

SB3a Sexual and asexual reproduction

Word	Pronunciation	Meaning
asexual reproduction	<i>ree-pro-duck-shun</i>	Producing new organisms from one parent only. These organisms are genetically identical to the parent.
clone		All the cells in a clone are genetically identical to each other and to the parent's cells.
fertilisation	<i>fert-ill-l-zay-shun</i>	Fusing of a male gamete with a female gamete.
invertebrate		An animal without bones, such as an insect or worm.
mitosis	<i>my-toe-sis</i>	The process of diploid cells dividing to produce two diploid daughter cells that are genetically identical to the parent.
sexual reproduction	<i>ree-pro-duck-shun</i>	Reproduction that needs a male and a female parent.
variation		Differences in the characteristics of organisms.
vertebrate		Animal with bones, such as a human.

SB3b Meiosis

Word	Pronunciation	Meaning
chromosome	<i>krow-mO-sOwm</i>	A structure found in the nuclei of cells. Each chromosome contains one enormously long DNA molecule packed up with proteins.
daughter cell	<i>dor-ter sell</i>	A cell produced by another cell that has divided.
diploid	<i>dipp-loyd</i>	A cell or nucleus that has two sets of chromosomes. In humans, almost all cells except the sperm and egg cells are diploid.
DNA		Deoxyribonucleic acid. A polymer made of sugar and phosphate groups joined to bases. One molecule of DNA is found in each chromosome.
egg cell		The female gamete in humans.
fertilisation	<i>fert-ill-l-zay-shun</i>	Fusing of a male gamete with a female gamete.
gamete	<i>gam-meet</i>	A haploid cell used for sexual reproduction.
gene	<i>jeen</i>	Section of the long strand of DNA found in a chromosome, which often contains instructions for a protein.
genome	<i>jee-nOhm</i>	All the DNA in an organism. Each body cell contains a copy of the genome.
haploid	<i>happ-loyd</i>	A cell or nucleus that has one set of chromosomes. Gametes are haploid.
meiosis	<i>my-O-sis</i>	A form of cell division in which one parent cell produces four haploid daughter cells.
mitosis	<i>my-tO-sis</i>	A form of cell division in which one parent cell produces two diploid daughter cells.
polymer	<i>poll-ee-mer</i>	A molecule made out of a chain of repeating similar units (called monomers).

replicate		When DNA replicates it makes a copy of itself.
sperm cell		The male gamete in humans.
zygote	<i>zY-goat</i>	Another term for 'fertilised egg cell'.

SB3c DNA

Word	Pronunciation	Meaning
adenine	<i>add-en-een</i>	One of four bases found in DNA. Often written as A.
base (in DNA)		Four substances that help make up DNA, often shown by the letters A, C, G and T. Pairs of bases form 'links' between two 'spines' formed of phosphate groups and a type of sugar.
chromosome	<i>krow-mO-sOwm</i>	A structure found in the nuclei of cells. Each chromosome contains one enormously long DNA molecule packed up with proteins.
complementary base pair		Two DNA bases that fit into each other and link by hydrogen bonds. There are two types of complementary base pair: A linking with T, and C linking with G.
cytosine	<i>cY-tO-seen</i>	One of four bases found in DNA. Often written as C.
DNA		Deoxyribonucleic acid. A polymer made of sugar and phosphate groups joined to bases. One molecule of DNA is found in each chromosome.
double helix		Two helices joined together.
gene	<i>jeen</i>	Section of the long strand of DNA found in a chromosome, which often contains instructions for a protein.
guanine	<i>gua-neen</i>	One of four bases found in DNA. Often written as G.
hydrogen bond		Weak force of attraction caused by differences in the electrical charge on different parts of different molecules.
thymine	<i>thY-meen</i>	One of four bases found in DNA. Often written as T.

SB3d Protein synthesis

Word	Pronunciation	Meaning
codon	<i>cOde-on</i>	A set of three bases (a triplet) found in DNA and RNA. The genetic code is formed from patterns of codons.
complementary		Means 'fitting together'. Complementary bases in a DNA molecule fit together.
genetic code	<i>jen-et-ick cOde</i>	A set of rules defining how the base order in DNA or RNA is turned into a specific sequence of amino acids joined in a polypeptide chain.
messenger RNA (mRNA)		A single strand of RNA produced in transcription.
nuclear pore	<i>new-blee-ar poor</i>	A small hole in the membrane around the nucleus.
polypeptide	<i>poll-ee-pep-tyde</i>	A chain of amino acids.
ribonucleic acid	<i>rye-bO-new-clay-ick</i>	See RNA.

ribosome	<i>rye-bO-sOwm</i>	A protein that attaches to mRNA. It allows transfer RNA (tRNA) molecules to match up with the mRNA codons and also joins the amino acids together.
RNA		Abbreviation of ribonucleic acid. The molecule is made of phosphate groups and sugars (called ribose) linked together with one of four bases.
RNA polymerase	<i>poll-im-er-aze</i>	An enzyme that creates mRNA from DNA.
template strand		The strand of a DNA molecule that RNA polymerase uses to make mRNA.
transcription	<i>trans-crip-shun</i>	The process by which the genetic code in one strand of DNA molecules is used to make mRNA.
transfer RNA (tRNA)		A molecule of RNA that carries an amino acid.
translation	<i>trans-lay-shun</i>	The process by which the genetic code in a molecule of mRNA is used to make a polypeptide.
uracil	<i>your-a-sil</i>	A base found in RNA but not in DNA.

SB3e Genetic variants and phenotypes

Word	Pronunciation	Meaning
allele	<i>a-leel</i>	Most genes come in different versions called alleles. So a gene for eye colour may have one version (allele) that can cause dark eyes, and another allele that can cause pale eyes.
genetic disorder		A problem caused by genes.
mutation	<i>mew-tay-shun</i>	A change to a gene caused by a mistake in copying the DNA base pairs during cell division, or by the effects of radiation or of certain chemicals.
phenotype	<i>fee-nO-tYpe</i>	The characteristics that a certain set of alleles display.

SB3f Mendel

Word	Pronunciation	Meaning
variation		Differences in the characteristics of organisms.

SB3g Alleles

Word	Pronunciation	Meaning
allele	<i>a-leel</i>	Most genes come in different versions, called alleles. So a gene for eye colour may have a version (allele) that can cause dark eyes and an allele that can cause pale eyes.
dominant		Allele that will always affect the phenotype (as opposed to a recessive allele, whose effect will not be seen if a dominant allele is present).
genetic diagram		Diagram showing how the alleles in two parents may form different combinations in the offspring when the parents reproduce.

genetic variation		Also called inherited variation. Differences between organisms passed on to offspring by their parents in reproduction.
genotype	<i>jee-nO-tYpe</i>	The alleles for a certain characteristic that are found in an organism. Written in a shorthand using letters to represent the alleles (with the dominant allele having a capital and being written first).
heterozygous		When both the alleles for a gene are different in an organism.
homozygous		When both the alleles for a gene are the same in an organism.
monohybrid inheritance	<i>mon-O-hy-brid in-herr-it-anse</i>	The study of how the alleles of just one gene are passed from parents to offspring.
phenotype	<i>fee-nO-tYpe</i>	The characteristics that a certain set of alleles produce.
ratio	<i>ray-shee-O</i>	A relationship between two quantities, usually showing the number of times one value is bigger than the other. For example, if there are six red buttons and two blue buttons, the ratio of red to blue is 3 to 1, also written 3:1.
recessive	<i>res-ess-iv</i>	Allele that will only affect the phenotype if the other allele is also recessive. It has no effect if the other allele is dominant.
zygote	<i>zY-goat</i>	Another term for 'fertilised egg cell'.

SB3h Inheritance

Word	Pronunciation	Meaning
family pedigree chart		A chart showing the phenotypes and sexes of several generations of the same family, to track how characteristics have been inherited.
probability		The likelihood of an event happening. Can be shown as a fraction from 0 to 1, a decimal from 0 to 1 or as a percentage from 0% to 100%.
Punnett square		Diagram used to predict the different characteristics in the offspring of two organisms with known combinations of alleles. You can use the square to work out the probability (how likely it is) that offspring will inherit a certain feature.
sex chromosome	<i>krow-mO-sOwm</i>	Chromosome that determines the sex of an organism. In humans, males have one X sex chromosome and one Y sex chromosome, while females have two Xs.

SB3i Multiple and missing alleles

Word	Pronunciation	Meaning
ABO blood group		Blood group system in humans which produces four phenotypes: blood groups A, B, AB and O.
carrier		An individual that has inherited a recessive allele but does not show the phenotype caused by that allele. For example, a woman who has one allele for a sex-linked genetic disorder and one 'healthy' allele will not suffer from the disorder but can pass it on to a son.

codominant		Two alleles that both affect the phenotype. For example a person with the blood group alleles I ^A and I ^B has blood group AB.
sex-linked genetic disorder		A disorder caused by genes that are inherited differently in males and females because they are carried on the sex chromosomes. An example is red–green colour blindness, which is more common in men than in women.

SB3j Gene mutation

Word	Pronunciation	Meaning
Human Genome Project	<i>jee-nOhm</i>	The project that mapped the base pairs in one human genome.
mutation	<i>mew-tay-shun</i>	A change to a gene, caused by a mistake in copying the DNA base pairs during cell division or by the effects of radiation or certain chemicals.
variation	<i>vair-ee-ay-shun</i>	Differences in the characteristics of organisms.

SB3k Variation

Word	Pronunciation	Meaning
acquired characteristic	<i>ak-wired</i>	A characteristic that can change during life, due to a change in the environment. (See also environmental variation.)
continuous variation		Continuous data can take any value between two limits. Examples include length, mass, time. Continuous variation is when differences in a characteristic are continuous.
discontinuous variation		Data values that can only have one of a set number of options are discontinuous. Examples include shoe sizes and blood groups. Discontinuous variation is when differences in a characteristic are discontinuous.
environmental variation		Differences between organisms caused by environmental factors, such as amount of heat, light, damage. These differences are called acquired characteristics.
genetic variation		Differences between organisms caused by differences in the alleles they inherit from their parents, or differences in genes caused by mutation.
mean		An average calculated by adding up the values of a set of measurements and dividing by the number of measurements in the set.
median		The middle value in a data set.
mode		The most common value in a data set.
normal distribution		When many individuals have a middle value for a feature, with fewer individuals having greater or lesser values. This sort of data forms a bell shape on charts and graphs.
range		The difference between the highest and lowest values in a set of data (usually ignoring any outliers or anomalous results).