

Student-Centered One-Health Modules: An Innovative Mobile Platform for Teaching Science Concepts

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Project Aims

Aim 1. Develop and assess student-centered One Health modules, with an online platform that middle school students will use on mobile devices, tablets, and computers. Our Curriculum Development Team collaborated with software developers to create bilingual curriculum modules that incorporate motivational student activities and study aids

Aim 2. Structure the hosting PEER website to accommodate the new modules and to make specific resources easier for teachers to find. The site currently serves a world-wide teacher audience (57,857 downloads each year by 2,201 teachers in 50 states)

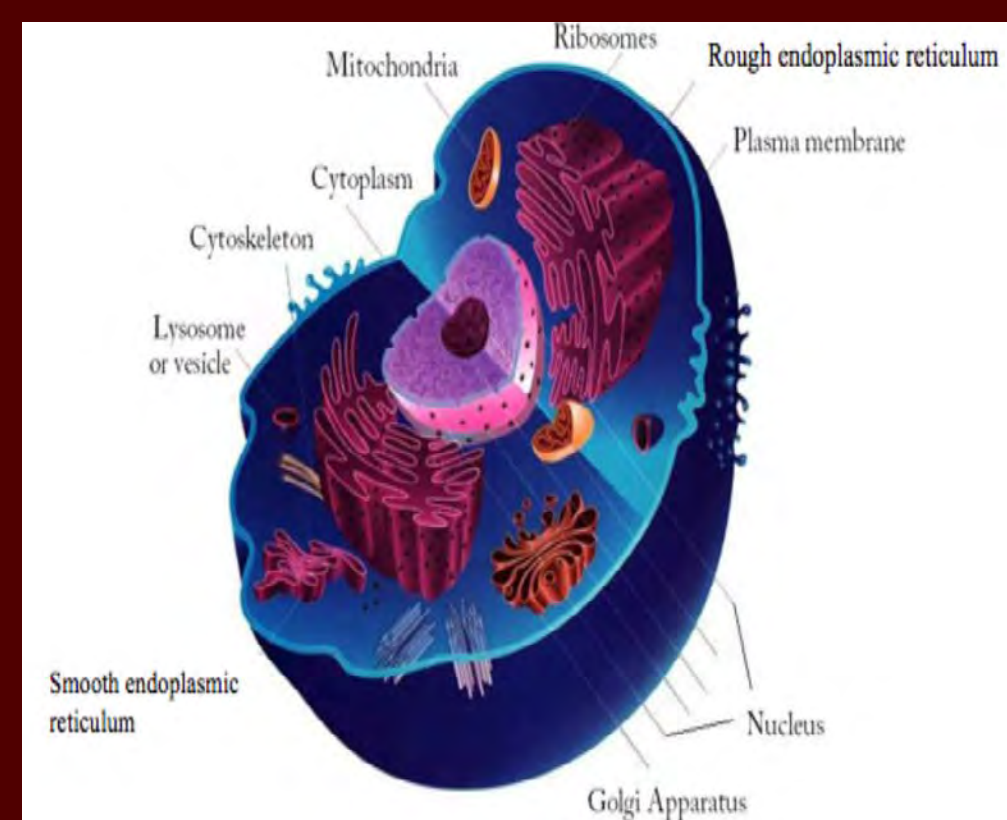
Aim 3. Provide professional development for middle school teachers. Teachers have participated in two summers of workshops related to implementation of the modules

Backpack Adventures

Students read a fictional story with factual content about key moments and individuals involved in cell biology. Students can then answer questions, create timelines, compare fact vs. fiction, or perform other related activities to reinforce required concepts.

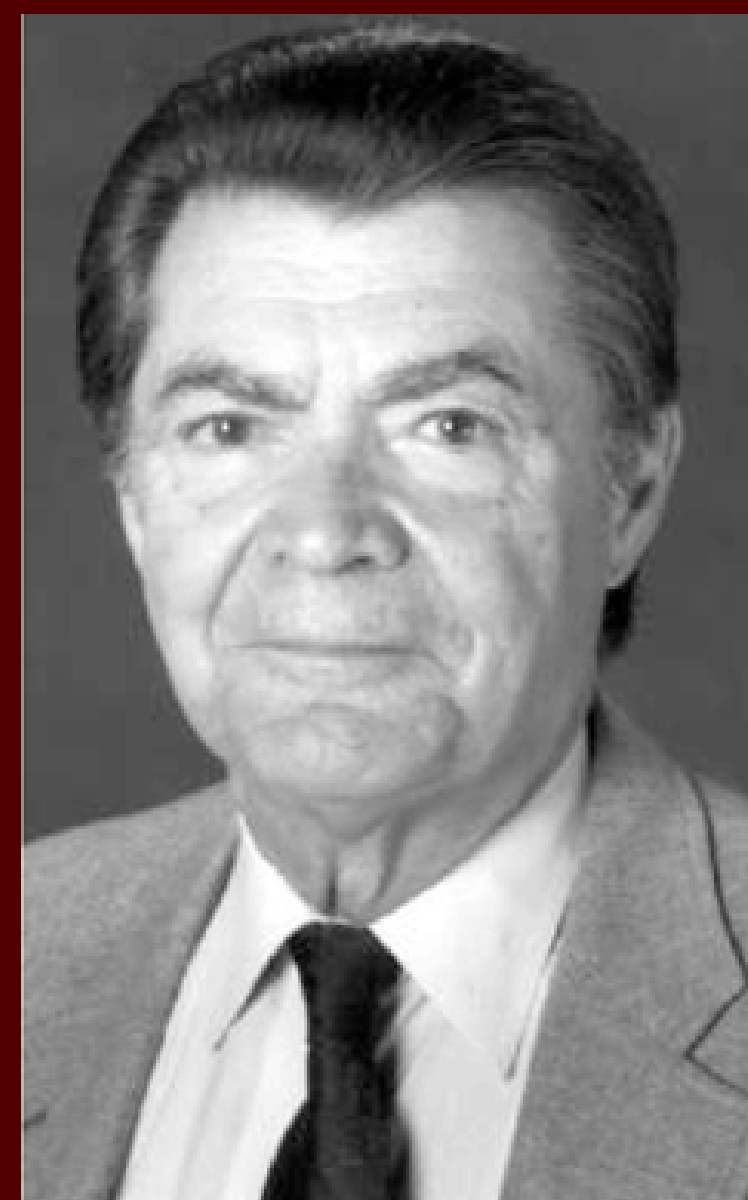
Essential Knowledge

Students use various types of note outlines to record information about required content from an interactive video presentation. Students can then compare and discuss their notes to ensure key concepts were learned.



Meet a Scientist

Students read a short biography about a scientist instrumental in the development of cell biology. They will then answer questions relating to the scientist and their work. Students could also be asked to role-play and describe how they would have solved the problem or answered the question facing the scientist.

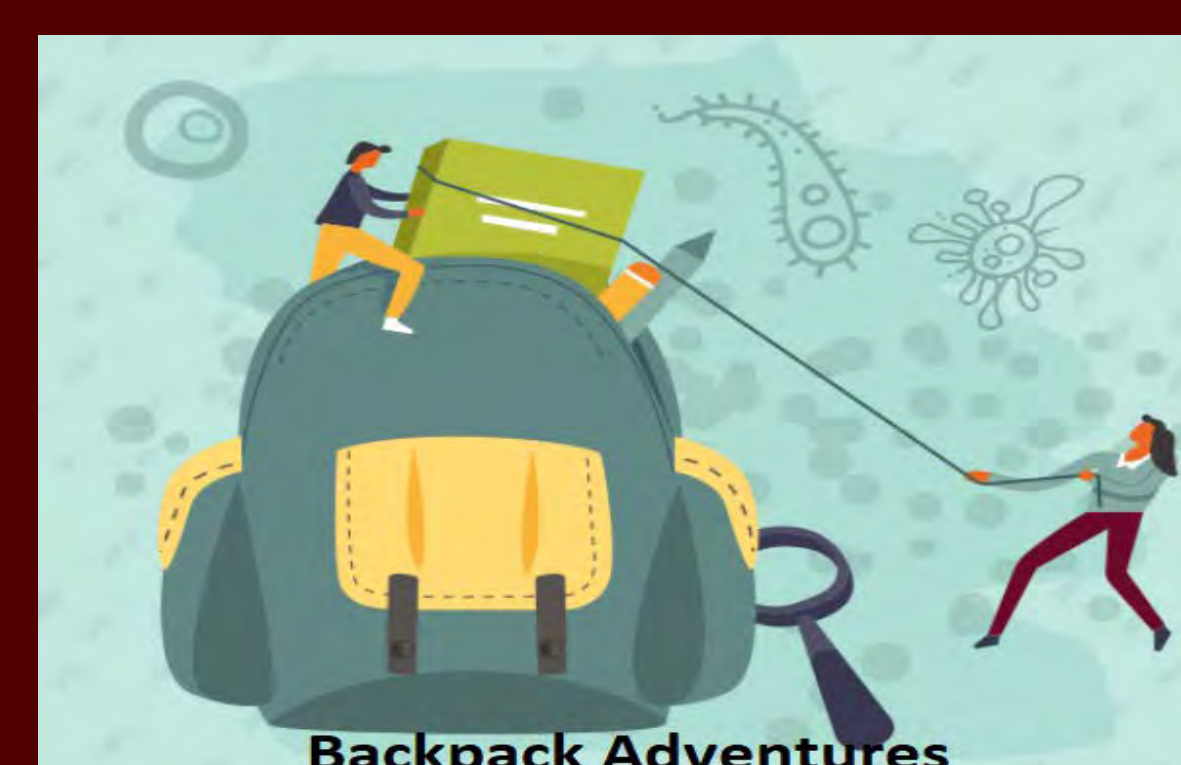
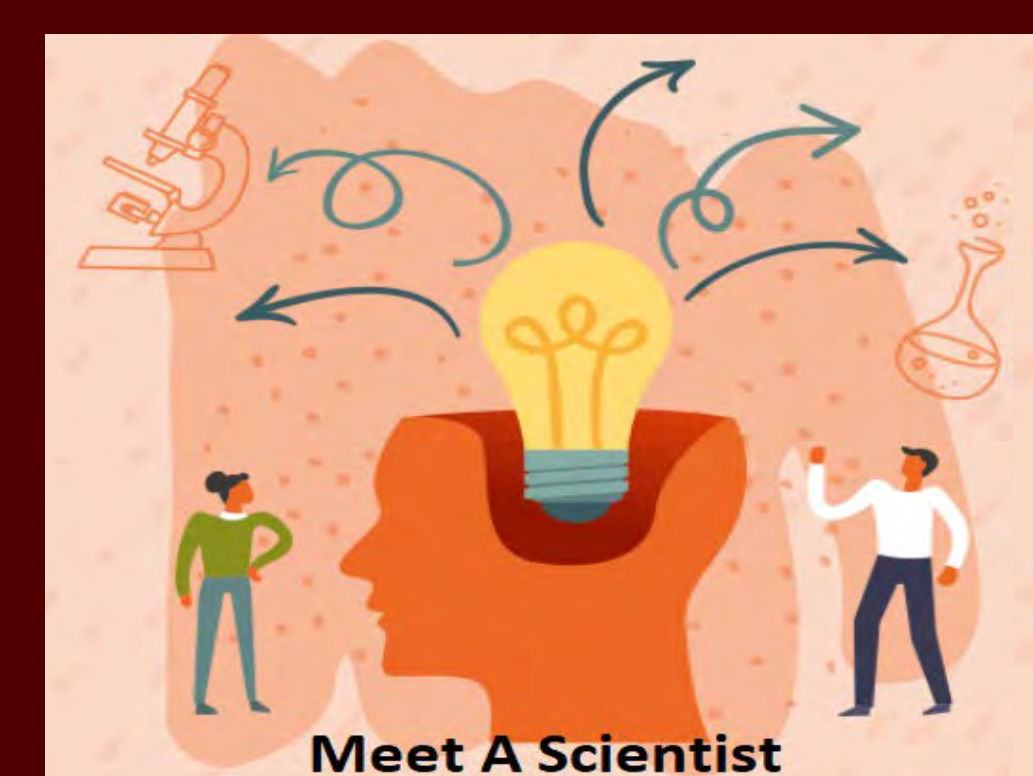
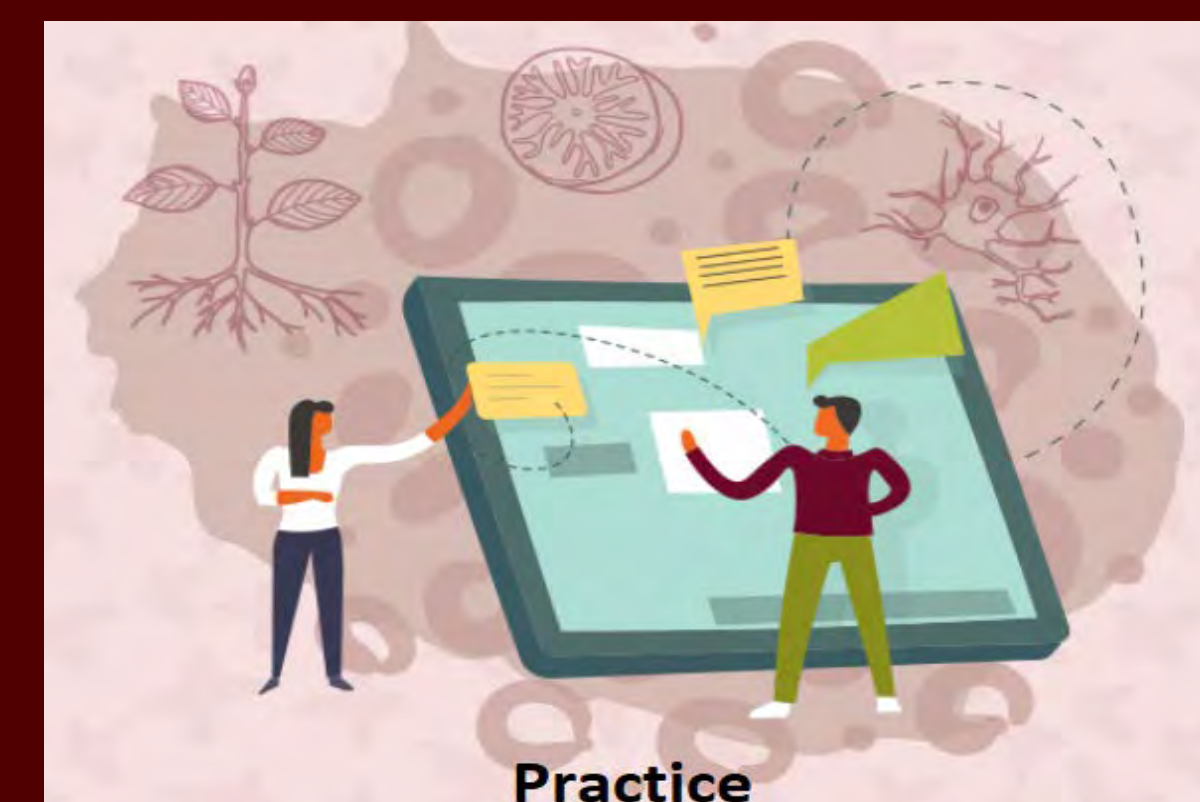


Project Description

This five-year project is part of a NIH-SEPA funded grant (<https://nihsepa.org>) to develop student-centered online modules for real world One-Health topics that are engaging and focused on topics that are interesting to students. The One-Health modules provide rural middle school teachers with student-centered instructional strategies and resources for teaching life science in the motivating context of One-Health (the integration of human, animal, and environmental health).

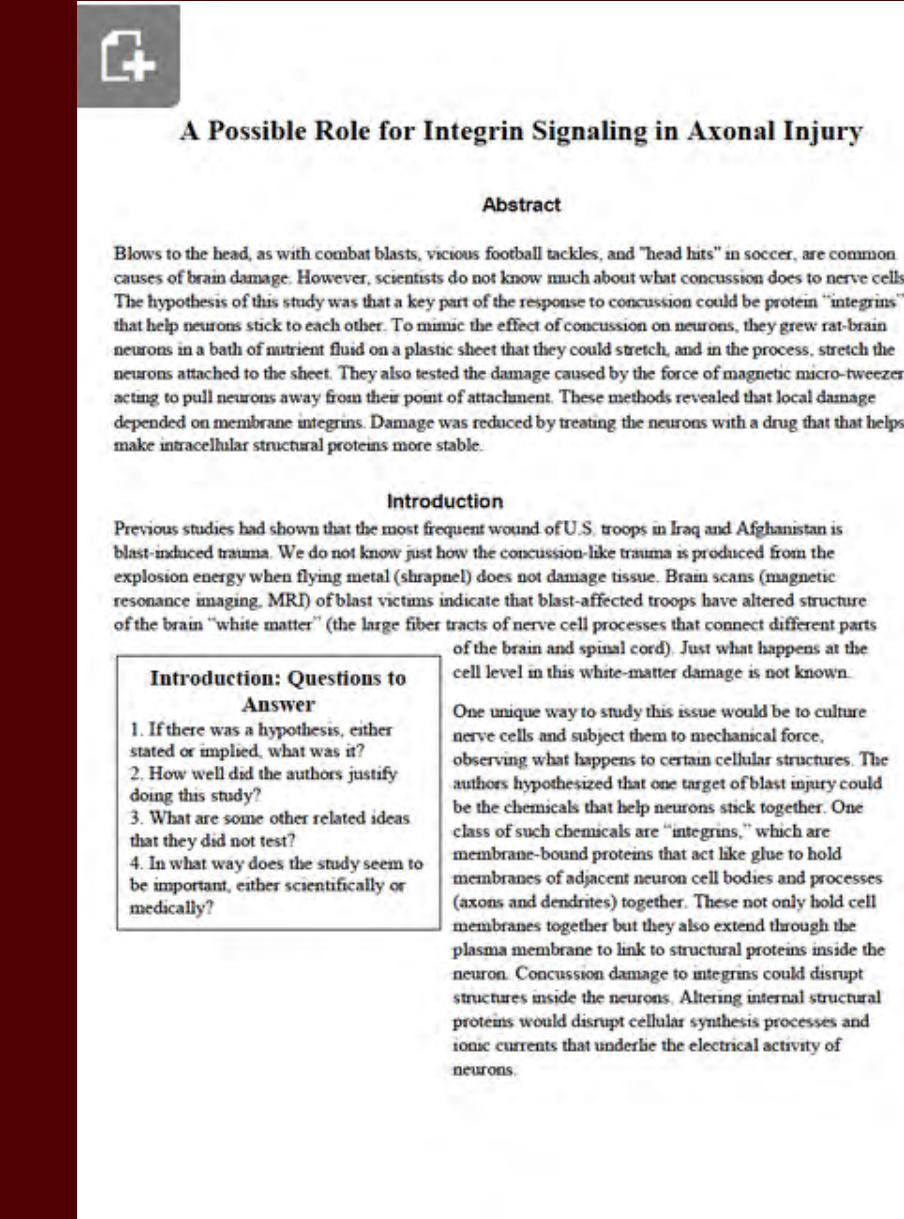
This project focuses on rural schools because they have large numbers of underserved Hispanics, have fewer teaching resources due to under-funding, and have difficulty in recruiting highly trained science teachers. This project also addresses student motivation by making it relevant to their personal life, presenting it in technologically appealing format, and by using a student-centered design that allows them to have some control over what and when they study.

To date, five modules have been completely developed on the following One Health topics: Cell Biology, Stress, Infectious Diseases, Ecology, and Clinical Trials. Each module has a motivating tool kit of cohesively integrated learning activities. The learner can select the order in which many of the activities are completed. Each module has pre and post tests and the following integrated learning activities



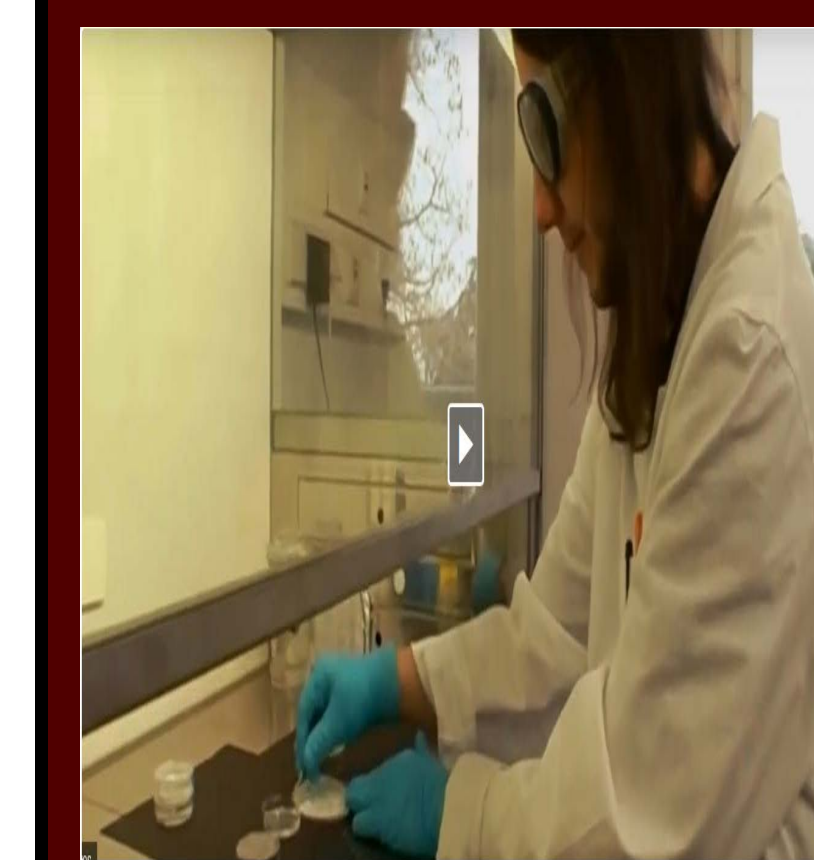
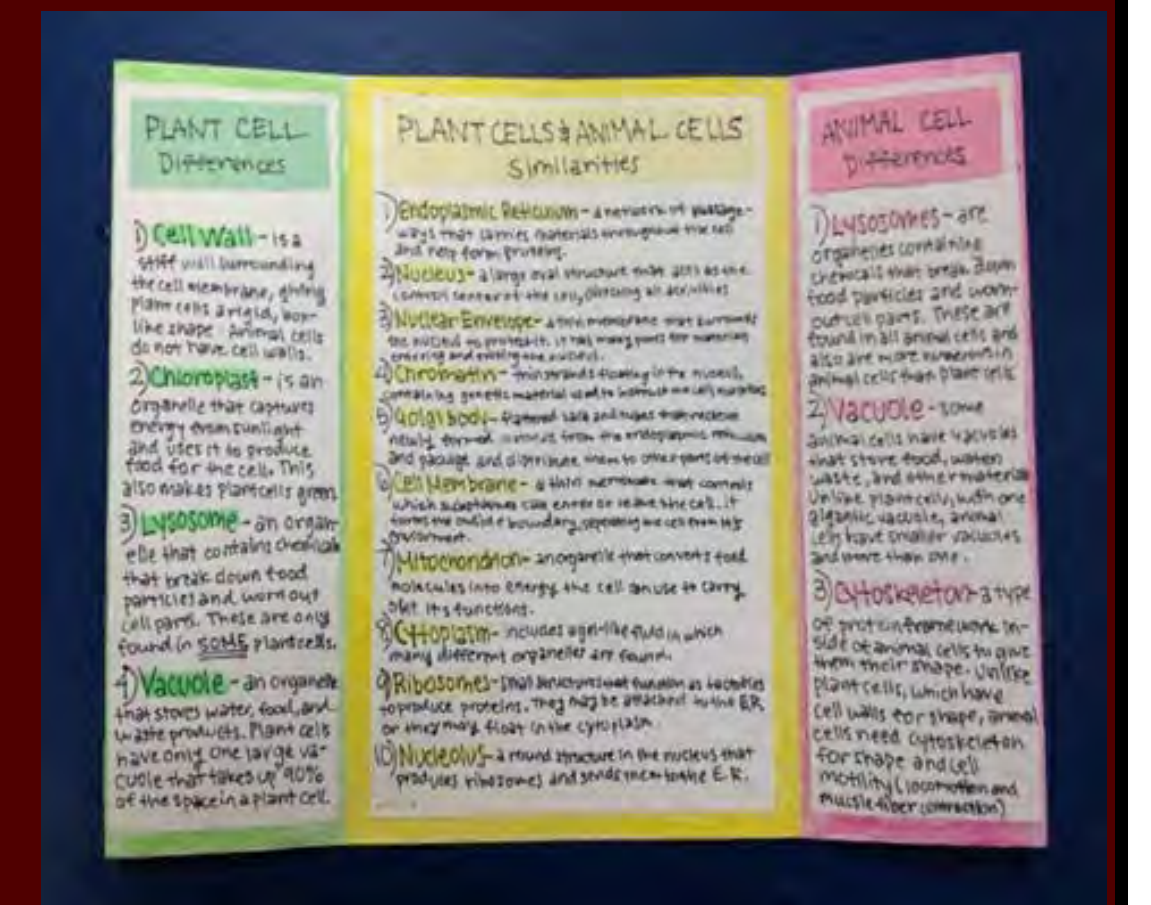
Real Science Review

Students read an actual research article related to cell biology (edited for middle school readability) and then review it using the scientific method known as “scaffolding.” They will then be asked to identify the hypothesis, data collection methods, relevance, etc.



Practice

Students can choose various on-line activities to gain or reinforce knowledge about cell biology. Activities include videos, matching/labeling games, flashcards, mnemonics, quizzes, etc.

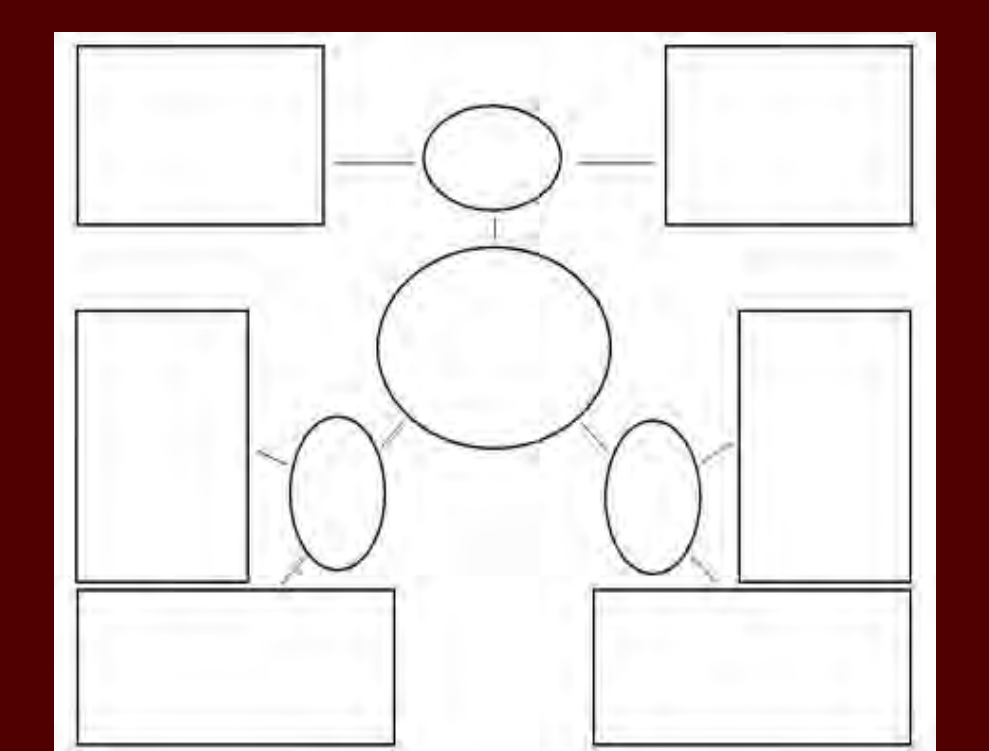


Scientist Videos

Students learn how real scientists utilize cell biology in various short videos describing research, careers, or other aspects of the field. Students will then answer questions and/or discuss how concepts they learn in class are applied in the real world.

Make Note of That

Within this section, the learner will explore three different styles of note-taking that can be leveraged when learning new content



Workshops and Website

Synchronous and asynchronous workshops have been conducted to orient teachers to the materials. Visit our website:

<https://vetmed.tamu.edu/peer/one-health>