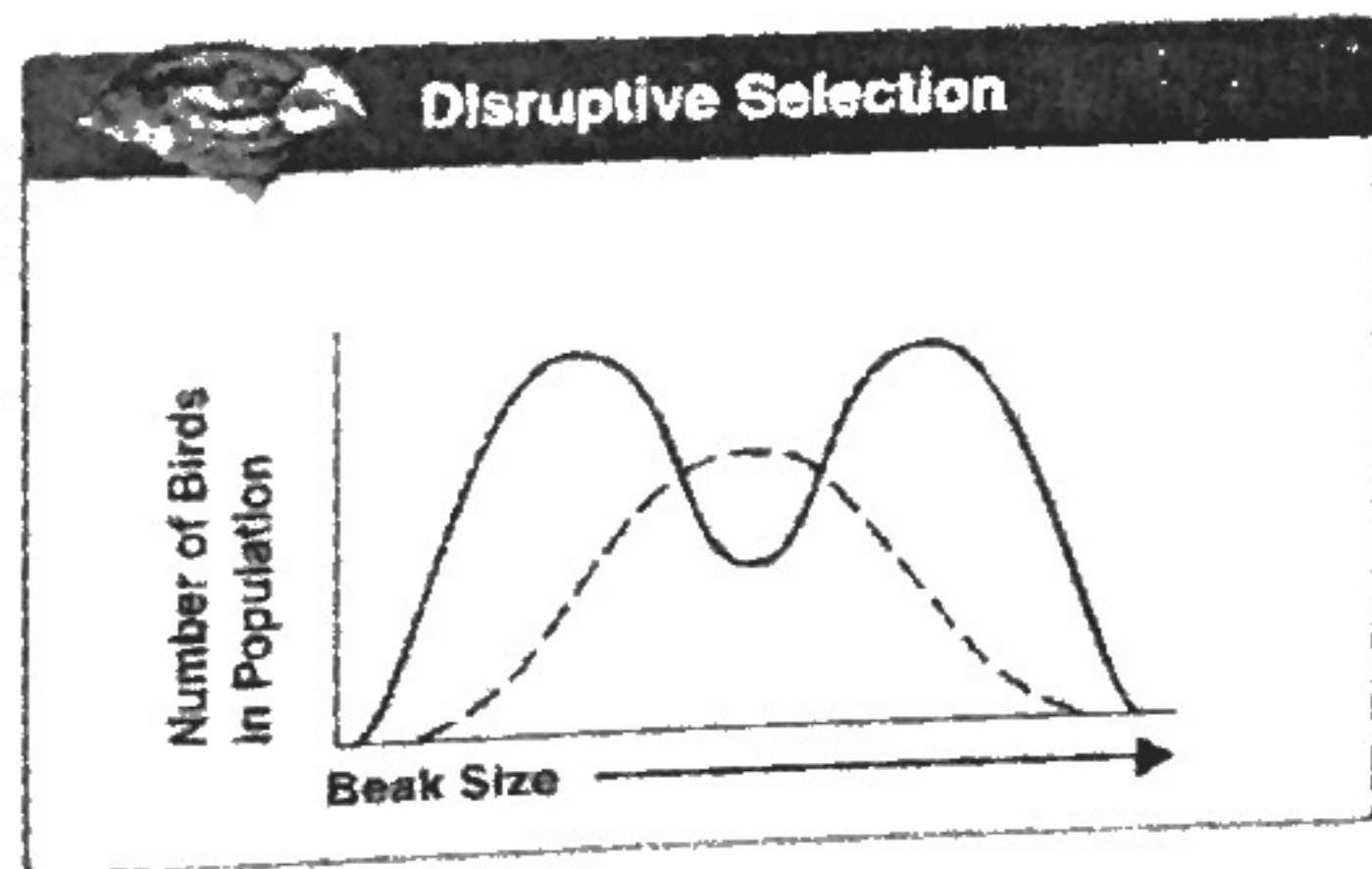
Describe the following types of selection curves in the box below the image:



whole populations favors 1 extreme of trait



favoring middle most variation of trait.



favoring those with extreme traits

What are the two sources of genetic variation in a population?

- mutation
  - gene shuffling
- Natural Selection acts directly on phenotypes

## Reproductive Isolation:

1. Behavioral: cannot mate due to behaviors - like birds
2. Geographic: separated by geo. barrier
3. Temporal: mating times different

speciation →



**Big Idea: Evolutionary History**

Scientist	Evolutionary Contributions/ Theory
Hutton	Shaped by geo forces · really old Earth gradualism
Malthus	only war, famine, disease could prevent endless growth
Lamarck	giraffe guy use & disuse · if you use it, it will get bigger & stay
Lyell	· geology · geological features explain past.

**Charles Darwin**

List his 5 major observations:

1. plants + animals well-suited
2. organisms survive + reproduce
3. species live in some places + not others
4. similar habitats have different animals + plants.
5. fossils of living + non-living organisms

**Theory of Natural Selection:**

· the environment naturally selects organisms based on their phenotypes / physical traits.

**What is an adaptation?**

· any behavior / physical trait organisms have.

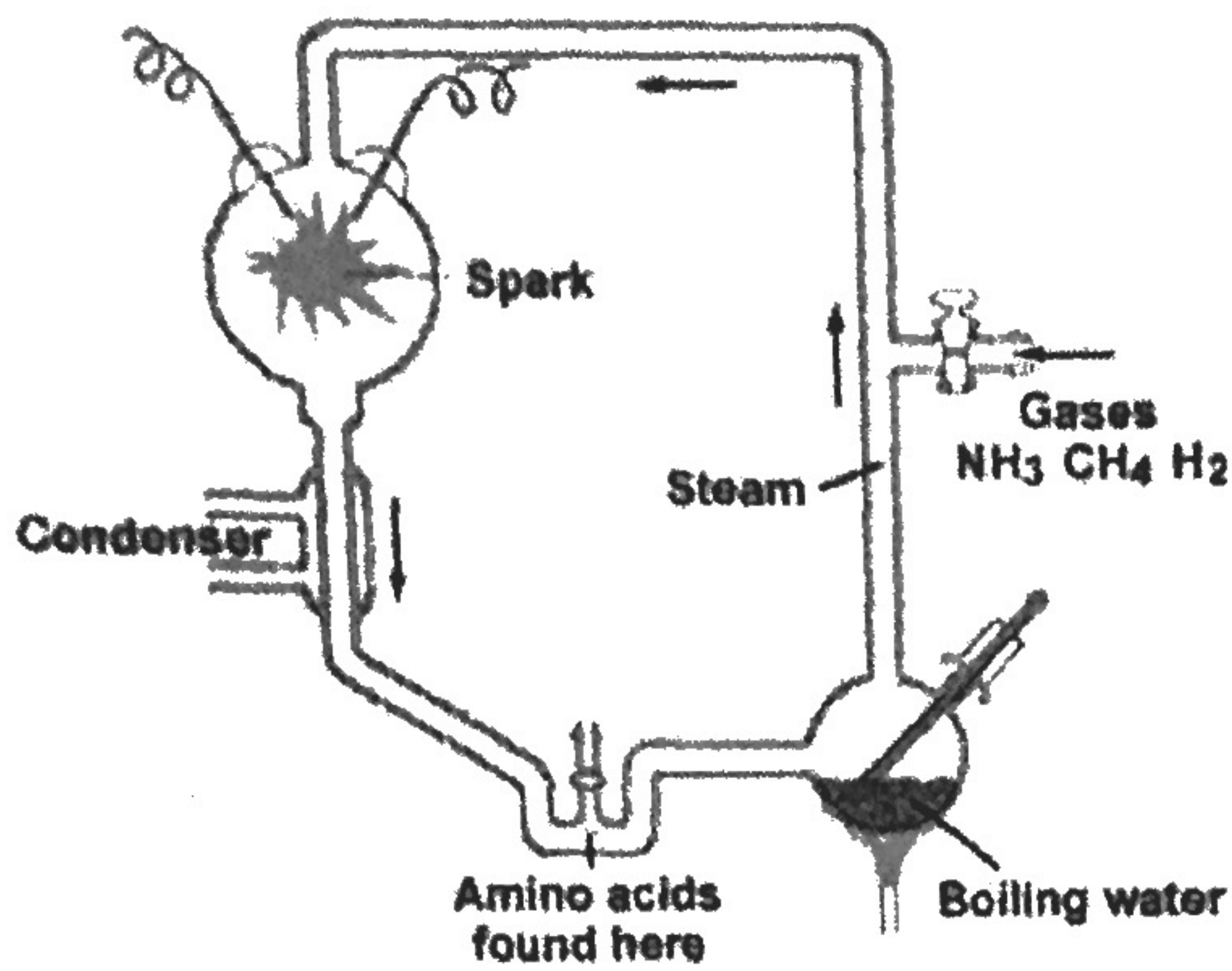
**What does the term Survival of the Fittest mean?**

· the best-suited characteristics will allow an organism to feel best in their environ. & survive & reproduce.



## Big Idea 8: Macroevolution and Earth History

The early atmosphere contained little to no oxygen.



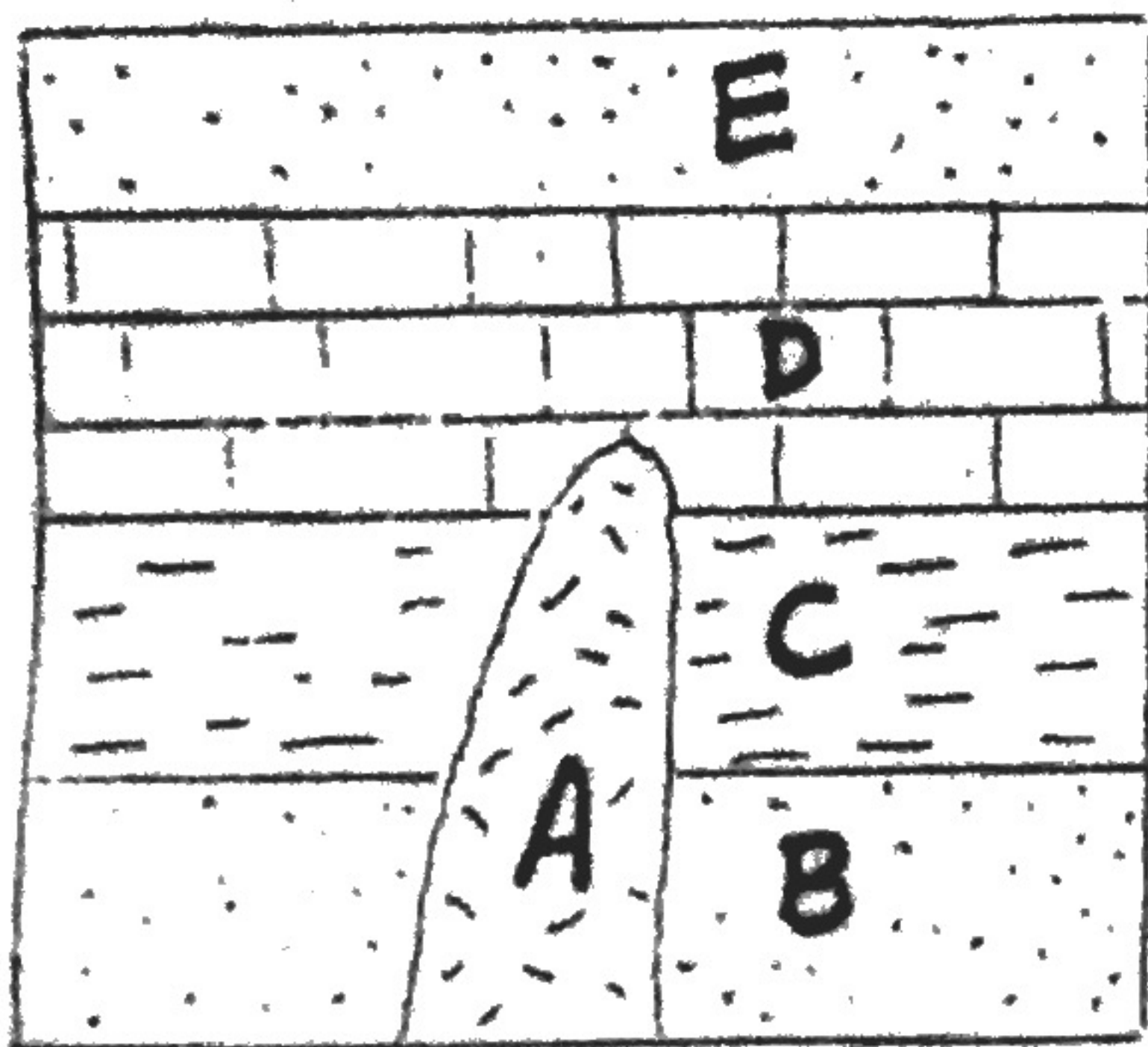
Miller and Urey's experiments suggested how mixtures of the organic compounds necessary for life could have arisen from simpler compounds present on a primitive Earth.

What did they find out?

amino acids = proteins  
↳ material for life present

What is the difference between relative dating and absolute dating?

relative dating is based on placement of fossils,  
absolute dating looks @



List the letters in order from oldest to youngest

B, C, D, A, E

What type of fossil dating is this image illustrating to the left?

relative dating

### Define:

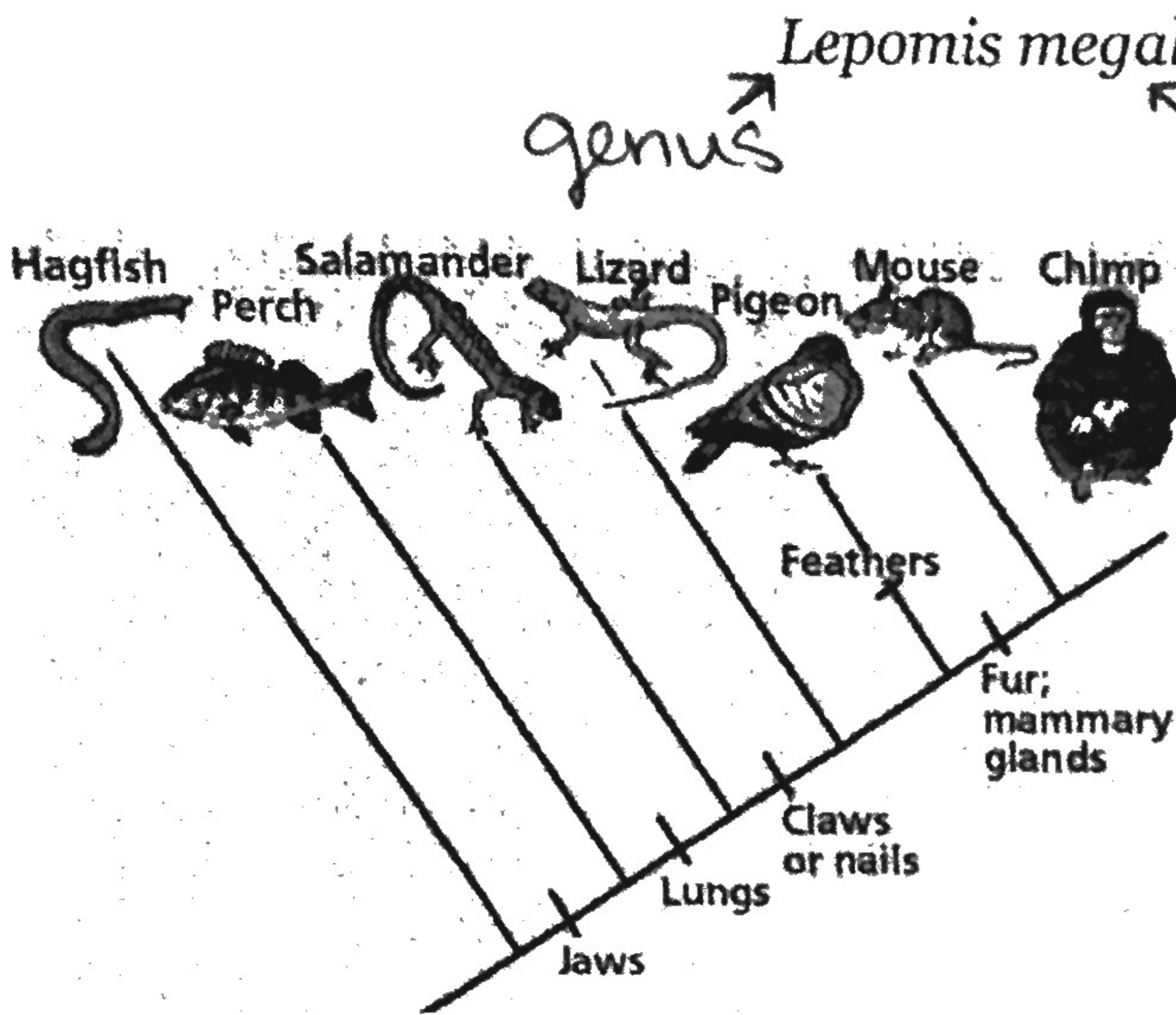
1. Mass extinction: wipes out total population of species
2. Adaptive Radiation:
3. Convergent Evolution:
4. Punctuated Equilibrium: evo. happens in spurts of time.
5. Theory: well accepted hypothesis supported by  
# data.



## Big Idea 9: Classification

System of classification scientists use to name organisms: binomial nomenclature.

Using this scientific name, Identify the species and genus:



### Cladogram:

1. Do mice have feathers? NO
2. Who is more related to the perch, the hagfish or the salamander? hagfish
3. Do lizards have mammary glands? NO
4. Which organism(s) have claws or nails?

~~Hagfish, Perch, Salamander, Lizard, Pigeon, Mouse, Chimp.~~  
Lizard, Pigeon, Mouse, Chimp.

## Big Idea 10: Body Systems

Define homeostasis: way in which the body maintains a stable state (internal environment)

What does our body do to maintain homeostasis?

What is the **hierarchy** of organization of the body:

cell → tissue → organ → organ system → organism

System and Function	
Immune - skin, blood, lymph nodes <u>protect body from foreign stuff.</u>	Digestive- Mouth, Small and Large Intestine, anus
Nervous - brain, spine, nerves	Excretory - kidneys, liver intestine
Cardiovascular- heart, blood vessels	Respiratory - Nose, mouth, lungs
Endocrine - glands, ovary, testes	Integumentary - skin

\*\* All the body systems are not on here, but these are the major ones we talked about



**Big Idea 10: Flowers**

Identify the parts of the flower on the image below. Label the part that is male and female.

