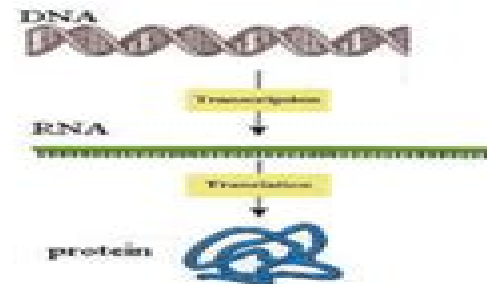


Protein Synthesis Simulation Lab**Part I: Introduction**

DNA is a very long, thin molecule located in the nucleus. The DNA in one chromosome has 10s of millions of base pairs and hundreds or thousands of genes. Yet an individual cell will only use a small portion of those genes in its lifetime. Imagine a mechanic who spends a lifetime fixing nothing but cars, but he or she is required nonetheless to carry around an entire library of repair manuals for everything from kitchen sinks to washing machines to light fixtures to computers and so on – all information the mechanic will never be able to use because s/he's busy fixing cars.

Another peculiar thing about DNA is that it is located inside the nucleus, and pretty much stays inside the nucleus, yet the proteins that DNA helps to make are produced OUTSIDE of the nucleus. So how does the cell solve this problem? It sends a "messenger" from the nucleus to the ribosomes in the cytoplasm.

In a process called transcription, the DNA code is transcribed (copied) into mRNA, following rules similar to DNA replication we saw earlier (see below). mRNA moves out of the nucleus into the cytoplasm where it links up with ribosomes and begins churning out proteins.



Recall that DNA consists of a sugar-phosphate backbone with a nitrogenous base. There are 4 different bases in DNA abbreviated with the letters A, T, C, & G. The code contained in DNA derives from these 4 bases. We can think of them as letters in an alphabet that will spell different words. In a real language, words can be anywhere from 1 letter long (a, I) to an upper limit of 10-15 letters for functional, non-compound words.

In DNA code, a "word" is always 3 letters long and is called a "codon." Consider the following DNA segment:

A	T	C	G	T	C	C	A	A	A
T	A	G	C	A	G	G	T	T	T

"ATC" is a codon. "GTC" is a codon. "CAA" is a codon. Etc.

In transcription, the DNA code is transcribed (copied) into RNA code, following rules similar to DNA replication we saw earlier EXCEPT that:

DNA	RNA
<i>Matches with</i>	
A.....	U
T.....	A
C.....	G
G.....	C

1. Transcribe the following DNA sequence into mRNA. Draw a line separating each codon:

A T C G T C C A A A

Protein Synthesis Simulation Lab Answers

**Sarah Stauffer, Aaron Gardner, Dewi
Ayu Kencana Ungu, Ainara López-
Córdoba, Matthias Heim**



Protein Synthesis Simulation Lab Answers:

Labster Virtual Lab Experiments: Basic Biology Sarah Stauffer, Aaron Gardner, Dewi Ayu Kencana Ungu, Ainara López-Córdoba, Matthias Heim, 2018-11-29 This textbook helps you to prepare for both your next exams and practical courses by combining theory with virtual lab simulations With the Labster Virtual Lab Experiments book series you have the unique opportunity to apply your newly acquired knowledge in an interactive learning game that simulates common laboratory experiments Try out different techniques and work with machines that you otherwise wouldn't have access to In this volume on Basic Biology you will learn how to work in a biological laboratory and the fundamental theoretical concepts of the following topics Lab Safety Mitosis Meiosis Cellular Respiration Protein Synthesis In each chapter you will be introduced to the basic knowledge as well as one virtual lab simulation with a true to life challenge Following a theory section you will be able to play the corresponding simulation Each simulation includes quiz questions to reinforce your understanding of the covered topics 3D animations will show you molecular processes not otherwise visible to the human eye If you have purchased a printed copy of this book you get free access to five simulations for the duration of six months If you're using the e-book version you can sign up and buy access to the simulations at www.labster.com springer If you like this book try out other topics in this series including Basic Genetics Basic Biochemistry and Genetics of Human Diseases Please note that the simulations included in the book are not virtual reality VR but 2D virtual experiments

Science Strategies to Increase Student Learning and Motivation in Biology and Life Science Grades 7 Through 12 David Butler, 2022-02-17 On the first day of school have you ever thought of your classrooms as newly opened boxes of crayons I do Like pencil sticks of colored wax the students each have different names individual characteristics and various levels of brightness I set a goal each year to promote not only creativity but to draw out of my students reasons about why science is so important As science educators we not only need to illustrate the importance of knowing facts and terminology but also be able to frame those concepts in such a way that students are motivated to want to study and understand biology When I began teaching I never thought that I would have the multitude of experiences I have now I have taught in schools ranging from city to rural public to private and large to small not to mention classes ranging from general science to advanced biology Through these diverse experiences I have developed a number of strategies that have enhanced student achievement and science appreciation In this book I will share with you these experiences and techniques showing you how to enhance teaching skills increase student drive create mental connections better manage your class time use proper technology practice forms of differentiation and incorporate the NGSS In addition this text allows me to share my most treasured philosophies experiences and teaching strategies and how they can be applied to biology life science classrooms

4th Biotechnology and Bioinformatics Symposium, 2007

Argument-driven Inquiry in Biology Victor Sampson, 2014-04-01 Are you interested in using argument driven inquiry for high school lab instruction but just aren't sure how to do it You aren't alone

This book will provide you with both the information and instructional materials you need to start using this method right away. *Argument Driven Inquiry in Biology* is a one stop source of expertise, advice, and investigations. The book is broken into two basic parts: 1. An introduction to the stages of argument driven inquiry from question identification, data analysis, and argument development and evaluation to double blind peer review and report revision. 2. A well organized series of 27 field tested labs that cover molecules and organisms, ecosystems, heredity, and biological evolution. The investigations are designed to be more authentic scientific experiences than traditional laboratory activities. They give your students an opportunity to design their own methods, develop models, collect and analyze data, generate arguments, and critique claims and evidence. Because the authors are veteran teachers, they designed *Argument Driven Inquiry in Biology* to be easy to use and aligned with today's standards. The labs include reproducible student pages and teacher notes. The investigations will help your students learn the core ideas, crosscutting concepts, and scientific practices found in the Next Generation Science Standards. In addition, they offer ways for students to develop the disciplinary skills outlined in the Common Core State Standards. Many of today's teachers like you want to find new ways to engage students in scientific practices and help students learn more from lab activities. *Argument Driven Inquiry in Biology* does all of this even as it gives students the chance to practice reading, writing, speaking, and using math in the context of science.

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Current Catalog National Library of Medicine (U.S.), 1969 Includes subject section, name section, and 1968-1970 technical reports **Scientific and Technical Aerospace Reports**, 1992

Protein Synthesis Simulation Lab Answers Book Review: Unveiling the Magic of Language

In a digital era where connections and knowledge reign supreme, the enchanting power of language has become more apparent than ever. Its ability to stir emotions, provoke thought, and instigate transformation is actually remarkable. This extraordinary book, aptly titled "**Protein Synthesis Simulation Lab Answers**," published by a highly acclaimed author, immerses readers in a captivating exploration of the significance of language and its profound effect on our existence. Throughout this critique, we shall delve to the book is central themes, evaluate its unique writing style, and assess its overall influence on its readership.

<https://crm.avenza.com/data/browse/fetch.php/Service%20Manual%20For%20Bw80%20Yamaha.pdf>

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