

Kahoot/Gimkit/Quizlet Module

Purpose: To provide students with fun and engaging methods to aid in the retention of knowledge gained in the classroom

Goal: To develop a strong understanding of key terms and the relationship of classroom information with the outside world

Learners in today's educational landscape are growing ever more interested in hands-on and visual methods of knowledge acquisition. In this module, we have outlined several programs which have been frequently used among students of all ages to aid retention of overall understanding of key concepts presented in the classroom.

Following an overview of three frequently used programs, a question bank has been provided for use in any way deemed most beneficial for the students.

Kahoot

To Play - [Play Kahoot](#)

To Create - <https://create.kahoot.it/auth/login>

Kahoot! is a trivia-based learning platform where students are able to compete with each other and get to the top of the leaderboard by answering questions accurately and efficiently. It's easy to use, create, and can be accessed on any device.

The purpose of kahoot is to provide a fun way to review concepts learned, this way students are able to retain information and recall it much faster when applying concepts in a test, project, or even in real life.

Gimkit

To Create - <https://www.gimkit.com/>

Gimkit, like Kahoot, is also a trivia-based learning game, but is self paced under a 15-minute (or more) time restriction. In this game, students earn "money" by answering the questions and can wisely invest their money multipliers, insurance, and other advantages. The one who earns the most by the end of the time period is the winner, and players can move up the leaderboard throughout the game. It can be used on any device and adds a joyous way of learning.

Not only are the students able to learn and understand concepts easier, they also learn how to get quicker and get more questions right as well as decide when to invest in the advantages.

Quizlet

Quizlet is a multi-use platform used to help students through making flashcards. Students can use a variety of ways to self learn in different in-app/website games. Teachers can create flashcard sets and have students play Quizlet Live! In which students create teams and try to go through the flashcards as fast as possible.

To Play - <https://quizlet.com/605966849/moleculego-study-set-flash-cards/?x=1qqt>

To Create - <https://quizlet.com/>

This platform is incredibly versatile, and all information put in it can be used individually or as a team/class. It's fun, and gives a chance for students to learn from each other and share their knowledge, so that every student masters each concept.

The following question bank is divided into categories. Below is a general description of what each category is meant to assess.

Location - Assesses the students knowledge on where certain molecules can be found naturally

Function - Assesses the students knowledge of what role certain molecules play in biology

Structure - Assesses the students knowledge on the general structure of important molecules

Interface of Structure and Function - Assesses the students knowledge of how the structure of a molecule can have a direct impact on its role in nature

Real-World Applications - Assesses the students knowledge of how certain molecules and aspects of Biology are applied in current research scenarios

Location

Question: In which of the following biomes would you most likely find the Green Fluorescent Protein (GFP)?

Correct Answer: "Ocean"

Wrong Answer: "Tundra"

Wrong Answer: "Tree Canopy"

Wrong Answer: "Desert"

Question: "In which of the following biomes would you expect to find the least amount of Chlorophyll?"

Correct Answer: "Harsh Desert"

Wrong Answer: "Rainforest Jungle"

Wrong Answer: "Grassland Plains"

Wrong Answer: "River Bed"

Question: "Where did CRISPR/Cas9 originate from?"

Correct Answer: "Bacteria"

Wrong Answer: "Parasites"

Wrong Answer: "Protozoa"

Wrong Answer: "Fungi"

Question: "Which species is the RAS protein found in?"

Correct Answer: "Humans"

Wrong Answer: "Dogs"

Wrong Answer: "Cats"

Wrong Answer: "Horses"

Question: "Where in a Eukaryotic cell might you find the nucleic acid adenine?"

Correct Answer: "Nucleus"

Wrong Answer: "Cytoplasm"

Wrong Answer: "Histone"

Wrong Answer: "Vacuole"

Function

Question: "What is the function of Cas9?"

Correct Answer: "Cuts both strands of DNA to begin editing"

Wrong Answer: "Binds to target sequence of DNA"

Wrong Answer: "Produces hormones"

Wrong Answer: "Allows for molecules to move through the cell membrane"

Question: "What is the function of gRNA in CRISPR?"

Correct Answer: "Binds to target DNA"

Wrong Answer: "Cuts both strands of DNA to begin editing"

Wrong Answer: "Produces hormones"

Wrong Answer: "Allows for molecules to move through the cell membrane"

Question: "What does NRAS do in cancer cells?"

Correct Answer: "Tells cells to differentiate uncontrollably"

Wrong Answer: "Tells cells to reproduce as needed"

Wrong Answer: "Tells cells to release insulin"

Wrong Answer: "Tells cells to explode"

Question: "How does helicase help in DNA replication?"

Correct Answer: "Unwinds DNA double helix"

Wrong Answer: "Adds nucleic acids to the leading strand"

Wrong Answer: "Creates Okazaki fragments"

Wrong Answer: "Adds amino acids to the lagging strand"

Question: "What is the primary role of ligase?"

Correct Answer: "Connect Okazaki fragments together"

Wrong Answer: "Unwind DNA"

Wrong Answer: "Create ribosomes"

Wrong Answer: "Unwind RNA"

Structure

Question: "What are the three main components of the CRISPR/Cas9 system?"

Correct Answer: "Cas9, gRNA, target DNA"

Wrong Answer: "Cas9, ribosomes, tRNA"

Wrong Answer: "Cas9, mRNA, calcium"

Wrong Answer: "DNA, RNA, vesicles"

Question: "Which is not a domain that makes up Cas9?"

Correct Answer: "Beta Chain"

Wrong Answer: "REC I"

Wrong Answer: "HNH"

Wrong Answer: "RuvC"

Question: "What subunits make up a DNA strand?"

Correct Answer: "sugar, phosphate, base"

Wrong Answer: "carbohydrates, proteins, nucleotides"

Wrong Answer: "proteins, sugars, lipids"

Wrong Answer: "nucleotides, lipids, proteins"

Question: "What subunit(s) make up the enzyme ATP Synthase?"

Correct Answer: "C ring, Stalk, F1"

Wrong Answer: "delta, iota, psi"

Wrong Answer: "lambda"

Wrong Answer: "F3, Stalk, L ring"

Question: "Which of the following has the structure of a purine?"

Correct Answer: "Adenine"

Wrong Answer: "Cytosine"

Wrong Answer: "Glutamine"

Wrong Answer: "Amide"

Interface of Structure and Function

Question: "A mutation to which of the following proteins would prevent COVID-19 from successfully infecting a host organism?"

Correct Answer: "Spike Protein"

Wrong Answer: "Green Fluorescent Protein"

Wrong Answer: "Envelope Protein"

Wrong Answer: "Transmembrane Protein"

Question: "How does mutated NRAS affect the body?"

Correct Answer: "Becomes cancerous"

Wrong Answer: "Allows body to gain muscles"

Wrong Answer: "Energizes cells"

Wrong Answer: "Allows for normal growth of cell"

Question: "How does the structure of an antibody affect its function?"

Correct Answer: "Allows for antigen specificity"

Wrong Answer: "Allows it to walk along microtubules"

Wrong Answer: "Allows degradation"

Wrong Answer: "The structure does not affect its function"

Question: "Which of the following may result from a mutated tubulin?"

Correct Answer: "Decreased cell structure"

Wrong Answer: "Increased cell structure"

Wrong Answer: "No effect on the cell"

Wrong Answer: "Increased resistance to antibiotics"

Question: "Which components of the CRISPR/Cas system allows for target site recognition for DNA cleavage?"

Correct Answer: "sgRNA"

Wrong Answer: "Ribosome"

Wrong Answer: "sgDNA"

Wrong Answer: "Helicase"

Real-World Application

Question: "What can CRISPR/Cas9 be used for today?"

Correct Answer: "Genome editing"

Wrong Answer: "Performing surgery"

Wrong Answer: "Prosthetics"

Wrong Answer: "Method of providing vaccines"

Question: "What is one use of GFP in research today?"

Correct Answer: "Tracking movement of proteins in the cell"

Wrong Answer: "Tracking sharks in the pacific"

Wrong Answer: "Tracking movement of metals in the bloodstream"

Wrong Answer: "Enhancing the growth of plants to be studied"

Question: "What is the primary use of DNA polymerase in research?"

Correct Answer: "Large-scale replication of DNA sequences"

Wrong Answer: "Destroying foreign DNA"

Wrong Answer: "Harvesting DNA from an animal cell"

Wrong Answer: "Deletion of a toxic gene from an organism"

Question: "What would happen to an individual if their insulin receptors were damaged?"

Correct Answer: "Blood glucose levels would rise"

Wrong Answer: "Blood glucose levels would fall"

Wrong Answer: "No insulin would be produced in the body"

Wrong Answer: "The kidneys would begin to lose function"

Question: "When you go to the grocery store, how can you visually tell the difference between a polyunsaturated fat and a saturated fat?"

Correct Answer: "A polyunsaturated fat will be liquid at room temperature while a saturated fat will be solid"

Wrong Answer: "A polyunsaturated fat will be solid at room temperature while a saturated fat will be liquid"

Wrong Answer: "You cannot differentiate between the two visually, both will be solid at room temperature"

Wrong Answer: "You cannot differentiate between the two visually, both will be liquid at room temperature"