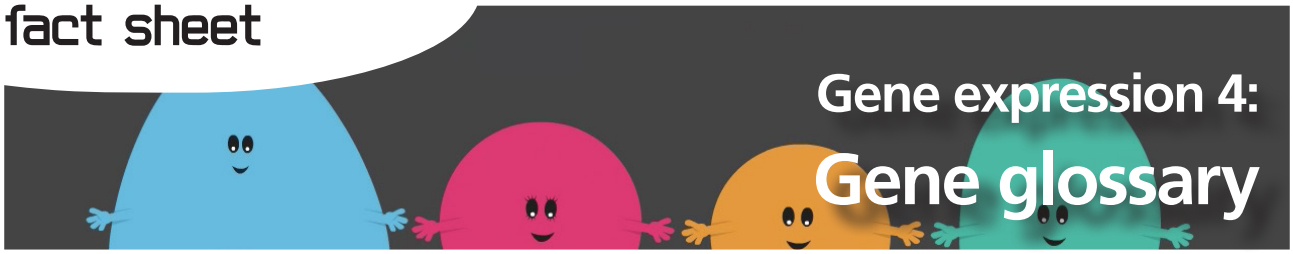
fact sheet



Gene expression 4: Gene glossary

alternative splicing	Introns and exons are removed differentially from messenger RNA resulting in variant mRNA sequences that are used to make different molecular products.
amino acid chain	During translation amino acids form chains which are folded into proteins.
amino acid	an organic compound used to build protein
cell differentiation	development of a cell type with a specific form and function
cell membrane	a membrane that protects the cell from the external environment
chromosome	These structures, found in the cell nucleus of plants and animals, carry genetic information.
codon	a three nucleotide unit of genetic material in mRNA that codes for an amino acid
cytoplasm	portion of the cell containing organelle and other particles
DNA	deoxyribonucleic acid, the genetic instructions of living organisms
elongation factors	These are regulating protein molecules that help with addition of nucleotides during transcription, and elongation of an amino acid chain during translation.
enhancer	This nucleotide sequence on DNA helps initiate transcription of a gene, and interacts with transcription factors to start transcription.
eukaryotic	any living organism in which cells contain a nucleus and other organelles
exon	nucleotide sequence of a gene that contains information needed to build a protein
gene expression	This is the activity of a gene within a cell: decoding of DNA to make a molecular product, such as a protein.
gene regulation	control of gene expression — turning genes within cells 'on' and 'off'
gene	This unit of heredity is a sequence of DNA that contains instructions to build a particular molecular product, such as a protein.
growth hormone	hormone that stimulates cell growth
intron	a segment of a gene that is part of the primary transcript, but is removed by splicing machinery and is not included in mature mRNA
leucocyte	This cell of the immune system protects against disease. It is also referred to as white blood cell.
mediator	This regulating protein complex (multiple protein molecules) interacts with enhancer region on DNA and the transcription initiation complex formed prior to the start of transcription.
mRNA	messenger RNA: this copy of genetic instructions from DNA is carried to the cytoplasm and read by the ribosome to make a protein.
methylated cap	During transcription the 5' end of messenger RNA is protected by addition of a 7-methylguanosin cap to the first transcribed nucleotide.
motif	specific nucleotide sequence recognised by regulating molecules, such as transcription factors
nucleotide	building block of DNA and RNA, made from a nitrogenous base (adenine, cytosine, thymine, guanine), five-carbon sugar, and one or more phosphate groups

nucleus	membrane enclosed organelle found in eukaryotic cells containing most of the genetic material in the form of DNA
pathogen	disease-causing infectious agent such as a virus or parasite
polyadenylation	This addition of poly-A tail (long chain of adenine bases) to messenger RNA at the end of transcription protects mRNA from cellular breakdown.
promoter	region of DNA that RNA polymerase binds and initiates transcription
protein-coding gene	a genetic sequence that contains the instructions for making a protein
protein	These macromolecules of the cell consist of a folded chain of amino acids.
regulating proteins	proteins that regulate/control the expression of different genes within the cell
regulating sequences	These nucleotide sequences of DNA control the expression of different genes within a cell.
ribosome	This molecular machine formed from RNA reads instructions contained in messenger RNA to build an amino acid chain.
RNA	ribonucleic acid, single-stranded molecule transcribed from DNA
spliceosome	This complex of RNA and protein molecules removes introns from messenger RNA before translation.
splicing	process that removes introns from messenger RNA before translation
start codon	The start sequence of messenger RNA is the first codon of mRNA translated by the ribosome into an amino acid. This sequence specifies the start of translation.
stop codon	The stop sequence of messenger RNA is the final codon of mRNA translated by the ribosome into an amino acid. This sequence specifies the end of translation.
termination sequence	This specific nucleotide sequence marks the end of a gene and signals the end of transcription.
transcription factor	This protein molecule regulates gene expression by binding to specific nucleotide sequences on DNA, bringing RNA polymerase to the promoter.
transcription initiation complex	This complex of molecules forms prior to transcription beginning.
transcription	This decoding of DNA by RNA polymerase to make messenger RNA takes place in the cell nucleus.
transfer RNA	RNA molecule that carries amino acids to the ribosome during translation
translation	reading of messenger RNA by the ribosome to make an amino acid chain that forms a protein