

6.1 Principles of Evolution

Standard Objectives:

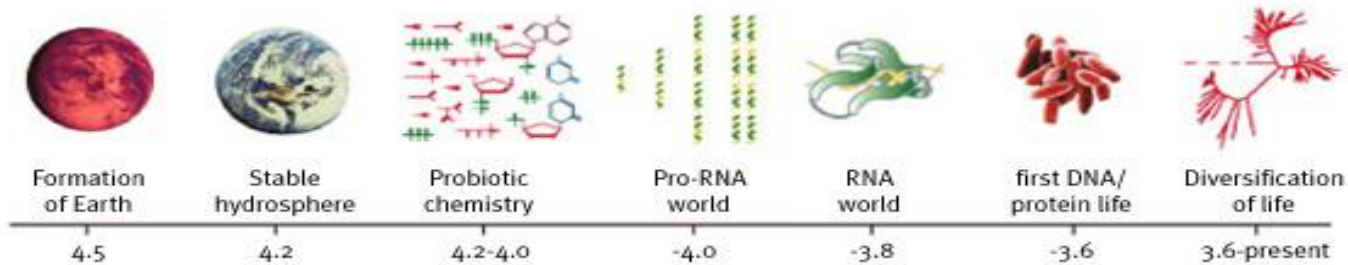
- Describe what evolution is *not* and what it *is*
- Define biological evolution
- Identify what two major events had to occur in Earth's history to give rise to biological evolution
- List and describe Darwin's four main principles of evolution

What Is Evolution?

Evolution is a Scientific Theory...

A Scientific Theory...

- Explains what we observe
- Predicts things we haven't observed yet



What Is Evolution?

Scientific Theories In Your Life...

- Cell Theory
- Germ theory of Disease
- Gene Inheritance Theory
- Molecular Theory
- Atomic Theory
- Big Bang Theory
- Theory of Relativity ($E=MC^2$)
- Climate Change Theory
- Plate Tectonic Theory
- Moon Origin Theory
- Quantum Theory

What Is Evolution?

Vocabulary:

- Evolution:
 - Process of gradual change over time in a population
 - Favorable characteristics are maintained
- Biological (aka Organic) Evolution:
 - Development of different kinds of organisms
 - Creates biological diversity
 - Two major events occurred in Earth's history:
 - Oxygenation of atmosphere; Sexual reproduction

What Is Evolution?

Evolution Is NOT:

A theory without factual evidence

Something someone believes in

Used to describe the origins of life

Evolution Is:

A scientific theory based on factual evidence

Based on science, not faith or belief

Used to describe the origin of different species

What Is Evolution?

Evolution Is NOT:

Something that only happens in humans

Something that only happened in the past

A process of a species becoming more and more complex

Evolution Is:

Used to describe change over time of all living organisms, not just humans

Not in the past, but continuously happening

Process of a species changing to become better suited for its environment

What Is Evolution?

Evolution Is NOT:

An accidental or random process

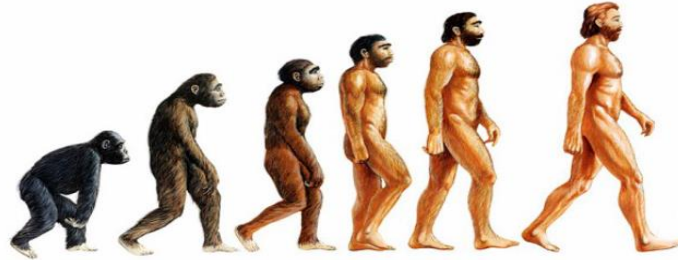
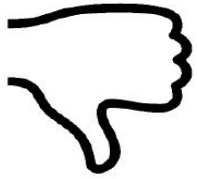
Disproven or contradicted by any evidence

Evolution Is:

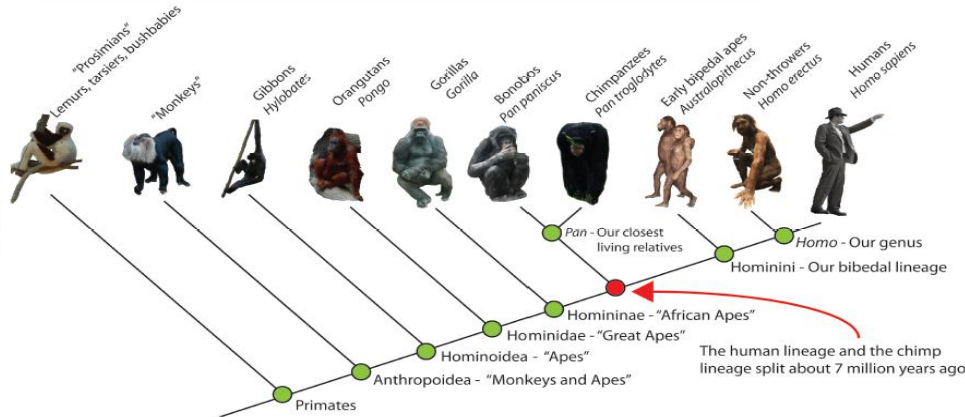
Cause and effect process, environment and mutations cause adaptations patterns

Supported by observations, and no observations made thus far do not support it

What Is Evolution?



Man did NOT descend from chimpanzees!



All modern primates (including humans) share common ancestors

Humans and chimps are related

6.1 Principles of Evolution

Darwin's 4 Principles of Evolution



6.1 Principles of Evolution

Darwin's 4 Principles of Evolution

1. Heredity

- Organisms pass genes from parent to offspring



6.1 Principles of Evolution

Darwin's 4 Principles of Evolution

2. Variability

- Offspring have variations in their genes
- Only some variations will survive



6.1 Principles of Evolution

Darwin's 4 Principles of Evolution

3. Competition

- Offspring must compete with each other and with other species to survive
- Best adapted will survive



6.1 Principles of Evolution

Darwin's 4 Principles of Evolution

4. Survive to Reproduce

- Those that survive long enough, can reproduce
- The best adapted will pass on their genes

