

Journal Club Teacher Guide: “Studies on Rickettsia-like Micro-organisms in Insects”

Hertig M, Wolbach SB. Studies on Rickettsia-Like Micro-Organisms in Insects. *J Med Res.* 1924 Mar;44(3):329-374.7. PMID: 19972605; PMCID: PMC2041761.

Overview

This *Wolbachia* Project Journal Club contains three sections:

1. **Journal Club** – Students will read and critically discuss the seminal *Wolbachia* research article “Studies on Rickettsia-like Micro-organisms in Insects” by Hertig and Wolbach (1924). Guided questions lead readers through each section of the article with an emphasis on data analysis (figures) and conclusions. Each section contains page references for ease of reading. The questions primarily address sections that are relevant to the discovery of *Wolbachia* and description of intracellular endosymbionts.
2. **Graphic Illustration** – Students will create a graphic illustration to support the research article.
3. **Claim-Evidence-Reasoning** – Students will formulate a claim, provide evidence, and communicate reasoning based on data/results from the research article.

Presentation & Social Media

We invite participants to share Graphic Illustrations from this Journal Club. Please send illustrations to info@wolbachiaproject.org to be featured on the Journal Club website as an inspiration for other young scientists. We also invite you to share illustrations on social media and tag us @WolbachiaProj.

Prerequisite Skills

No prerequisite skills are required for this activity. Background Research questions are included to introduce important concepts from the paper.

Group Size

This activity can be performed in small groups (2-4 students) or as an individual project.

Teaching Time

The entire activity will take approximately 2-3 class periods. Each activity is a stand-alone unit and may be completed independent of the other modules.

- Day 1 (full class period): Read the article; work in groups to answer the Guided Questions
- Day 2 (full class period): Create a graphic illustration
- Days 3 (partial class period): Complete the CER activity

Supplies

1. **Journal Article:** Download the research article from PubMed, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2041761/>
2. **Wolbachia Project Journal Club, Graphic Illustration, and CER:** The activity is available in a PDF or Word document; it may be printed or viewed online. The background research and graphic illustration will require a computer with internet access.

Connection with the Standards

This *Wolbachia* Project Journal Club connects the Next Generation Science Standards (NGSS) and AP Framework with Common Core State Standards for ELA & Literacy.

NGSS Disciplinary Core Ideas:

- NGSS – Structure and Function (LS1.A)

NGSS Science and Engineering Practices:

- Engaging in Argument from Evidence: Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.
- Connections to Nature of Science - Scientific Investigations Use a Variety of Methods: Scientific inquiry is characterized by a common set of values that include logical thinking, precision, open-mindedness, objectivity, skepticism, replicability of results, and honest and ethical reporting of findings.
- Connections to Nature of Science - Scientific Knowledge is Open to Revision in Light of New Evidence: Scientific argumentation is a mode of logical discourse used to clarify the strength of relationships between ideas and evidence that may result in revision of an explanation.

NGSS Crosscutting Concepts:

- Structure and Function: Investigating or designing new systems or structures requires a detailed examination of the properties of different materials, the structures of different components, and connections of components to reveal its function and/or solve a problem.

AP Framework

- AP Big Idea 4: Systems Interactions (SYI)
 - SYI-1: Living systems are organized in a hierarchy of structural levels that interact.
- AP – Cell Structure and Function (Unit 2)
 - Origins of Cell Compartmentalization (2.11)
- AP – Ecology (Unit 8)
 - Community Ecology (8.5) – Describe the structure of a community according to its species composition and diversity.
 - Community Ecology (8.5) – Explain how interactions within and among populations influence community structure.

Reading Standards for ELA/Literacy in Science and Technical Subjects include:

- Evaluate the hypothesis, data, analysis, and conclusions in a science or technical text (RST-11.12.8)
- Cite specific textual evidence to support analysis of science and technical texts (RST.9-12.1)
- Determine the central ideas or conclusions of a text (RST.9-12.2)
- Write informative/explanatory text, including the narration of historical events, scientific procedures/experiments, or technical processes. (WHST.9-12.2)
- Draw evidence from informational texts to support analysis, reflections, and research. (WHST.9-12.9)
- Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence to add interest. (SL.11-12.5)

* The Reading Standards listed above have been abbreviated; see the [Common Core State Standards](#) for detailed, grade-level standards.