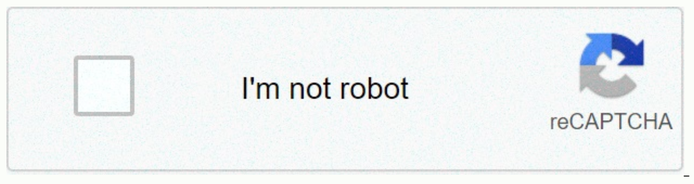

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Protein synthesis activity worksheet

Shannan Muskopf May 19, 2019 In this worksheet, we will practice describing transcription and translation processes and explaining how DNA controls protein synthesis. Q1: Which of the following is incorrect on tRNA? AtRNA molecules contain 3 nucleotide bases that encode for an amino acid. BtRNA stands for transfer RNA. CtRNA provides the site for the transcription process. The DA tRNA molecule will tie to a codon of mRNA. Q2: How many bases in a row form a codon? Q3: In mRNA, what DNA base is replaced with uracili (U)? Q5: The diagram provided shows the mRNA being translated. What is label 1? ARibosome

BtRNA CmRNA DAmino acid What is label 2? Amino acid BtRNA CmRNA DRibosome What is label 3? ARibosome BtRNA CAmino acid DmRNA Q6: Which of the following is incorrect about DNA and protein synthesis? A DNA provides a model for protein synthesis. The BA mutation in DNA could lead to the formation of a different sequence of amino acids. The ca mutation in DNA could cause the production of a different protein. The DA chain of amino acids forms a section of DNA. The EEach protein made has a specific shape related to its function. Q7: The diagram shows a strand of DNA being transcribed. What is label 1? AmRNA BRNA polymerase CRNA DDNA What is label 2? ARNA BRNA polymerase CmRNA DDNA What is label 3? ADNA BRNA polymerase CmRNA DRNA Q8: What happens to mRNA after transcription? ASe leaves the cell through the pores in the cell membrane. BSi attaches to RNA polymerase. CIt dissolves in the cytoplasm. DIt leaves the nucleus through the pores in the nuclear membrane. EArticulate inside the nucleus ready for translation. Q11: By what process is a sequence of mRNAs read to generate a sequence of amino acids? ASynthesis BMitosis CTranscription DTranslation EReplication Q12: What process copies a DNA sequence to a single strand of mRNA? ASynthesis BMitosis CTranscribation DTranscribation EReplication Q13: The central dogma of molecular biology describes how genetic information flows from genes to proteins. It is partially outlined in the diagram provided. What process is indicated by the letter X? ASynthesis BTranscribation CTranscribation DMitosis EMeiosis What process is indicated by the letter Y? ATranslation BTranscription CSynthesis DMitosis EMeiosis Q14: The central dogma of molecular biology describes how genetic information flows from genes to proteins. It is partially outlined in the diagram provided. Which molecule is indicated by the letter X? AmRNA BDNA CsRNA DrRNA EtRNA Which molecule is indicated by the letter Y? ArRNA BsRNA CmRNA DtRNA EDNA Completes statement: One of constitutes the molecule indicated by the letter Z. Anucleotides Bnucleosomes Cdeoxyribose sugars Dribosomi Eamino acids In order to help as many teachers as possible, we have cut our prices in half. For $29.00 US, you can download all our editable lesson plans. These high school biology lesson plans include DOCX, PPTX, and XLSX files. Our editable lessons make it easy for you to transition your lesson online. Start Today We also offer a distance learning website that has a pre-built curriculum based on high school NGSS biology standards. Make your online lesson work immediately, add your students, and plan your first unit. There are 20 weeks of curruciulum biology including video tutorials, PowerPoint, quizzes, tests and surgeries. Distance learning students want to learn again, excited to come to your online class because they know they'll discover something new. The survey allows students to rediscover their love of learning. Students who take ownership of their learning are natural when motivated to learn, as surveying is a great way to ignite their passions. Investigation In everything we do, we believe in inspiring others. Imagine a science course where every student is engaged in practical science and motivated to discover the world around them. The way we inspire learning is to help teachers use survey-based education. We just happen to make big biology lesson plans! Free biology classes The common core and NGSS are focused on what needs to be taught, not how it is taught. The curriculum is one of the most important aspects of any class as it combines what you teach with the way you teach it. The lessons that complement the survey, previous knowledge and various learning styles while capturing students' curiosity, have the greatest impact on learning. Next Gen standards incorporate three main ideas: 1) Science Practices, 2) Content Knowledge, 3) Integrated Concepts. How you structure your resume is important to be successful in implementing the three main ideas of NGSS together with Common Core. Below is a possible way to integrate NGSS into your class. NGSS implementation with CCSS question: Always start a lesson with a hook. A teacher demo, a tense story, a story of how the concept was discovered, or a video from YouTube is a great way to intrigue students about what you're teaching. The goal of the hook is to get your students to ask questions (what caused it, how it happened). Analysis: Have students conduct a structured survey experiment to collect data. The data must be organized into a data and chart table. The important thing about this step is to have the their data to find trends. While this may seem counterintuitive to get students to start immediately with a higher DOK level, this requires students to apply their previous analytical knowledge and skills. Don't include lab questions or lab backgrounds as the goal is to get students to analyze their data. Answering questions and being correct is not the goal point, the analysis of the data is. Study and error are an important component of the scientific method. [1] You may need to help students/groups find trends and relationships. Before finishing with data analysis, students discuss their analysis in a small group and then as a class discussion. The teacher will gather the main ideas and perhaps introduce new ones. Finally, that all students vote publicly on what ideas they think are correct. Clear expectations: Give students examples of what you want them to accomplish by the end of the unit. If you're giving students a test, provide students with the study guide for that test. Then provide students with an example test that students take it or analyze the test using the study guide. You could have students identify the sample test where each part of the study guide is used. This concept of clear expectations really helps when your test requires students to transfer their knowledge and skills to a new uns taught topic. When reviewing the test, students will know what the test will look like, what kind of questions it will ask (modeling, multiple choice, claims evidence reasoning paragraphs, etc.) and what it is expected to do/know. DO NOT provide students with the actual test; think of the example as a pre-test. This concept of clear expectations should also be used for projects. Provide students with a column and several sample projects (hopefully saved from previous years). Students then aalize the heading by classifying the project examples according to the heading. Students should be encouraged to compare how they ranked each example with their peers. Finally, the teacher then asks the class how they would classify it and offer advice. The goal is for students to know clearly what they are expected to know and do by the end of the unit. Vocabulary: Now it's time to introduce academic and scientific vocabulary. Using a graphic organizer, students write the word, the synonym of the word, the definition of the word, and a phrase using the word. To speed up the process, provide students with this graphic organizer with the word of the compiled vocabulary, the sentence frame for the way the word is used, and an image for the word. [2] This is a good place to introduce the concept of crosscutting to your students. Academic discourse: Students write how they speak. It is essential that students practice saying complete sentences with academic vocabulary and content. Choral students read the phrase with their partner. So the teacher new phrases that use academic and scientific vocabulary, and the class repeats those sentences. While this takes valuable time, your students are building their academic oral language that will be used in their applied writing. [2] Content education: The goal of this instruction is to guide students to discover separate information. separate. do not integrate concepts for students as they need to make these connections themselves later. You can guide students to collect disintegrated facts through discussions of small groups based on previous knowledge, textbook reading, or through direct teacher-led education. As a training assessment, you can choose to use DOK 1 level multiple choice questions to verify their understanding. Conceptual integration: Reintroduce the concept of crosscutting to your students. Next, have students build a conceptual map of the main keywords and then connect them through keywords using arrows. [3] On each arrow, students must write words explaining how one keyword relates to the other keyword. Remember that we haven't asked lab questions before; this is the time to ask these kinds of questions. Students should have the conceptual map in front of them when writing answers to lab questions. Their answers must include both academic and content vocabulary and be written in complete sentences. Do not provide students with a multiple-choice style assessment as they need to synthesize the information itself. The goal is to guide students to integrate the concepts taught with the previous concepts taught and the concept of crosscutting. Claim, Evidence, Reasoning: This is when students answer the question. You can ask students to write the reasoning paragraph of the claims evidence as the conclusion of the experiment. Re-submit the question to the students. Ask students to write a complaint about what they think is the answer to the question. They must support their request with experimental evidence (from the data table) and explain how such evidence supports the claim. If your students are new to claim, evidence, and reasoning, you should provide sentence frames for each section. [2] If your students are more advanced, you can have them write a DOK 4 essay with the statement that it is the introductory paragraph, the evidence and reasoning are the paragraphs of the body and a conclusion paragraph that summarizes their results or provides a new solution. Rating: Proof of understanding should be the main goal of your assessment. The evaluation must make students use the concepts learned in the unit and apply these concepts to new and unful worked situations. This is called transfer. The transfer is not the same as the application. The transfer requires that you have not taught the situation and that students use the concepts taught in the classroom to understand the new situation. many types of ratings that you can use to test the transfer. You can choose to use a DOK 2 and DOK 3 level multiple choice test with short answer questions applied to make sure your students know the content. You can also choose to make the experiment itself the evaluation with you that mainly evaluates the analysis, reasoning of the evidence of the claims and the sections of the topics. With the use of for the three sections, students will demonstrate all four DOK levels. Section 1, students use previous analytical knowledge and skills. Section 2, students use their knowledge of content and experimental data to support a complaint. Section 3, eliminate any misunderstanding when students defend their claim and we call on students to ask scientific questions. Argumentation (Optional): Now is the time for students to try to show their mastery of what they've learned by having them discuss their statement with their classmates. Socratic seminars (fishbowls) or hoops are great for making students safely discuss their statements or ideas with their peers. [4] Part of the student grade for this section is to ask a scientific question about the claims, evidence, or reasoning of another group. An example of a scientific question is that students make a prediction based on the claim of another group. An extension activity is to have students respond to prediction with more research or another experiment. The main objective of scientific education is for students to transfer their knowledge to new situations. In order to promote transfer to your teaching, students need to solve problems on different topics during the same lesson. What connects these different topics is a transversal concept. The advantage of using crossingcutting concepts is that they discourage rotating learning of a topic. Because a crossingcutting concept takes content from different basic disciplinary ideas, students experiment with the concept of crossingcutting through several examples. Using several examples, students must rely on using a crosscutting concept to solve problems from different topics. The purpose of transversal concepts is to help reduce surface learning through rotating learning (memorization). Models. Guide students to organize and classify information and how that information is related. Cause and effect: mechanism and explanation. Experimentation allows students to practice cause and effect. For example, a hypothesis has an expected cause and effect. Students can discuss the causes of some event (the effect). Scale, proportion and quantity. When considering phenomena, students should analyze how changes in size, time, and energy can affect such phenomena. System systems and models. Simplify complex ideas; Definition models and systems allows students to limit variables to test their ideas through experimentation. Energy and matter: flows, and conservation. Identifying changes in energy and matter within, outside, and within a system can help students understand the possibilities and limitations of that system. Structure and function. The shape determines the function. Stability and change. Stability is when a system is immutable. The dynamic balance of stability and change is important for understanding systems. There are a thousand ways to implement science science in your resume as practices are just about what students should do, not how they learn practices. NGSS standards are based on the idea that a practice is the focal point for each content standard (DCI). Of course you have probably already noticed that the practices are based on each other. Here are some best practices that incorporate both NGSS and Common Core. Asking questions (for science) and defining problems (for engineering): Getting all your students to ask scientific questions is very difficult, especially if they are not used to being invited to ask scientific questions. Student-generated questions are by far the most powerful questions to base your resume on. If most of your students aren't used to asking scientific questions, then when a student asks a question, you might say I don't know, that's a good question. Your goal after class is now to do an experiment, demo, or one-day research project based on this question. The next day you have the student repeat the question and suddenly start a demo, start a structured request lab, or start a one-day research project. If you do a demo, you are then going to pass this task on to creating a conceptual model (explained in the construction of explanations). If you do a lab, you'll focus on analyzing the data to determine the response. If you do a research project, be sure to find rank-level resources in advance; textbook page numbers, web addresses, etc. Your goal is to highlight the question. Many of the NGSS standards focus on designing a solution. You can do this by creating many projects based on troubleshooting student-determined issues. For example, students will have to define an environmental problem and then design a solution to this problem. Model development and usage: There are many types of models including diagrams, images, physical replicas, mathematical representations, concepts, analogies, and computer simulations. [6] All models are used to represent a system (or parts of a system) that predict phenomena. Basic models include physical images, diagrams, and replicas. Most teachers already have students who develop diagram and image models. The carbon cycle is a great example of an image diagram/model. Higher DOK level models are usually abstract and can include mathematical representations or a concept. Conceptual maps are a great pre-writing task, [3] especially for EL students. Give students 5-10 main keywords that represent a concept. Students must organize the words and with arrows (cross-links). The next step is crucial. Have students write connecting words on each arrow. Link words can then be used to form sentences in an essay. A conceptual model may include engineering design models but also a collection of claims that used to predict phenomena. Students can develop a conceptual model using teacher lead teaching. Once the conceptual model is developed, it provides students with a scaffolding to connect scientific concepts to applied writing. Planning and conduct of surveys: the practice of surveys concerns experimentation and levels of investigation. We are in favour of the use of structural, guided and open experiments based on surveys. Planning an investigation involves a guided and open investigation and, of course, the conduct of the survey is included at all levels of the survey. The confirmation survey is at DOK level 1 [7] as students already know what the final result should be. The structural survey is at DOK level 2 [7] as it mainly requires students to analyze the data to explain the phenomena in terms of concepts. The guided survey is at DOK level 3 [7] as it requires students to design and conduct a survey for a specific purpose or research application. The open survey is at DOK level 4 [7] as students have to conduct a survey, from the specification of a problem to the design and implementation of an experiment, the analysis of its data and the formation of a conclusion. Data analysis and interpretation: a crucial skill that all students must have to do science is the analysis and interpretation of data. This includes charts, tabulation, trend search, templates, and relationships. For more advanced students, they should be able to calculate the slope, intercept, and correlation coefficient for linear attacks. Use of mathematics and computational thinking: this practice is integrated with the practice of data analysis and interpretation. Students should be able to create and analyze a graph and make and use mathematical models. A great example of a mathematical model is Mendel's Punnett squares. Charts can also be part of a mathematical model. All students should be able to perform simple statistical analyses such as reports, rates, percentages, and unit conversions. For more advanced students, complex statistical analyses such as standard deviation, standard error, and chi squared can and should be introduced. Build explanations (for science) and design solutions (for engineering): make a complaint and apply scientific reasoning, theory, and/or models to link evidence to the claim. Students should also be able to identify, use and discuss theories and laws in their explanations. Projects are a great tool for teachers to have their students design solutions to real-world problems. The fun projects of they include: designing a water crisis solution for a California city, designing better classroom lab equipment, or designing a home that reduces water, waste, or energy. Engage in discussions from rehearsals: A Socratic seminary is a safe and powerful way to have their statement discussed and supported with other students. The goal of the Socratic Socratic seminary to get students to learn from each other and find out how well they can sustain their affirmation. The teacher's job is to be the facilitator of the topic and not to let a student dominate the discussion or go off topic. The Socratic seminar securely [8] requires students to advance and defend their ideas while at the same time students evaluate competing topics or design solutions. Obtaining, evaluating and communicating information: this practice is more closely aligned with the Common Core than any other practice. This is the practice in which students read and interpret scientific literature, although not at the level of scientific journals. Scientific literature can come from textbooks, science-related exchange books, websites, and popular articles on science. [9] Students should be exposed to multiple writing opportunities that include journaling, written reports, research projects, and presentations. [9] Before students give a presentation or write a report, they should receive examples of previously written reports. This could mean that you need to write a report yourself to provide as an example. The scientific survey covers how much information (e.g., guide question, procedure and expected results) is provided to students and how much guidance you will provide as a teacher. [10] The purpose of survey-based learning is that students build the meaning of what is taught. The first key ingredient for survey-based learning is to start with a question. The second key ingredient is that students interact with hands-on learning or analyze the data or text provided. Only after the students have analyzed the lab results/data/text is when you teach the content. Getting students to ask questions first, requiring students to integrate their previous knowledge with new information is critical to scientific investigation. The single most important factor influencing learning is what the student already knows. The confirmation survey is about the old ways of teaching science. First the teacher teaches a concept and then the students do a lab that demonstrates the concept. The key feature of the confirmation request is that students are taught the content first. Structured survey requires students not to know the advanced answer. This means that the teacher starts with a question, and then students follow a list of procedures to do an experiment. The guided survey is when the teacher asks a question but requires students to figure out how to test their hypothesis. Students design their own experiment to to answer the question. A best practice for guided surveys is for 2000 students and then in a second laboratory to manipulate a new variable. AP science labs focus on guided investigation and open investigation. [11] The open investigation is like a science fair project. Students come up with the question, design how they're going to their hypothesis, and find out the solution for themselves. Questioning and reflecting leads to lasting learning. There are many advantages to having great lesson plans in your biology classes. Biology can be many students' favorite subject. When students reach high school, most have already developed their favorite learning styles. Students learn faster and retain more information when the educational curriculum matches their previous knowledge, preferred learning styles, and curiosity. We become your educational resource for high school, middle and elementary science classes and mixed learning. Educational strategies that emphasize the relationship between the student's new knowledge and existing knowledge foster meaningful learning. Differentiation The integration of students' previous knowledge, preferred learning styles and curiosities is the most important factor when differentiating education for each student. Writing a high school science curriculum that incorporates different learning styles, different levels of previous knowledge, student interest, and Common Core and NGSS standards is very difficult. Students who were previously bored with biology may once again take an interest in the class, with student questions and curiosities guiding their learning. When students are interested in a class, they earn a better grade, which, in turn, leads to higher self-esteem and a greater feeling of success. The student-teacher relationship improves when students are successful and have an active role in participation. the more our vision teaches to inspire stimulating learning is the driving force behind everything we do. Science is how we think and treat it in our world. 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