

# Biochemistry & Cell Transport



## Macromolecules

The number of hydrogens on each carbon is what makes a lipid saturated or unsaturated

**Truth or Lie**

Every amino acid has the same general structure that includes a hydroxyl group

**Truth or Lie**

Glucose results from the hydrolysis of long chains of a polymer called glycogen

**Truth or Lie**

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## Enzymes

Enzymes make chemical reactions happen by raising activation energy of a reaction

**Truth or Lie**

Molecules that bind to the active site to prevent a substrate from binding are called competitive inhibitors

**Truth or Lie**

Enzymes change their shape to fit the shapes of incoming substrates to catalyze reactions

**Truth or Lie**

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## Cell Transport

A hypotonic solution has a larger concentration of solvent than inside the cell

**Truth or Lie**

Molecules that move into cells using passive transport would be large molecules, bacteria, and hormones

**Truth or Lie**

Water moves along a different concentration gradient than ions like Na<sup>+</sup>, Cl<sup>-</sup>, or K<sup>+</sup>

**Truth or Lie**

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## Cell Membranes

Cholesterol helps prevent polar molecules from crossing the cell membrane

**Truth or Lie**

The interior of the cell membrane is a zone of non-polar fatty acid chains

**Truth or Lie**

The most current model of the cell membrane has a phospholipid bilayer with a mosaic of proteins

**Truth or Lie**

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# Cell Respiration & Photosynthesis Review



## Anaerobic Respiration

Pyruvate can be reduced to reform NAD<sup>+</sup> to keep the reactions in glycolysis going

**Truth or Lie**

Glucose gains a -PO<sub>4</sub> group to help commit the molecule to the processes of glycolysis and lock it in the cell

**Truth or Lie**

In glycolysis the production of ATP happens through Oxidative Phosphorylation

**Truth or Lie**

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## Aerobic Respiration

Molecules absolutely required for the Krebs' Cycle are NAD<sup>+</sup>, pyruvate, and FADH<sub>2</sub>

**Truth or Lie**

During the ETC the movement of electrons causes the creation of ATP through Oxidative Phosphorylation

**Truth or Lie**

Krebs' Cycle reactions all take place in the matrix of the mitochondrion

**Truth or Lie**

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## Light Reactions

The Z-Scheme shows the amounts of energy that electrons receive from the photosystems

**Truth or Lie**

The final resting place of electrons during the light reactions is in water molecules at the end of the Z-Scheme

**Truth or Lie**

Cyclic electron flow happens only to the electrons leaving Photosystem I

**Truth or Lie**

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## Calvin Cycle

RuBisCo is the only enzyme that can add carbon dioxide into the Calvin Cycle

**Truth or Lie**

CO<sub>2</sub> molecules are attached to RuBP molecules to produce 3PG molecules at the beginning of the Calvin Cycle

**Truth or Lie**

The molecules needed to run the Calvin Cycle are NADPH, ADP, and CO<sub>2</sub>

**Truth or Lie**

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# HOMEOSTASIS



## Osmoregulation

The lining of the descending Loop of Henle is lined with cells with aquaporins in their cell membranes

**Truth or Lie**

Glucose would be reabsorbed into the bloodstream in the distal tubule of the nephron

**Truth or Lie**

Fluid is forced out of the circulatory system and collected by Bowman's Capsule

**Truth or Lie**

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## Nervous Sys

If not enough Na<sup>+</sup> enters the axon an action potential will fail to fire along the axon

**Truth or Lie**

During hyperpolarization Na<sup>+</sup> is moved out of the axon and K is brought into the axon

**Truth or Lie**

At resting membrane potential there is more K<sup>+</sup> outside the cell than inside the cell

**Truth or Lie**

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## Endocrine Sys

Oxytocin is a hormone that works mostly by a positive feedback system during birth

**Truth or Lie**

In mammals the pituitary gland is involved in the regulation of metabolic rate

**Truth or Lie**

The hormone released to cause the catabolism of glycogen is glucagon

**Truth or Lie**

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## Thermoregulation

Endotherms have more mitochondria in their cells than ectotherms

**Truth or Lie**

Surface Area to Volume ratios mean that it is better to be a smaller creature if you are an ectotherm

**Truth or Lie**

Being an ectotherm means your population, life expectancy, and number of offspring can increase

**Truth or Lie**

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# Genetics Review



## Nucleic Acids

Nucleotide chains are joined by linkages called Phosphodiester Bonds

**Truth or Lie**

DNA is a molecule that can be described as complementary and antiparallel with 5' and 3' ends in opposite directions

**Truth or Lie**

The RNA double helix is formed by hydrogen bonding between purines and pyrimidines

**Truth or Lie**

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## DNA Replication

The enzyme DNA Polymerase III makes new a new complementary DNA in the 5' to 3' direction

**Truth or Lie**

Okazaki fragments are formed from the copying action needed on the Lagging Strand which is made towards the replication fork

**Truth or Lie**

SSBPs are molecules that prevent hydrogen bonds from forming between base pairs

**Truth or Lie**

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## Transcription

In eukaryotes small non-coding sequences of mRNA called introns are removed after transcription

**Truth or Lie**

Transcription is a process that makes 5'-3' mRNA, rRNA, and tRNA in the nucleus of prokaryotic cells

**Truth or Lie**

Promoters and terminators are copied by RNA Polymerase into mRNA sequences

**Truth or Lie**

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## Translation

Ribosomes have 3 binding sites for tRNA molecules to help join amino acids into a polypeptide chain

**Truth or Lie**

Deleting a single letter on RNA can result in a frameshift mutation that usually causes early stop codons called missense mutations

**Truth or Lie**

Translation can match correct amino acids to codons using the codon and anticodon match

**Truth or Lie**

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