

# PEER

## Middle & High School STEM Resources for Teachers



TEXAS A&M UNIVERSITY  
Partnership for Environmental Education & Rural Health

[peer.tamu.edu](http://peer.tamu.edu)

Texas A&M's Partnership for Environmental Education & Rural Health (PEER) Program ([peer.tamu.edu](http://peer.tamu.edu)) strives to further Kindergarten thru 12th-grade science, technology, engineering, and mathematics (STEM) education in rural schools across the nation. *PEER spreads awareness and knowledge of One Health, agricultural, life, and veterinary sciences.*

The program provides free, TEKS- and NGSS-aligned curricula. Teachers may request a lesson and lesson plan for any grade. Students may also enjoy browsing the PEER YouTube Channel ([tx.ag/PEERYoutube](https://tx.ag/PEERYoutube)), which includes veterinary student interviews and scientist presentations.

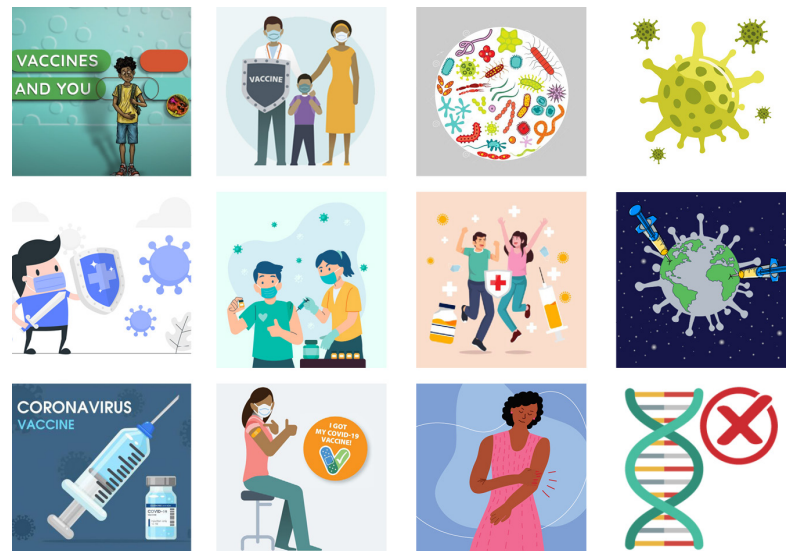
## Vaccine Biology & Hesitancy

With the COVID-19 pandemic bringing vaccine biology and hesitancy to the forefront of public discourse, PEER has developed a large body of content addressing these issues for teachers to incorporate in their lesson planning. **With almost 80 videos available** featuring Dr. Ian Tizard, Distinguished Professor of Immunology at Texas A&M University, topic areas include:

- **Vaccines & You**
- **Vaccine Biology**
  - Introduction
  - Bacteria
  - Viruses
  - Basic Immunity—Fighting Invaders of the Body
  - Vaccinations—How Do Vaccines Work?
  - The Triumph of Vaccines in Controlling Disease
- **Vaccine Hesitancy**
  - Science of the Coronavirus
  - Coronavirus Vaccines
  - Importance of Vaccinations
  - Vaccine Hesitancy Reassurances
  - Vaccine Hesitancy Myths



[peer.tamu.edu/vaccine-hesitancy](http://peer.tamu.edu/vaccine-hesitancy)



TEXAS A&M UNIVERSITY

Veterinary Medicine & Biomedical Sciences

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**SEPA**  
SCIENCE EDUCATION PARTNERSHIP AWARD

# COVID-19 Vaccine Rack Cards

In addition, a set of rack cards (brochures) has also been developed, with both English and Spanish versions available for download as PDFs.

- **Is the COVID-19 Vaccine Safe & Does It Save Lives? (English)**
- **¿Es segura la vacuna contra COVID-19 y realmente salva vidas? (Español)**
- **Vaccine Hesitance: 4 Vaccine Myths (English)**
- **Desconfianza hacia las vacunas: 4 mitos? (Español)**
- **Researching Vaccine Hesitancy (English)** [peer.tamu.edu/vaccine-hesitancy](https://peer.tamu.edu/vaccine-hesitancy)
- **Investigando la desconfianza hacia las vacunas (Español)**



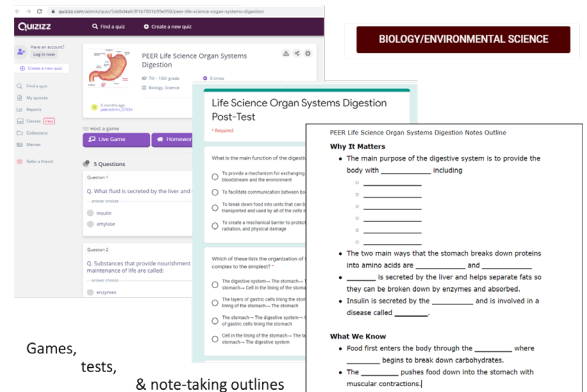
The **Immunology Consortium at Texas A&M University**, of which Dr. Ian Tizard is a member, has published a **statement in support of COVID-19 Vaccination**. Again, both English and Spanish versions are available for download as PDFs.



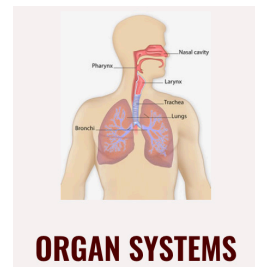
# Biology & Environmental Science Curriculum

This curriculum includes two standards-based topics—**Biology and Environmental Science**—intended to teach middle and high school science in a student-centered way. Each topic contains three modules, and each module contains multiple units. Each unit includes:

- PowerPoint and Google Slides presentations,
- note-taking outlines (skeleton notes),
- interactive pre- and post-tests in Google Forms,
- study games,
- activities to reinforce what the students have learned, and
- documents that detail TEKS and NGSS-alignment.



[peer.tamu.edu/biology-environmental-science](https://peer.tamu.edu/biology-environmental-science)



# Veterinary Curriculum

A collection of lessons aligning science standards with **veterinary medicine**—all include multiple presentations or plans that teachers can implement into any classroom. Topics are:



[peer.tamu.edu/veterinary-curricular](https://peer.tamu.edu/veterinary-curricular)

- Arthritis
- Behavior
- Clinical Trials
- Dental Health
- Diabetes
- Heart Disease
- Infectious Diseases
- Nutrition & Growth
- Orthopedics
- Parasites
- Physical Exam
- Spaying/Neutering

# One Health Curriculum

A standards-based, mobile-app curriculum designed to be more interesting and motivating to students, the **One Health Curriculum** frames content in terms of their own health. Modules are named with an emphasis on the One Health concept and can be accessed via our conventional website, through our learning management system (LMS), or through our viewer (without management or feedback).

The term “One Health” refers to the biological reality that humans and animals share the same biology and many of the same diseases. Almost everything that has been discovered about human medicine was first discovered through research on animals, and many applications have been made in both human and veterinary medicine. One Health is the intersection of human, animal, and environmental health.



CONNECTING HUMAN, ANIMAL, AND ENVIRONMENTAL HEALTH

## INFECTIOUS DISEASES

### Example units from this module...



Learn about Edward Jenner who developed the smallpox vaccine



Online activities include an epidemic vs. pandemic video, infectious diseases crossword puzzle, memorization strategies, etc.



[peer.tamu.edu/one-health](https://peer.tamu.edu/one-health)



Learn how real scientists study the impact of infectious diseases in various short videos; Texas A&M's Dr. Ian Tizard answers questions about vaccination



Note-taking templates on key concepts in the Charting, Cornell, Mind Mapping, and Fill In the Blank styles, including keys



[peer.tamu.edu/infectious-diseases](https://peer.tamu.edu/infectious-diseases)



Learn about efflux pumps and antimicrobial resistance—using the scientific method to identify the hypothesis, data collection, etc.



Activities and worksheets about how diseases spread, background information, vocabulary words, and lesson suggestions

### SHOW WHAT YOU KNOW:

[Take Infectious Diseases Post-test](#)  
[Take Infectious Diseases Post-test \(en Español\)](#)

Pre- and post- tests to assess knowledge of infectious diseases, covering essential knowledge standards

**Available modules include Cell Biology, Stress, Infectious Diseases, Ecology Clinical Trials, Genetics, Zoonotic Diseases, and Vaccine Hesitancy.** Each module has a motivating tool kit of enrichment learning activities. The learner can select the order in which many of the activities are completed. Each module has the following integrated learning activities:

- **Essential Knowledge:** Slide show of academic content that meets Texas Knowledge and Skills Standards and Next Generation Science Standards
- **Backpack Adventures:** Science fiction story based on each module's theme about a time-traveling group of middle-school students
- **Meet the Scientist:** Short biography of a research pioneer in the topic area
- **Scientist Video Presentation:** Video on the topic from a scientist
- **Real Science Review:** Published research report that we re-wrote at middle-school grade level; students conduct a simulated peer review, just as real scientists do with real science
- **Make a Note of That:** Advice to help students organize notes on the academic content
- **Practice:** Mnemonic advice to help students remember the information presented in the various learning activities; engaging digital games to reinforce learning of essential knowledge
- **Show What You Know:** Pre- and post-tests of essential knowledge
- **Teacher's Guide:** An overall lesson plan of the module, includes TEKS/NGSS, background information, required resources, and classroom activities

# Integrative Curricula

These integrative curricula follow adventure stories. The characters—young middle-school-aged students—travel through time and space to different parts of the world. They face various health problems they're required to solve. Each set of curricula provides lessons in English, math, science, and social studies. Stand-alone lessons are also available in each of the subject matter areas.

Each set of curricula was developed by repackaging our original curricular modules into smaller, one- to three-class period lessons. They contain lesson plans, class activities and games, worksheets, handouts, and quizzes. Sets are packaged with a teachers' guide introducing the lessons and providing background information.

Lessons not only captivate students' interests in unique ways but also appeal to a sense of adventure and excitement that can only enhance their learning. One such adventure/curricula set for 6th grade is *The Kiss of the Assassin*, set in Peru. It focuses on pathogens and bacterial infectious diseases (namely Chagas disease) that can be obtained from insects, like the "kissing bug," that harbor the bacteria and serves as vectors for the disease. It includes:

- four to six packaged lessons in each of the four subject matter areas,
- PowerPoint presentations,
- narratives, and
- teacher's guides.



[peer.tamu.edu/integrated-curriculum-6th-grade](http://peer.tamu.edu/integrated-curriculum-6th-grade)

## Videos

Videos on a variety of STEM topics are available for teachers to utilize as part of their lesson plans. Recorded interviews with scientists, veterinarians, and veterinary, graduate, and undergraduate students, plus ones with student researchers are all available. Some of the video conference recordings available include:

- **Science & You!** with Dr. Larry Johnson
- **Bugs In Your Blood: Malaria!** with Dr. Jeffrey Musser
- **Healthy Pet, Healthy You!** with Dr. Mark Stickney
- **The Vet School Experience: What is vet school really like?** with Dr. Anton Hoffman & Nikki Lejeune and Emily Burkhart
- **My Path to Vet School: A Veterinary Student Q&A Panel** with Nikki Lejeune, Clarissa Root, and Chanel Berns
- **The Cat's Out of the Bag!—Veterinary Specialization & Feline Medicine** with Dr. John August



[peer.tamu.edu/videos](http://peer.tamu.edu/videos)



## About PEER

The Partnership for Environmental Education and Rural Health (PEER) is a Youth Science, Technology, Engineering, and Mathematics (STEM) promotion program utilizing veterinary medicine and environmental issues to stimulate youth interest in learning about their own health (One Health). The project has reached 20,250 teachers in all 50 states and 2,046,250 students over its 20+ years of existence. PEER has received both National Institutes of Health (NIH) and National Science Foundation (NSF) grant monies, as well as funding from Texas A&M University and private foundations. These funds have allowed PEER: to develop a website hosting standard-based science and agriculture sciences lessons and scientist and veterinarian videos; provide teacher professional development; and near-peer mentoring of K-12 students.

PEER is funded by Science Education Partnership Awards (SEPA) ([nihsepa.org](http://nihsepa.org)) and by the National Institute of General Medical Sciences (NIGMS) ([nigms.nih.gov](http://nigms.nih.gov)).