

Public Review

Title: *Virology Lab Exercises for Undergraduates*

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Review by Brian Bowser

The “Virology Lab Exercises for Undergraduates” manual was designed to provide students with a hands-on introduction to the world of viruses. The content was carefully selected to strengthen laboratory skills and to complement what you are learning in the classroom.

The manual teaches both classic microbiological methods and more modern molecular approaches to studying microbes. The content includes studies of viruses that infect bacteria, plants and animal cells to give you a broad range of experiences.

It begins with time-tested techniques such as culturing bacteria and performing plaque assays with bacteriophages—viruses that infect bacteria and produce visible plaques in bacterial lawns. These foundational skills provide insight into viral replication, host range, and virus quantification.

You will then explore methods used to study viruses that do not produce plaques, such as Deformed Wing Virus (DWV)—an RNA virus that infects insect cells – as a model system. Since DWV cannot be detected through traditional plaque assays, you will use molecular techniques to detect and quantify the virus. The manual also includes exercises using Zucchini Yellow Mosaic virus, which infects species of plants.

The work is more than a collection of protocols—it is a guide for developing your technical skills, critical thinking, and scientific reasoning. As you move through the experiments, you are encouraged to think like a researcher: ask questions, consider controls, interpret results thoughtfully, and appreciate the challenges and creativity involved in studying organisms too small to see.

I expect that the laboratory experiences found within this manual will inspire curiosity, sharpen your skills, and deepen your understanding of the unseen world around us.

Reviewer’s Bio: Brian Bowser received his Ph.D. from the University of North Carolina at Chapel Hill and did his post-doctoral work at the Penn State College of Medicine. He is a Molecular Biologist and Virologist who has worked in the contract research field for 15 years. He currently

directs a group of Process Analytics/Quality Control scientists responsible for the testing of antibody and cell therapy drug products in Phase I and II clinical trials.