Biochemistry & Cell Transport

2 Truths & a Lie

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+, Cl-, or K+

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

2 Truths & a Lie

Anaerobic Respiration

Pyruvate can be reduced to reform NAD+ to keep the reactions in glycolysis going

Truth or **Lie**

Glucose gains a -PO_4 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+, pyruvate, and $FADH_2$

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_2 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_2

Truth or **Lie**

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HOMEOSTASIS

2 Truths & a Lie

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+ enters the axon an actional potential will fail to fire along the axon

Truth or **Lie**

During hyperpolarization Na+ is moved out of the axon and K is brought into the axon

Truth or **Lie**

At resting membrane potential there is more K+ 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 ~~endo~~therms

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

2 Truths & a Lie

Nucleic Acids	DNA Replication	Transcription	Translation
Nucleotide chains are joined by linkages called Phosphodiester Bonds	The enzyme DNA Polymerase III makes new a new complementary DNA in the 5' to 3' direction	In eukaryotes small non-coding sequences of mRNA called introns are removed after transcription	Ribosomes have 3 binding sites for tRNA molecules to help join amino acids into a polypeptide chain
Truth or Lie	**Truth** or Lie	**Truth** or Lie	**Truth** or Lie
DNA is a molecule that can be described as complementary and antiparallel with 5' and 3' ends in opposite directions	Okazaki fragments are formed from the copying action needed on the Lagging Strand which is made towards the replication fork	Transcription is a process that makes 5'-3' mRNA, rRNA, and tRNA in the nucleus of prokaryotic cells	Deleting a single letter on RNA can result in a frameshift mutation that usually causes early stop codons called missense mutations
Truth or Lie	Truth or **Lie**	**Truth** or Lie	Truth or **Lie**
The RNA double helix is formed by hydrogen bonding between purines and pyrimidines	SSBPs are molecules that prevent hydrogen bonds from forming between base pairs	Promoters and terminators are copied by RNA Polymerase into mRNA sequences	Translation can match correct amino acids to codons using the codon and anticodon match
Truth or **Lie**	**Truth** or Lie	Truth or **Lie**	**Truth** or Lie
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