

Pg#65: Visualizing Natural Selection

EQ1: What does Natural Selection need in order to work well?

EQ2: Are humans still evolving?



EQ:

Evolution:

3 Misconceptions:

1.

2.

Scientific Theory:

3.

Darwin: "

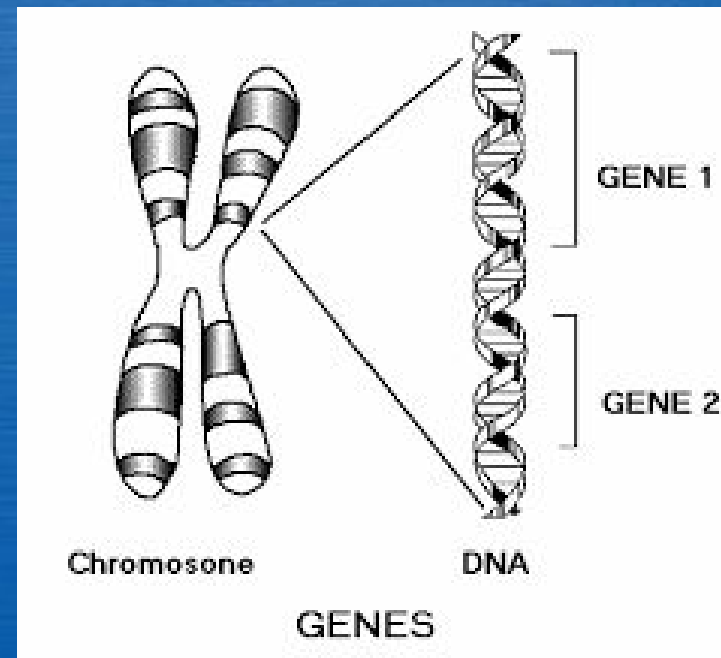
1.	2.
Draw:	Draw:
3.	4.
Draw:	Draw:

Answer the EQ:

Set-
up
your
page
#65

Theory of Evolution

- **Evolution**: The process of genetic change in a *population* over time
 - Driven by Natural Selection- Only the organisms that can respond to changes will survive



Misconceptions: What evolution is NOT

1. Does not happen over one lifetime

2. Is not untested:

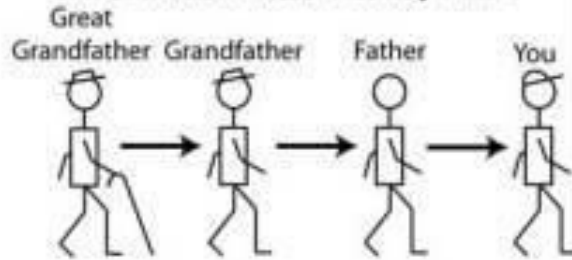
Theory: A set of assumptions, propositions, or accepted facts that attempts to provide a plausible or rational explanation of cause-and-effect

Scientific theory: is a well-supported explanation that is acquired through the **scientific** method and *repeatedly* tested and confirmed through observation and experimentation.
ex:gravity

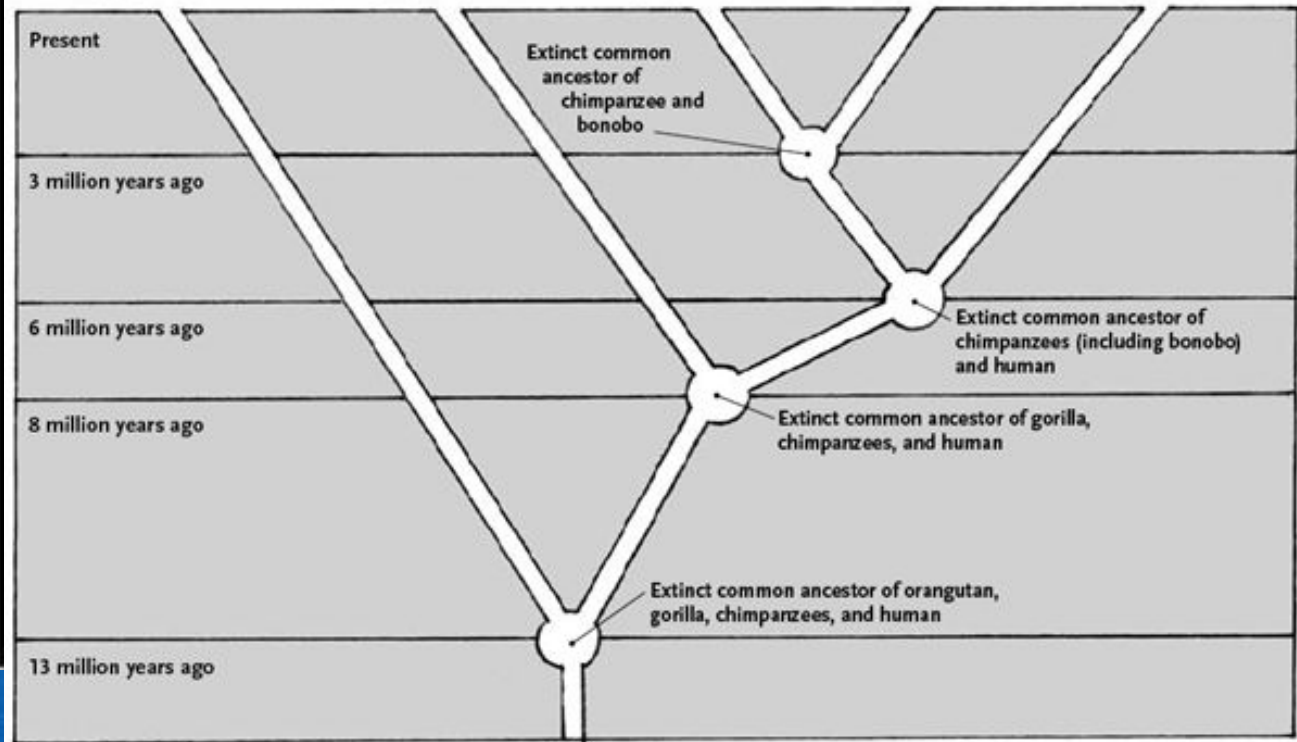
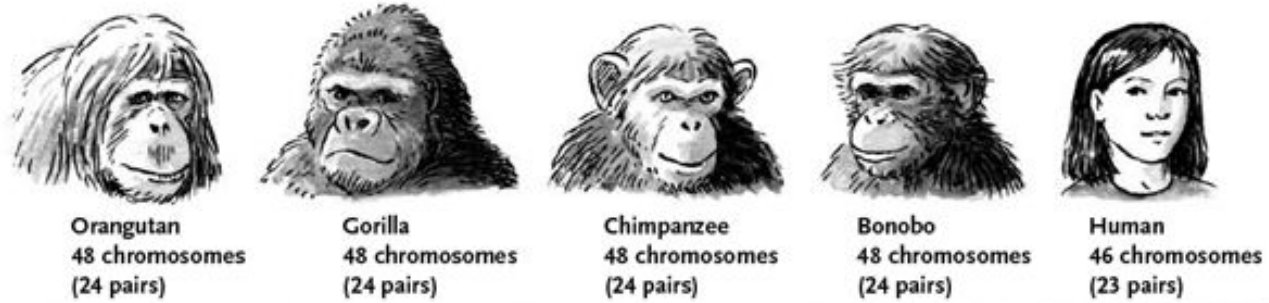
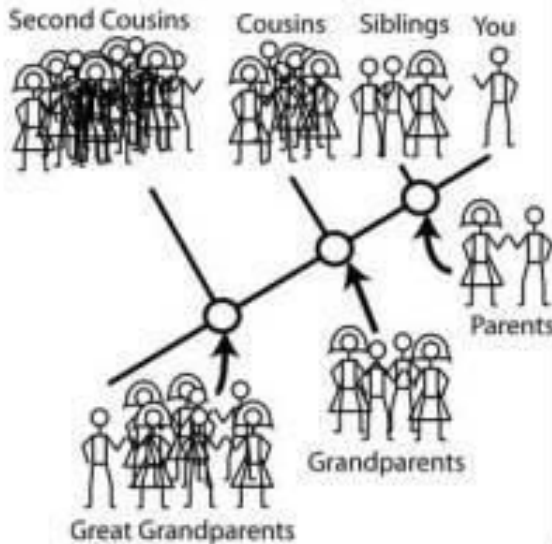


3. Humans did not *come from* chimps, we both do share a *common ancestor* that was neither human or chimp

This is NOT Your Family Tree



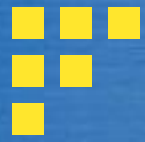
This is Your Family Tree



Darwin: “Survival of the Fittest”


It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change.

Charles Darwin



1. _____ <div data-bbox="770 475 954 601" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">Draw:</div>	2. _____ <div data-bbox="1277 475 1460 601" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">Draw:</div>
3. _____ <div data-bbox="770 825 954 951" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">Draw:</div>	4. _____ <div data-bbox="1277 825 1460 951" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;">Draw:</div>

Answer the EQ:



- Darwin's Theory of Natural Selection requires **four principles**:

1. Overproduction

2. Variation

3. Reproductive Advantage/
Competition

4. Heritability/Selection



1. Overproduction

- Each species produces more offspring than can survive

Ex: Each sunflower has hundreds of seeds, most of which will not germinate (grow).

- This happens in some animals too...



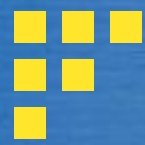


Sea Turtles Lay 200+ Eggs



About 1 in 1,000 hatchlings survive to adulthood





Ex: Sea Horse giving birth (2min)





2. Variation

- Each individual has a unique combination of inherited traits.
- EX: Some sunflowers are taller than others
= they maybe get more light and grow healthier







Why is Variation Important?

...Because the environment changes.

1. The more variations within a species, the more likely a species will survive

- EX: If everyone is the same, they are all vulnerable to the same environmental changes or diseases- all will be wiped out

2. The more variation of types of species in an habitat, the more likely at least some species will survive there

- EX: Dinosaurs replaced by mammals on Earth



Which species has a better chance of surviving a natural disaster?

Species A



Species B





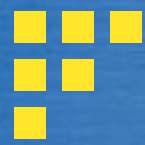
Which community has a better chance of surviving a natural disaster?

Community A



Community B





Pg#65

1. _____ <div data-bbox="772 471 956 606" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">Draw:</div>	2. _____ <div data-bbox="1275 471 1458 606" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">Draw:</div>
3. _____ <div data-bbox="772 821 956 956" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">Draw:</div>	4. _____ <div data-bbox="1275 821 1458 956" style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">Draw:</div>

Answer the EQ:

3. Reproductive Advantage/Competition

- Individuals COMPETE for limited resources:
 - Food, water, space, mates
- Natural selection occurs through “Survival of the fittest/fit enough”
 - Fitness: the ability to survive and reproduce
- Not all individuals survive to adulthood to reproduce



-Compete for Mates

- Some variations allow the organisms that possess them to have more offspring based on mate preference- not necessarily for a trait that increases survival (can even reduce it!)





Bower Birds



Male

Female



4. Heritability/Selection

- The individuals with the best traits / adaptations will survive and have the opportunity to pass on their traits to offspring
 - The adaptations must be genetic (heritable)



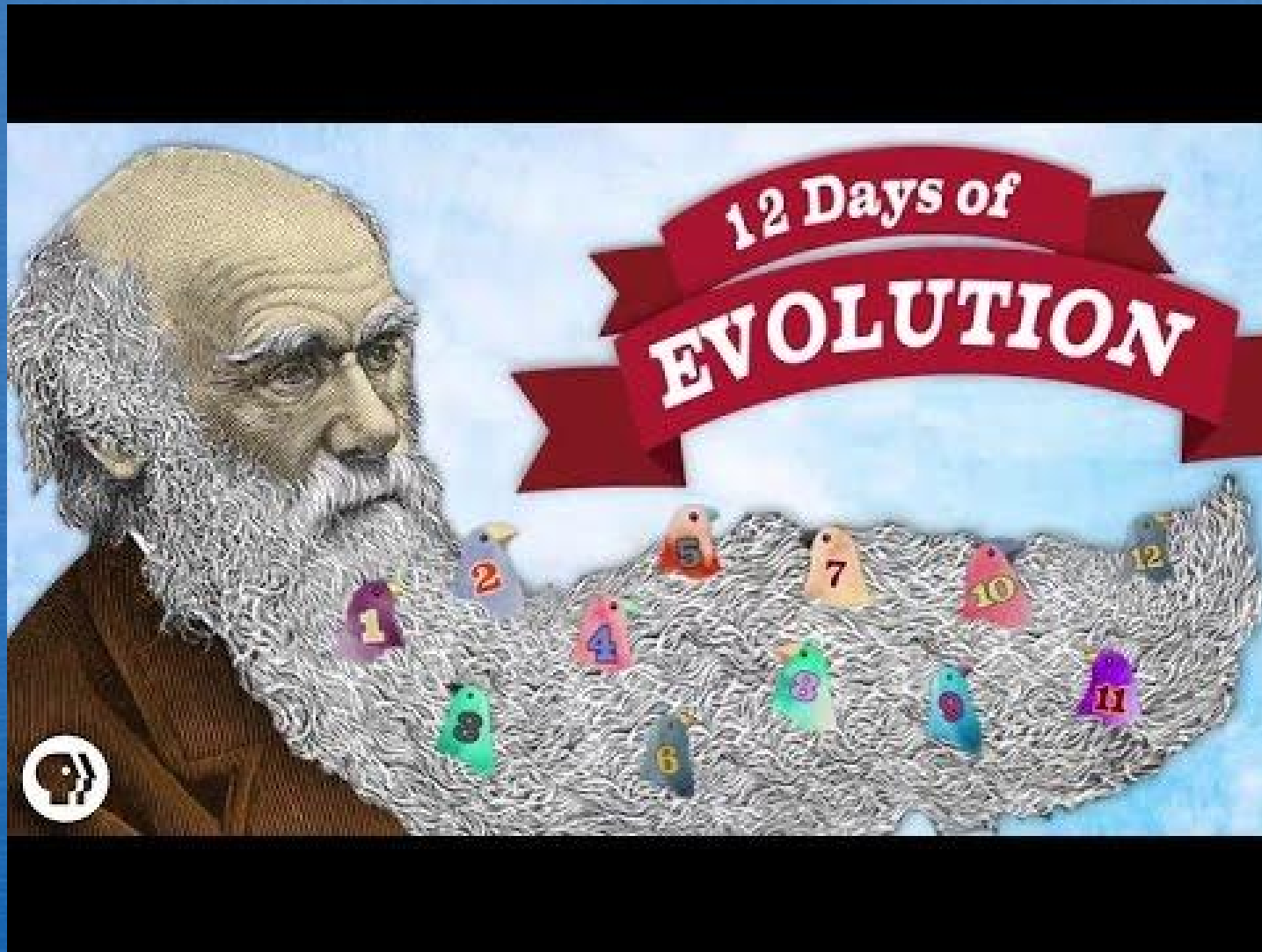
- Do modern humans follow the **four principles**?

1. Overproduction
2. Variation
3. Reproductive Advantage/
Competition
4. Heritability/Selection

Are humans still evolving?

Are humans still evolving? (3:30)





Per1-4
Pg. 64
2 facts

(Stop
at 9.5
min)

Natural Selection (2facts) 9min

