A Level Year 1 Key Words – Topic 4

Genes and Protein and the Genetic Code

1		Section of DNA on a chromosome that controls a feature by coding for formation of one or more specific polypeptides or a functional RNA (including rRNA and tRNA).
2		A thread like structure made of protein and DNA by which hereditary information is physically passed from one generation to the next.
3		The material that makes up chromosomes. It consists of DNA and the protein histone.
4		A chromosome which is not a sex chromosome
5		The sequence of triplets of nucleotides (codons) in DNA which determines the sequence of amino acids in an organism's proteins. It is degenerate; non-overlapping; universal ; has start and stop codons
6		A single amino acid may be coded for by more than one triplet code.
7		Each base appears in only one triplet – each base is only read once.
8		The genetic code is the same in all organisms – this is indirect evidence for evolution.
9		Proteins, which together with DNA, make up the chromosomes of eukaryotic cells.
10		Each of the two thread-like strands into which a chromosome divides that are joined together by a single centromere prior to cell division
11		The specific linear position of a particular gene on a certain chromosome
12		Alternative forms of a particular gene with different base sequences, and therefore different codes
13		The process by which the genetic code codes for proteins in the cell. The template strand of DNA codes for mRNA in transcription, which is then translated into an amino acid sequence at the ribosomes.
14		The complete set of genetic material present in a cell or an organism.
15		The complete set of genes in a cell, including those in mitochondria and/or chloroplasts
16		The full range of proteins produced by the genome. This is sometimes called the complete proteome, in which case the term proteome refers to the proteins produced by a given type of cell under a certain set of conditions.
17		Formation of messenger RNA molecules from the DNA that makes up a particular gene. It is the first stage of protein synthesis.
18		Enzyme that joins together nucleotides to form messenger RNA during transcription
19		Complex chemicals made up of an organic base, a sugar and a phosphate. They are the basic units of which the nucleic acids DNA and RNA are made.
20		The type of RNA that is a long strand arranged in a single helix and its base sequence is determined by the sequence of bases on a length of DNA
21		A sequence of three bases in DNA.
22		The strand of DNA which is used during transcription to make mRNA. It runs in a 3' to 5' direction so the mRNA is built in a 5' to 3' direction.
23		A sequence of three adjacent nucleotides in mRNA that codes for one amino acid
24		Portions of DNA within a gene that do not code for a polypeptide. They are removed from pre-messenger RNA after transcription.
25		Portions of DNA within a gene that codes for proteins. They are joined together during splicing.

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26		The process by which base sequences corresponding to the introns are removed and the functional exons are joined together.
27		The latter part of protein synthesis when the mRNA is used as template to which complementary tRNA molecules attach and the amino acids link to form a polypeptide.
28		The type of RNA made of around 80 nucleotides and has an anticodon, which is complementary to a section of mRNA. Each molecule is specific to one amino acid.
29		A sequence of three adjacent nucleotides on a molecule of transfer RNA that is complementary to a particular codon on a messenger RNA molecule.
30		An organelle consisting of rRNA and proteins found in large numbers in the cytoplasm and on the RER of living cells. They bind to mRNA and use tRNA to synthesise polypeptides.
31		A polymer consisting of a large chain of amino acids bonded together by peptide bonds.
32		A change to one or more nucleotide bases in DNA that could result in a change in genotype which may be inherited
33		If a nucleotide is changed in the DNA sequence
34		If the base change results in the formation of a stop codon
35		If the base change results in a code for a different amino acid completely
36		If the base change still codes for the same amino acid as before (as code is degenerate)
37		If a nucleotide is lost from the DNA sequence, resulting in a 'frame shift' in translation
38		A material or other factor which increases the normal mutation rate eg high energy radiation, chemicals
39		A change that occurs in a chromosome. These changes are most often brought on by problems that occur during meiosis and can result in changes in the number of chromosomes in a cell or changes in the structure of a chromosome.
40		The process of the genome doubling that gives rise to organisms with multiple sets of chromosomes.
41		The failure of one or more pairs of homologous chromosomes or sister chromatids to separate normally during nuclear division, usually resulting in an abnormal distribution of chromosomes in the daughter nuclei.

Gene Mutation	Human Genome	Gene	Silent mutation
Substitution mutation	Proteome	Chromosome	Deletion mutation
Genetic code	Non-overlapping	nucleotides	Protein synthesis
mRNA	Translation	Chromatin	Histones
Degenerate	Anti-codon	Polypeptide	Splicing
Triplet	Mutagen (mutagenic agent)	Polyploidy	Chromatid
Intron	Mis-sense mutation	Nonsense mutation	Ribosome
Template strand	tRNA	Autosome	Locus
Codon	Chromosome mutation	Universal	Alleles
Genome	Transcription	RNA Polymerase	Exon
Non-disjunction			