Cellular Physiology Topics

Homeostasis
Negative and positive feedback systems
Atoms, ions, molecules, free radicals and compounds.
Ionic, covalent, and hydrogen bonds.
Properties of water and those of inorganic acids, bases and salts.
pH and the role of buffer systems in homeostasis.
Building blocks and functions of carbohydrates, lipids and proteins
Structure and functions of DNA, RNA, and ATP
Structure and function of cytoplasm, cytosol and organelles.
Structure and function of the nucleus.
Locations of intracellular fluid (ICF) and extracellular fluid (ECF) and describe the various fluid compartments of the body.
Diffusion, facilitated transport, osmosis, active transport
Electrolyte composition of the three major fluid compartments: plasma, interstitial fluid and intracellular fluid.
Selective permeability.
Cell division.
Protein synthesis
Anabolism and catabolism
Oxidation-reduction reactions
Role of ATP in metabolism
Glycolysis, Kreb's cycle, electron transport chain
Fate, metabolism and functions of carbohydrates.
Fate, metabolism and functions of lipids and proteins
Key molecules in metabolism and describe the reactions and the products they may form.
Sources, functions and importance of minerals and vitamins in metabolism
General features of epithelial tissue, connective tissue, muscular tissue, nervous tissues.
Structure, location, and function of each different type of epithelial tissues.
Structure, location, and function of the various types of connective tissues.
Structure, location and mode of control of skeletal, cardiac and smooth muscle tissue.
Basal metabolic rate (BMR), and factors that affect it