

Appendix C: Glossary

Actin – major muscle protein organized into thin filaments

Amino acids – basic building blocks of proteins

Anode – positive electrode

Bioinformatics – use of data storage and analysis technologies to extract meaningful information from large quantities of biological data

BME (β -mercaptoethanol) – a reducing agent that breaks disulfide bonds

Cathode – negative electrode

Charge density – ratio of charge to mass of a protein

Codon – a set of three nucleotides (DNA bases) that code for an amino acid

Dalton (Da) – unit of molecular weight equal to the mass of a hydrogen atom, 1.66×10^{-24} g

Denature – to disrupt a protein's 3-dimensional structure

Disulfide bond – S-S bond between amino acids in a polypeptide chain; contributes to tertiary and quaternary structure of proteins

DTT (dithiothreitol) – a reducing agent that breaks disulfide bonds

Exon – region of a gene that is translated into amino acids (compare to intron)

Fingerprint – distinct pattern of bands on a protein gel, useful as an identifying characteristic of a sample or species

Gel electrophoresis – technique used to separate molecules that carry electric charges. The molecules separate from each other according to the different rates at which they migrate through an electric field set up in a gel soaked in a chemical solution.

Gene – a defined region of DNA that encodes information for the synthesis of a single polypeptide

Genome – the entire complement of genes in an organism

Genomics – the study of all the nucleotide sequences in the chromosomes of an organism

Homology – similarity between genes of different species due to common ancestry

Intron – region of a gene that is not translated into amino acids (compare to exon)

Kilodalton (kD) – 1,000 daltons

mRNA – message derived from a gene, with information to make one polypeptide

Myosin – major muscle protein organized into thick filaments

Native – the natural structure of a protein or protein complex, as found within the organism

PAGE – polyacrylamide gel electrophoresis

Phylogeny – the evolutionary relationship of species based on lineage and history of descent

Posttranscriptional modification – alterations that allow one gene to code for many proteins

Posttranslational modification – alterations of proteins after they are synthesized by the cell

Protein – a functional assembly of one or more polypeptides, made of sequences of amino acids

Protein folding – the process by which a protein bends and twists to achieve its normal three-dimensional shape

Proteome (protein complement expressed by a genome) – the complete protein profile found under given conditions in a biological sample

Proteomics – the study of the proteome in specific cells, tissues, organs, organ systems, or organisms during a specific time period (e.g., during development)

SDS – sodium dodecyl sulfate

SDS-PAGE – sodium dodecyl sulfate-polyacrylamide gel electrophoresis; a form of electrophoresis that treats samples with SDS to denature proteins

Transcription – production of mRNA from DNA genetic information

Translation – production of a protein from messenger RNA (mRNA)

tRNA – transfer RNA which acts as adaptor molecule between mRNA and an amino acid