BIO Study Resource

A free tool for learning biology.

Support
Get the help you need, when you need it.

Practice
Do activities to hone your skills and check your understanding.

Created for you, by UT BIO Faculty.

SCAN ME

Your instructors know that sometimes you need a little extra support for your learning.

That's why they created the BIO Study Resource. This is a curated Canvas site with modules covering a variety of biology topics. Each module includes text, images, videos, activities, and a short quiz to check your understanding.

Self-check
Assess your progress by taking a no-stakes quiz.

1 ENROLL
Use the QR code above or the URL below to enroll for free!

2 EXPLORE
You will find many topics that are related to the study of biology!

3 LEARN
When you find a topic you want to learn, click the icon to get started!

Enroll at **https://utexas.instructure.com/enroll/HYPME3**

BIO Study Resource: Subject Sections and Learning Outcomes

The following shows the BIO Study Resource site structure, including subject areas, and key words with associated Learning Outcomes (LOs).

Biology

1. **Prokaryotes vs. Eukaryotes -** Diagram the structures of prokaryotic and eukaryotic cells and show where DNA, RNA, and proteins are located.

2. **Biomolecules -** Describe the basic molecular structure (components, bonds, folding) of DNA, RNA, and proteins and their general functions.

3. **Cell Specialization -** Describe how multicellular organisms are composed of many cells that are specialized to do different things, even though they have the same DNA.

4. **Cell Signaling -** Explain how cells within a multicellular organism communicate with each other, and diagram the components of a generic signal transduction pathway.

5. **Cell Division -** Compare and contrast mitosis and meiosis in terms of cell type and location, chromosome arrangement, DNA content, and chromosome number.

6. **Gene Expression -** Explain the processes by which gene products are produced (transcription, RNA processing, and translation).

7. **Genes & Alleles -** Explain the concepts of *genes* and *alleles*, including how the two are related but are not the same.

8. **Biochemical Pathways -** Describe an example of a biochemical pathway.

Chemistry

1. **Covalent and Non-covalent Bonds -** Differentiate between covalent and non-covalent bonds.

2. **Intra- and Intermolecular Interactions** - Using biological examples, differentiate between intra- and intermolecular interactions.

3. **Molecular Structure and Function** - Explain how molecular structure determines molecular function.

Scientific Literacy

1. **Generating a Search String -** Independently generate search strings to access sources over multiple databases, topics and journals.

2. **Finding Sources -** Search for relevant peer-reviewed articles in the university library databases.

3. **Evaluating Sources -** Explain criteria used to determine reliability and credibility of sources. Use the CRAAMP test to evaluate sources. Select reliable, credible sources that are most relevant to a research topic using multiple criteria.

Math & Statistics

1. **Fractions-Percents-Decimals -** Manipulate integers, fractions, decimals, and percentages.

2. **Exponents & Logarithms -** Work with exponents and logarithms and understand their inverse relationship.

3. **Probability of a Single Event -** Calculate the probability of a single event and express it in different ways (ratio, %, decimal, fraction).

4. **Probability of Combined Events - Part I -** Differentiate mutually exclusive events and independent events and calculate the probability for each type of event.

5. **Probability of Combined Events - Part II -** Calculate the probability of *dependent* events using conditional probability.

6. **Descriptive Statistics -** Describe a sample data set using measures of the center of data (mean, median, mode), measures of the spread of data (range, interquartile range, standard deviation and variance), and a box-whisker plot.

Data & Modeling

1. **Use of Models in Biology -** Discern different types of models used in biology teaching and research.

2. **Graphing -** Select an appropriate graph type for your data. Create graphs in Excel and/or Google Sheets, including titles, legends, and axes labels. Evaluate a graph based on a provided graphing rubric.

3. **Graph Interpretation -** Interpret a graph in a three-step process: 1) understanding the title, axes, units, legends and type of data presented, 2) looking for trends in the presented data, and 3) interpreting the trends in the context of the research question.

Lab Techniques

1. **Polymerase Chain Reaction (PCR) -** Describe how PCR amplifies DNA fragments.

2. **Gel Electrophoresis -** Explain how gel electrophoresis separates DNA or protein molecules by size.

3. **Bacterial Transformation -** Describe the principle, procedure, and applications of bacterial transformation.

If you have any questions or feedback about the site or would like to contribute to the site in the future, please contact Stacia Rodenbusch at staciar@utexas.edu.

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