

<p>History of Life</p>	<p>The fossil record provides evidence about the history of life on Earth, and shows how different organisms, including species, have _____</p> <ul style="list-style-type: none"> • Fossils occur in a particular _____ • More than 99% of the species that have ever lived on Earth have become _____ (have died out) • Ancient unicellular organisms, over billions of years, have given rise to modern bacteria, protists, fungi, plants and animals <p>1. Fossils are the _____ remains of _____ life</p> <ul style="list-style-type: none"> • Either the remnants of the organism or some evidence of its presence is preserved • Fossils can be _____, eggs, _____, _____, or animal droppings • Fossils are usually found in sedimentary rock, which is rock formed from layers of sand, silt, clay or mud <p>2. _____ is used to determine the age of fossils Compares one fossils placement in a rock layer with that of fossils in other layers of rock.</p> <p>3. _____: scientists calculate the age of a fossil or rock sample based on the amount of radioactive isotopes it contains</p> <ul style="list-style-type: none"> • gives absolute dates for fossils, rock samples • based on the "_____ - _____" of various isotopes
<p>Geologic Time Scale</p>	<p>1. The _____ is a representation of evolutionary time.</p> <p>2. Scientists placed the world's rocks in order according to relative time</p> <ul style="list-style-type: none"> • This time scale is divided into sections • The _____ is the period from the beginning of life on the Earth until about 544 million years ago • The rest of Earth's history is divided into _____ • Eras are subdivided into _____ • All times are given as _____ - millions of years ago

<p>First Organic Molecules</p>	<ol style="list-style-type: none"> 1. Scientists have begun to demonstrate how Earth's early atmosphere could have produced organic compounds such as nucleic acids (building blocks of DNA and RNA) 2. Groups of organic molecules called _____ may have been precursors to cells 3. _____ cells arose first, oxygenating both the oceans and the atmosphere 4. _____ cells probably arose from communities of prokaryotic cells 5. _____ in eukaryotes allowed for new trait combinations
<p>Patterns of Evolution</p>	<ol style="list-style-type: none"> 1. _____ - Most life on Earth is eliminated. Survivors diversify and evolve into the new dominant forms by adaptive radiation 2. _____ - many new forms evolve from a single species or group of closely related species. It usually occurs after a mass extinction and many new habitats and niches are opened up for exploitation. <ul style="list-style-type: none"> • Disappearance of dinosaurs allowed the adaptive radiation of mammals, producing great diversity among mammals 3. _____ - Process where organisms of different ancestries evolve to look similar as they adapt to similar environments. Ex.- _____ 4. _____ - different species evolve with each other as they adapt to each other. Ex. - _____ 5. _____ - long, stable periods of equilibrium in a species interrupted by brief periods of more rapid change

<p>Evolution of Populations</p>	<p>Evolution can only occur as a result of changes in the genes of a population.</p> <p>_____ - All of the genes in a population</p> <p>_____ - Number of times an allele occurs in a population</p> <p>In genetic terms, _____ is any change in the relative frequency of alleles in a population.</p>
<p>Sources of Genetic Variation</p>	<p>1. There are two main sources of genetic variation</p> <ul style="list-style-type: none"> • _____ - random changes in DNA sequences. _____ mutations tend to be eliminated. _____ mutations are preserved in the population. • _____ - recombination of genes and chromosomes by meiosis, crossing over, and sexual reproduction.
<p>Natural Selection on Single Gene Traits</p>	<p>1. The number of phenotypes produced for a trait depends on how many genes control the trait</p> <ul style="list-style-type: none"> • A single gene trait will only show as many phenotypes as it has alleles <p>2. Natural selection on single-gene traits can lead to changes in allele frequencies and so to evolution</p> <ul style="list-style-type: none"> • Mutations provide variations that may be more or less successful in different environments
<p>Genetic Drift</p>	<p>The random change in allele frequency is _____</p> <p>_____.</p> <ol style="list-style-type: none"> 1. Individuals with a particular allele may leave more offspring than other individuals in their population just by chance. 2. Over time, this can lead to an allele becoming more _____ in a population 3. Genetic drift frequently occurs when a small group of individuals colonizes a new habitat
<p>Speciation</p>	<p>_____ occurs when an isolation of populations has occurred long enough for gene differences to build up, resulting in _____ (can no longer reproduce) of the populations.</p>

Isolating mechanisms:	<p>1. _____ - courtship behaviors, songs, etc.</p> <p>2. _____ - Separation of populations caused by a physical barrier; rivers, rising mountain chains, vegetations differences, etc.</p> <p>_____ - Populations develop separate mating seasons.</p>