Adaptive radiation – The emergence of numerous species from a common ancestor introduced into an environment, presenting a diversity of new opportunities and problems. E.g. mammals after the extinction of the dinosaurs.

Analogous structures – Referring to structures that perform the same function though derived from different ancestral structures. E.g. bird’s wing and a butterfly’s wing.

Allopatric speciation – A mode of speciation induced when the ancestral population becomes segregated by a geographical barrier.

Artificial selection – The selective breeding of domesticated plants and animals to encourage the occurrence of desirable traits.

Balanced selection – A type of selection in which the frequencies of the coexisting forms do not change noticeably over many generations.

Biogeography – The study of the past and present distribution of species.

Bottleneck effect – Genetic drift resulting from the reduction of a population, typically by a natural disaster, such that the surviving population is no longer genetically representative of the original population. E.g. Northern elephant seals and cheetahs.

Convergent evolution – The independent development of similarity between species as a result of their having similar ecological roles and selection pressures.

Darwinian fitness – A measure of the relative contribution of an individual to the gene pool of the next generation.

Directional selection – Natural selection that favors individuals on one end of the phenotypic range. E.g. peppered moth in England during the Industrial Revolution.

Divergent evolution – The separation of one species of organisms into two (or more) species.

Diversifying or disruptive selection – Natural selection that favors extreme over intermediate phenotypes.

Founder effect – A cause of genetic drift attributable to colonization by a limited number of individuals from a parent population. E.g. Ellis-van Creveld syndrome in Amish population.
**Frequency-dependent selection** – A decline in the reproductive success of a form resulting from the form’s phenotype becoming too common in a population; a cause of balanced polymorphism in populations. E.g. right and left-mouthed cichlids

**Gene flow** – The loss or gain of alleles from a population due to the emigration or immigration of fertile individuals between populations.

**Gene pool** – The total aggregate of genes in a population at any one time.

**Genetic drift** – Changes in the gene pool of a small population due to chance.

**Gradualism** – A view of Earth’s history that attributes profound change to the cumulative product of slow but continuous processes.

**Hardy-Weinberg equilibrium** – An axiom maintaining that the sexual shuffling of genes alone cannot alter the overall genetic make-up of a population.

**Heterozygote advantage** – A mechanism that preserves variation in eukaryotic gene pools by conferring greater reproductive success on heterozygotes over individuals homozygous for any one of the associated alleles. E.g. sickle cell trait in areas with malaria

**Homologous structures** – Structures in different species that are similar because of common ancestry. E.g. arms of a human, wings of a bird, fins of a whale, forelegs of a cat

**Macroevolution** – Evolutionary change on a grand scale, encompassing the origin of novel designs, evolutionary trends, adaptive radiation, and mass extinction.

**Microevolution** – A change in the gene pool of a population over a succession of generations.

**Mutation** – A rare change in the DNA of genes that ultimately creates genetic diversity.

**Natural selection** – Differential success in the reproduction of different phenotypes resulting from the interaction of organisms with their environment. Evolution occurs when natural selection causes change in relative frequencies of alleles in the gene pool.

**Non-random mating** – Selection of mates for specific phenotypes.

**Polyploidy** – A chromosomal alteration in which the organism possesses more than two complete chromosome sets.

**Population** – A group of individuals of one species that live in a particular geographic area.
**Postzygotic barrier** – Any of several species-isolating mechanisms that prevent hybrids produced by two different species from developing into viable, fertile adults.

**Prezygotic barrier** – A reproductive barrier that impedes mating between species or hinders fertilization of ova if inter-specific mating is attempted.

**Punctuated equilibrium** – A theory of evolution advocating spurts of relatively rapid change followed by long periods of stasis.

**Species** – A population or group of populations whose members have the potential to interbreed with one another in nature to produce viable, fertile offspring.

**Stabilizing selection** – Natural selection that favors intermediate variants by acting against extreme phenotypes.

**Sympatric speciation** – A mode of speciation occurring as a result of a radical change in the genome that produces a reproductively isolated sub-population in the midst of its parent population. Common in plants due to polyploidy.