Teacher Directions

UNIT: CHIKUNGUNYA
LESSON 3: CHIKV?!? I HAVE QUESTIONS!
Activity 3B: Let's Have a Chat

TEXAS BIOMEDICAL RESEARCH INSTITUTE
HEALTH STARTS WITH SCIENCE

Instructional Objective

- Design a scientific questionnaire for a biomedical researcher to further investigate CHIKV replication in humans.

Materials

- Article, Chikunguna? Silly Name, Serious Virus!
- Annotated Organizer from Activity 3A, if completed
- Student Directions

Education Standards

TEKS: Processing: (MS) 1.F, 1.G **(HS)** 1.A, 1.F, 1.G, 2.B, 3.A, 3.B, 3.C, 4.A, 4.B, 4.C

Content: (MS) 7.13.A, 5.13.A **(HS)** B.5.D, B.7.D, B.12.A, E.8.D

ELPS: C.1.B, C.1.E, C.2.H, C.2.G, C.3.D, C.3.E, C.3.G, C.4.D, C.4.F, C.4.H, C.4.K, C.5.F

Step 1: Group Setup

- Form groups of 3–4.
- Each group will work together using the article and, if completed in Activity 3A, the Annotation Organizer tool.

Step 2: Generating Questions

- Each group will come up with questions about CHIKV replication, graphs, research methods, etc. Tables for these questions are on Student Directions.
- Each group will also come up with questions about STEM careers: what education is needed, how long does it take, etc. Tables for these questions are on Student Directions.

UNIT: CHIKUNGUNYA
LESSON 3: CHIKV?!? I HAVE QUESTIONS!
Activity 3B: Let's Have a Chat

Step 3: Drafting the Questionnaire

› Once group questions are generated, questions will be reviewed by teacher. Each group will then select 3 questions related to the article and 3 questions pertaining to STEM careers. These questions will be placed on the questionnaire. A table for the final questions is on the Student Directions.

NOTE: If groups are struggling to come up with questions, use the following stems to get the conversation going:

1. **Clarifying Questions**
   - › Sentence stems:
     - ➔ What does it mean when the article says…?
     - ➔ Why did the researchers choose ___ cells/methods?
2. **Scientific Investigation Questions**
   - › Sentence stems:
     - ➔ What future experiments could be done to test…?
     - ➔ How could this data be applied to preventing or treating CHIKV in humans?
3. **STEM Career Questions**
   - › Sentence stems:
     - ➔ What kind of scientist would study CHIKV in a lab?
     - ➔ What careers are involved in vaccine development or public health response?

Step 4: Finding a Scientist

› Group Tasks:

- ➔ Each group can research local scientists studying viruses or immunology and locates the scientist's professional email address.
  - ♦ If students are unable to locate a local scientist, you may provide the following information about the authors of the CHIKV article. Their emails may be located through their separate research institutes:
    - Dr. Israel Guererro-Arguero, Texas Biomedical Research Institute.
    - Dr. T.R. Haj, Department of Microbiology and Molecular Biology, College of Life Sciences, Brigham Yount University.
    - Dr. E. Shannon Tass, Department of Statistics, College of Physical and Mathematical Sciences, Brigham Young University.
    - Dr. Bradford Berges, Department of Statistics, College of Physical and Mathematical Sciences, Brigham Young University.

UNIT: CHIKUNGUNYA
LESSON 3: CHIKV?!? I HAVE QUESTIONS!
Activity 3B: Let's Have a Chat

- Dr. Richard Robison, Department of Statistics, College of Physical and Mathematical Sciences, Brigham Young University.

♦ Draft a professional email, asking a scientist if they would be willing to respond to a short questionnaire about CHIKV and STEM careers.

NOTE: It may be necessary for the teacher to review how to write a professional email with the students.

♦ The scientist may not be familiar with the CHIKV article. It may be necessary to attach a pdf copy of the CHIKV article.

NOTE: Students may need assistance with how to attach documents to an email.

♦ Prepare a draft of the 6-question questionnaire.

➔ All drafts must be discussed with and approved by teacher.

♦ Teacher reviews drafts with group and makes suggestions. Once approved, group emails the scientist and attaches questionnaire and pdf article. The email should be sent from one student on behalf of the group.

NOTE: Due to firewalls, the email may need to come from the teacher's email. Teacher may need to check spam for scientist's response.

NOTE: emails should include a window for responses. Perhaps a 5-day business week window will be optimal.

Processing Out:

When the scientist responds, students use the Group Questionnaire Reflection Processing Out, writing out each question and the scientist's response.

The group records their reflections on the Processing Out.

Option: A single questionnaire/class

› Each group shares their questions with the class.
› The class will discuss all questions and select the top 6 (3 about the CHIKV article and 3 about STEM careers).
› Generate a class questionnaire from the selected questions.
› Follow the process to ask a scientist.

Authentic Connections

› If possible, the questionnaire can be asked during a live Zoom or Teams or another platform.
› Use a digital tool (Padlet, spreadsheet, etc.) scientists can respond asynchronously.