

Development of one or more species from an existing species, when sympatric or allopatric populations diverge so much from the parent population that interbreeding cannot occur	A group of organisms that normally interbreed in nature to produce fertile offspring and belong to the same gene pool	Speciation occurring where organisms are initially capable of actually interbreeding but cannot because they are geographically separated	Speciation occurring where organisms living within the same area are theoretically capable of interbreeding, but cannot because of difference in behaviour, flowering times etc.
Speciation	Species	Allopatric speciation	Sympatric speciation
Two type of reproductive barriers	The change in allele frequencies of a population as a result of chance processes.	This happens in small populations where chance alone may play a considerable role	Two ways of increasing genetic variety
Prezygotic and Postzygotic	Genetic drift	Genetic drift	Mutation & immigration
Three ways of decreasing genetic variety	Prezygotic or Postzygotic? Habitat difference	Prezygotic or Postzygotic? Difference in breeding times	Prezygotic or Postzygotic? Mechanical differences
Natural selection, emigration, genetic drift	Prezygotic	Prezygotic	Prezygotic
Prezygotic or Postzygotic? Behavioural patterns e.g. courtship rituals	Prezygotic or Postzygotic? A zygote is formed but does not develop properly	Prezygotic or Postzygotic? A hybrid forms but it is sterile	List some geographical barriers
Prezygotic	Postzygotic	Postzygotic	Water, oceans, deserts, canyons, mountain ranges

A zygote is formed but does not develop properly	A hybrid forms but is sterile e.g. a sterile mule	The hybrid offspring are fertile but produce infertile or non-viable offspring	Two apparently distinct species that are connected by a series of intermediate geographical and structural subspecies between which interbreeding can occur
Hybrid inviability	Hybrid sterility	Hybrid breakdown	Ring species
A gradual variation in the characteristic of a species or population over its geographical range	The development of superficially similar structures in unrelated organisms, usually because the organisms live in the same kind of environment	Structures that are superficially similar but have evolved in different ways, e.g. wings of birds, bats and insects	Structures that have similar evolutionary history but have developed to suit different functions, e.g. wing of bat, flippers of dolphins, arms of humans
Cline	Convergent evolution	Analogous structures	Homologous structures
The type of evolution where a common ancestor divides into two or more lines with dissimilar characteristics due to the environments they live in	A form of divergent evolution in which there is a rapid proliferation of forms from an ancestral type because of the sudden availability of niches	The development of related organisms along similar evolutionary paths due to strong selective pressure acting on all of them in the same way	The gradual process by which the present diversity of plants and animals arose from the earliest and most primitive organisms
Divergent evolution	Adaptive radiation	Parallel evolution	Evolution
Fossils preserved in sedimentary rock layers that can be used to trace the evolutionary history of a species	Formation of a new species through autopolyploidy or allopolyploidy. As the chromosome numbers of the new 'instant' species do not match that of the original species, they cannot interbreed	The formation of a completely new species, genera etc.	The accumulation (through mutation) of new characteristics in a species
Geological record	Instant speciation	Macro-evolution	Micro-evolution

The process that brings about new species by the elimination of the less adapted individuals and the survival of the organisms which are better adapted	A barrier to breeding that exists due to differences in mating seasons or mating organs	Any part of an organism that has diminished in size during its evolution because the function it serves has decreased in importance, e.g. appendix in humans	Mutation producing more than twice the normal haploid number of chromosomes
<b>Natural selection</b>	<b>Reproductive isolation</b>	<b>Vestigial organ</b>	<b>Polyploidy</b>
Isolating mechanism that acts to prevent the fusion of gametes from different populations	Isolating mechanism that acts after fertilisation to prevent the exchange of genes between populations, by impairing development or fertility of the offspring	Evolution proceeds slowly but continuously. Eventually the accumulated changes result in speciation	There are long periods of little evolutionary change (stasis) interrupted by short bursts of rapid speciation
<b>Prezygotic</b>	<b>Postzygotic</b>	<b>Gradualism</b>	<b>Punctuated equilibrium</b>
Three steps in species development	The change in allele frequency due to the accumulated effects of chance	A chance change in allele frequency which occurs when a small group of individuals become detached from the main population	Found only in that country
1. geographical barrier 2. different selective pressure 3. postzygotic isolation	<b>Genetic drift</b>	<b>Founder effect</b>	<b>Endemic</b>
Natural selection against one end of a range of variation, resulting in a progressive change in allele frequency	Natural selection acting against the extremes of a range of variation, resulting in resistance to change in allele frequencies	Natural selection acting against the middle of a range of variation	
<b>Directional selection</b>	<b>Stabilising selection</b>	<b>Disruptive selection</b>	

