ONE HEALTH LESSONS

The Story Behind The COVID-19 Vaccine Lesson Plan

Lesson Name:

The Story Behind the COVID-19 Vaccine

Grade Level Connection(s)

United Nations' Sustainable Development Goals:
Good Health and Well-being
Quality Education
Partnerships for the Goals

Next Generation Science Standards:
2-PS1-4 Matter and Its Interactions
3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics
4-LS1-1 From Molecules to Organisms: Structures and Processes
5-PS1-1 Matter and Its interactions
MS-LS1-3 From Molecules to Organisms: Structures and Processes
MS-LS2-1 Biological Evolution: Unity and Diversity
MS-LS2-4 Biological Evolution: Unity and Diversity
HS-LS-1 From Molecules to Organisms: Structures and Processes
HS-LS-4 Biological Evolution: Unity and Diversity
HS-LS-5 Biological Evolution: Unity and Diversity
HS-ESS2-1 Earth and Human Activity

Teaser/Overview

Have you ever wondered about the science behind the COVID-19 vaccine? How about who is behind the research? This is an inspiring and insightful lesson that acts as a follow up to the "*Outbreak: One World – One Health*" lesson.

ONE HEALTH LESSONS

Lesson Objectives

1. Students will understand the history of the mRNA vaccine development.
2. Students will recall lessons and vocabulary words from the first lesson in this series *"Outbreak: One World – One Health"*
3. Students will understand the immune system and the role of proteins and vaccines.
4. Students will understand that collaboration between people of various disciplines can make people, animals and the environment healthy.

Vocabulary Words

1. Immune System- the part of a body that fights anything recognized as strange.
2. mRNA (messenger RNA)- instructions to build a protein.
3. Protein- a very small structure inside of (or on) a cell or virus that helps the cell or virus function.
4. Translation- the process of creating a protein from mRNA.

Materials

Scientist Volunteers will bring:
Learning material either with printed-out slides or PowerPoint slides on the computer

Materials teachers should provide:
Projector or blackboard/whiteboard

Classroom Set-Up

- *Students can be online or in-person (or the classroom can be hybrid)*
- *Groups of 4-5 students is ideal (because they will work in teams)*

ONE HEALTH LESSONS

Classroom Visit

1. Introduction (2 minutes)

Role Model Introduction:
Being a role model for students is an important part of being a One Health Lessons volunteer. Begin your lesson by introducing yourselves! Every team member should take a moment to explain who they are and what they study/do as a scientist. A bonus will be to tell your "story," as if giving an elevator pitch to 8-year-olds: Why did you become a scientist? What made you interested in your topic? Why should students relate to you, or be interested in you? Feel free to draft a script of what you will say, here. And remember, you can also weave your story throughout your lesson through examples from your own life, and/or return to it with Q&A at the end.

Topic Introduction:
This lesson is focused on the woman behind the science of the ground-breaking mRNA vaccine that was once claimed to be impossible to create. Highlighting her perseverance over multiple decades, the lesson follows the story of a dedicated scientist whose research contributed to the reason why the COVID-19 vaccine was developed faster than ever before. The students will earn points throughout the lesson by answering questions that refer to both the previous lesson in this One Health series ("Outbreak: One World – One Health") as well as the new vocabulary taught in this lesson..

2. Learning Experience (35-50 minutes, based on the wishes of the teacher)

Throughout the lesson, the students (who are organized in teams of 4-5) will participate in an interactive contest focused on molecular biology. There are multiple entertaining interactive activities that have the students (1) model the immune system, (2) explore how proteins are created and (3) determine the potential consequences of a mutation in a protein.

3. Wrap Up: Review and Discuss the Learning Experience (15 minutes)

The class closes with a final 11-question contest (if the teacher wishes, based on the age of the students). The classroom teacher also is asked to complete a 3-4 minute survey after completion of the lesson.

ONE HEALTH LESSONS

4. Connections & Close (1 minutes)

Connections to the real world around students:
The lesson celebrates both the perseverance of a determined scientist and the ground-breaking research that she led over several decades. Her instrumental research is the reason why the COVID-19 vaccine was able to be developed in record time.

Close:
Thank teachers and the class for the invitation to teach about the inspiring story of Dr. Katalin Korikó. Briefly explain the **Global Pen Pal Program** that is available to pair classrooms motivated promote One Health actions in their own communities. More information is found at www.OneHealthLessons.com.

Follow Up: After the Presentation

Teachers who wish to extend the impact of this lesson may find the following CRS and One Health web pages (and more) useful:

- http://www.onehealthlessons.com
- http://www.crscience.org/educators/helpfulreports
- http://www.crscience.org/educators/treasuretrove
- https://www.nytimes.com/2021/06/10/podcasts/the-daily/mrna-vaccines-katalin-kariko.html
- More information is found in the slide notes associated with the PowerPoint presentation.

Teachers are encouraged to complete the following 3-4 minute survey to help future One Health Lesson development.

https://www.surveymonkey.com/r/COVID-19VaccineLesson