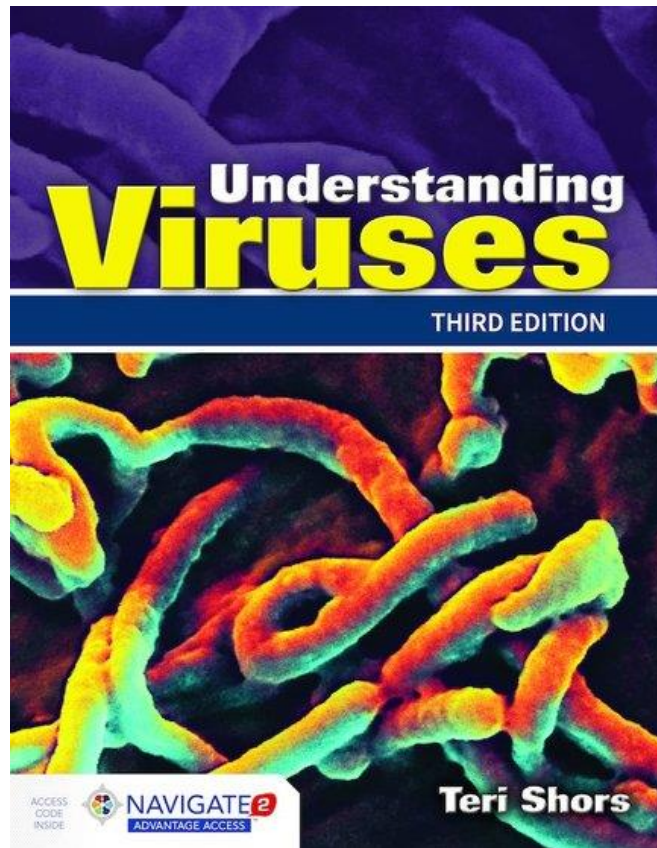




This item was created as a helpful tool for you, our valued customer,  
and is not intended for resale, dissemination, or duplication.

***Understanding Viruses, Third Edition***  
*Includes Navigate 2 Advantage Access*



**Teri Shors**, PhD, University of Wisconsin - Oshkosh  
ISBN-13: 978-1-284-02592-7  
Paperback with Access Code • 768 Pages • © 2017  
Jones & Bartlett Learning

**SEE WHAT'S NEW TO THE THIRD EDITION!**

Contact Your Publisher's Representative For More Information  
1-800-832-0034 • [info@jblearning.com](mailto:info@jblearning.com) • [www.jblearning.com](http://www.jblearning.com)

**This Transition Guide outlines many of the changes and new content in the *Third Edition*. Use this guide for an easy transition to the new edition.**

From Adenovirus to Zika virus, the Third Edition of best-selling *Understanding Viruses* provides a strong, comprehensive introduction to human viral diseases. It provides a balanced approach to this fascinating discipline, combining the molecular, clinical, and historical aspects of virology making it the ideal text for undergraduate students majoring in biology, microbiology, medical technology, or pre-med. This edition includes updated information on influenza, additional molecular virology content, updated epidemiology statistics, and more.

Chapters discussing specific viral diseases weave in an epidemiological and global perspective and include treatment and prevention information. Contemporary case studies, *Refresher Boxes*, and *Virus Files* engage students in the learning process. Comprehensive yet accessible, *Understanding Viruses, Third Edition* is an exciting and engaging text for your virology course.

## KEY UPDATES:

- Extensive and thorough revision throughout, especially of the first six chapters, to bring the text up-to-date with the latest research and global news on viruses including the recent Ebola crisis and Zika virus outbreak.
- At the suggestion of reviewers, Chapters 2 and 4 from the previous edition were condensed to create the new Chapter 3: “Molecular Biology, Host Cell Constraints and How Viruses Hijack Host Cells”
- NEW interior design will draw in the reader and help to engage students in the high-quality pedagogical features.
- NEW Learning Objectives have been added to every chapter to focus students’ attention and guide their study.
- The lists of Resources at the end of each chapter have been separated by Primary Literature, Reviews, Popular Press, and Video.
- The fully revised art package, including over 500 new or revised photos and illustrations, makes difficult concepts more approachable and figures more engaging.
- Numerous end-of-chapter case studies have been added to engage students and focus their thought on real-life application of topics.
- An extensive, fully illustrated BONUS CASE STUDY on the recent Ebola virus outbreak including over 50 study questions and a complete reference list has been added as an appendix.

Contact Your Publisher’s Representative For More Information  
1-800-832-0034 • [info@jblearning.com](mailto:info@jblearning.com) • [www.jblearning.com](http://www.jblearning.com)

## CHAPTER OUTLINE

Table of Contents Comparison to transition from the *Second* to the *Third Edition*

Second Edition	Third Edition
<b>Chapter 1:</b> Introduction to Viruses	<b>Chapter 1:</b> Introduction to Viruses
<b>Chapter 2:</b> Eukaryotic Molecular Biology and Host Cell Constraints	<b>Chapter 2:</b> Virus Architecture and Nomenclature Eukaryotic
<b>Chapter 3:</b> Virus Architecture and Nomenclature	<b>Chapter 3:</b> Molecular Biology, Host Cell Constraints and How Viruses Hijack Host Cells
<b>Chapter 4:</b> Virus Replication Cycles	<b>Chapter 4:</b> Mechanisms of Viral Entry and Spread of Infection in the Body
<b>Chapter 5:</b> Laboratory Diagnosis of Viral Diseases and Working with Viruses in the Research Laboratory	<b>Chapter 5:</b> Host Resistance to Viral Infections
<b>Chapter 6:</b> Mechanisms of Viral Entry and Spread of Infection in the Body	<b>Chapter 6:</b> Epidemiology
<b>Chapter 7:</b> Host Resistance to Viral Infections	<b>Chapter 7:</b> Laboratory Diagnosis of Viral Disease and Working with Viruses in the Research Laboratory
<b>Chapter 8:</b> Epidemiology	<b>Chapter 8:</b> Poliovirus and Other Enteroviruses
<b>Chapter 9:</b> The History of Medicine, Clinical Trials, Gene Therapy, and Xenotransplantation	<b>Chapter 9:</b> Influenza Viruses
<b>Chapter 10:</b> Viruses and Cancer	<b>Chapter 10:</b> Hepatitis Viruses
<b>Chapter 11:</b> Poliovirus and Other Enteroviruses	<b>Chapter 11:</b> Herpesviruses
<b>Chapter 12:</b> Influenza Viruses	<b>Chapter 12:</b> Human Immunodeficiency Virus (HIV)
<b>Chapter 13:</b> Rabies	<b>Chapter 13:</b> Rabies
<b>Chapter 14:</b> Poxviruses	<b>Chapter 14:</b> Poxviruses
<b>Chapter 15:</b> Herpesviruses	<b>Chapter 15:</b> New Viruses and Viruses that are Reemerging
<b>Chapter 16:</b> Human Immunodeficiency Virus (HIV)	<b>Chapter 16:</b> Viruses and Cancer
<b>Chapter 17:</b> Hepatitis Viruses	<b>Chapter 17:</b> The History of Medicine, Clinical Trials, Gene Therapy, and Xenotransplantation
<b>Chapter 18:</b> New Viruses and Viruses That Are Reemerging	<b>Chapter 18:</b> What About Prions and Viroids?
<b>Chapter 19:</b> What About Prions and Viroids?	<b>Chapter 19:</b> Plant Viruses
<b>Chapter 20:</b> Plant Viruses	<b>Chapter 20:</b> The Best for Last: Bacteriophages
<b>Chapter 21:</b> The Best for Last: Bacteriophages	

Contact Your Publisher's Representative For More Information  
1-800-832-0034 • [info@jblearning.com](mailto:info@jblearning.com) • [www.jblearning.com](http://www.jblearning.com)

## IMPORTANT CHAPTER UPDATES

In addition to the Key Updates made to all chapters, the author has provided more detailed notes on what has changed in each chapter.

### Chapter 1: Introduction to Viruses

- ✓ New Opening Case Study on Viral Hemorrhagic Septicemia
- ✓ New Case Study on Heartland Virus
- ✓ New Virus File box “Now I Take My Pen in Hand...: Letters by a Wisconsin Soldier During the Civil War Chronicled Disease”
- ✓ Updated statistics on MERS-CoV, Measles, Ebola, etc.
- ✓ Added several new sections and topics including Learning from Viruses, Helpful or Collaborative Viruses, Human & Aquatic Viromes, Applications of Viruses in Health or Medicine, Viral Infections: A Brief Introduction of Transmission and Pathogenesis, and recent viral outbreaks including MERS, Hantavirus, Measles, Schmallenberg, and the 2014-2015 Ebola epidemic
- ✓ Over 70 new or revised photos, illustrations, and table

### Chapter 2: Virus Architecture and Nomenclature Eukaryotic

- ✓ New Opening Case Study on viruses in contact lens solution
- ✓ Previous Opening Case Study moved to a Virus File box
- ✓ New Case Study on Bald Eagle Die-Offs
- ✓ Combined several tables
- ✓ Heavily revised section on the Virosphere
- ✓ Re-ordered topics slightly under the Virus Architecture and Structure section and added coverage of Types of Viral Genomes
- ✓ Added new coverage of Virus Discovery in the 21st Century

### Chapter 3: Molecular Biology, Host Cell Constraints and How Viruses Hijack Host Cells

- ✓ Combined Chapters 2 & 4 from the previous edition, providing a unique, big-picture look at the molecular biology of viruses
- ✓ Replaced 2 old Virus File boxes with 3 new Virus File boxes on RNA Splicing, Real-Time virus tracking, and Reverse Pharmacology
- ✓ Significant updates to several figures to focus them on more general concepts
- ✓ Added comprehensive table of human viruses
- ✓ Increased molecular biology coverage to include coverage of RNA splicing, Plasma Membrane and Endocytosis, Intracellular Membranes and Organelles, and Cytoskeleton
- ✓ Changed discussion of molecular constraints to a revised structure of 4 Hurdles
- ✓ Update coverage of antiviral therapies including new content on sources of novel antivirals

### Chapter 4: Mechanisms of Viral Entry and Spread of Infection in the Body

- ✓ New Opening Case Study on Safe Burials and Ebola
- ✓ New Virus File box on “Isolated Reminders of Smallpox Epidemics During the 1800s in America”
- ✓ Added Case Studies on avian influenza surveillance and cow patties
- ✓ Added more information on cytomegalovirus and pregnancy
- ✓ Separated section on Virus Exit into subsections on shedding of human viruses and shedding and zoonosis potential

### **Chapter 5: Host Resistance to Viral Infections**

- ✓ New Opening Case Study on Ebola Survivor Dr. Kent Brantly
- ✓ Added new Virus File boxes on Massie Puzzle Piece Hiding on Chromosome 6 and Wakefield's Syndrome ("Autistic Enterocolitis") and the MMR Vaccination Scare
- ✓ Increased coverage of Viral Recognition: PRRs and PAMPs
- ✓ Significantly revised several figures and added new figures with updated vaccine information

### **Chapter 6: Epidemiology**

- ✓ New Opening Case Study on Virus Cold Cases: Brainerd Diarrhea, Sweating Sickness and Picardy Sweat
- ✓ Added new Virus File box on Voluntary Quarantine and the Village of Eyam
- ✓ Updated coverage of travel medicine including new tables and figures

### **Chapter 7: Laboratory Diagnosis of Viral Disease and Working with Viruses in the Research Laboratory**

- ✓ Replaced old Virus File box on Chronic Fatigue Syndrome with new box on development of a rapid test to determine if respiratory illnesses are caused by a virus or bacterium
- ✓ Added several new figures on topics including TCID<sub>50</sub> assays and algorithms for identifying HIV infection
- ✓ Added new Case Study on Severe Brain Infections in Africa and Vietnam Associated with a New Mysterious Cyclovirus

### **Chapter 8: Poliovirus and Other Enteroviruses**

- ✓ New figures on iron lung and seasonal variations in respiratory illnesses caused by viruses
- ✓ Added coverage of rhinoviruses
- ✓ Revisions to various tables and figures as needed

### **Chapter 9: Influenza Viruses**

- ✓ New Opening Case Study on Commingling of Humans, Pigs, and Variant Influenza Viruses at U.S. County Fairs
- ✓ Revised and improved over 50% of figures
- ✓ Revamped Virus File 9-3 to be Using Plasmid-Based Reverse Genetics to Produce Avian Influenza A (H5N1) Vaccines
- ✓ Increased coverage of pathogenic avian influenza A viruses, pandemic planning, and bird migration/bird flu
- ✓ Added new info on subtypes, reservoirs, the 1918 pandemic, WWI military, the 2009 influenza strain, and the controversial construction of a potential "killer flu or Armageddon virus
- ✓ Added new tables on FDA-Approved Influenza Antivirals, People at Highest Risk for Influenza Complications, others who should be vaccinated, and Influenza Vaccines

### **Chapter 10: Hepatitis Viruses**

- ✓ New Opening Case Study on contaminated oranges among tourists in Egypt
- ✓ New Virus File box on Human Viruses Lurking in Porta-Potties and Outhouses
- ✓ Revised or embellished almost all figure captions
- ✓ Several significant revisions to key figures
- ✓ Updated coverage of Hepatitis Prevalence in the World for HAV, HBV, HCV, & HEV
- ✓ Updated Hepatitis C information including 3 new tables and discussion of new drugs

### **Chapter 11: Herpesviruses**

- ✓ New Opening Case Study on Chickenpox Lollipops
- ✓ Two new Case Studies called "Why is it Called Chickenpox?" and "Are HSV-1 and CMV Related to the 'Stupidity Virus?'"
- ✓ Updated and revised tables, especially on drugs to treat herpesvirus infections
- ✓ Updated content on history of Kaposi's sarcoma, vaccines, and Herpes B

**Chapter 12: Human Immunodeficiency Virus (HIV)**

- ✓ New Opening Case Study on the 2015 HIV Outbreak in a Small Town in Indiana: A Warning to Rural America
- ✓ New Virus File box called “Shutting the Cellular Door to HIV-1: Research Toward a Cure”
- ✓ Updated information on diagnostics
- ✓ Revised over 50% of figures
- ✓ Updated information on global epidemiology of HIV/AIDS
- ✓ Added information on pricing/costs per month for a person living with HIV on ART
- ✓ New tables on FDA-Approved Antivirals and Combination HIV medicine

**Chapter 13: Rabies**

- ✓ Added questions for the Opening Case Study
- ✓ Added coverage of Human rabies in China
- ✓ Updated information on Human and Animal rabies cases
- ✓ Revised figures and captions as needed, including adding new figures showing vaccination for rabies in the wild

**Chapter 14: Poxviruses**

- ✓ Updated general information
- ✓ Added several figures including an illustration of the vaccinia virus life cycle

**Chapter 15: New Viruses and Viruses that are Reemerging**

- ✓ New Opening Case Study on Post-Ebola Syndrome
- ✓ New Virus File box on Zika virus
- ✓ Additional information added for key topics including Nipah virus and norovirus

**Chapter 16: Viruses and Cancer**

- ✓ New Opening Case Study on Dr. Dock’s 1896-1897 Observations of Cancer Remission After ‘Bout with Influenza
- ✓ New Case Study on Infectobesity
- ✓ New Virus File boxes on Cell Cycle and Cancer

Biology Definitions, and The Pap-Test Controversy

- ✓ Added contemporary examples such as Michael Douglas, John Forbes Nash Jr., and James E. Holmes
- ✓ Embellished information on Burkitt Lymphoma with more figures
- ✓ Added new table on FDA-Approved HPV Vaccines
- ✓ Major revisions to several figures including ones on Creation of Bivalent HPV vaccine and SV-40 replication cycle

**Chapter 17: The History of Medicine, Clinical Trials, Gene Therapy, and Xenotransplantation**

- ✓ New Opening Case Study called “Can a Shot of Poliovirus Cure Cancer?”
- ✓ Retitled and significantly updated Virus File box on Timothy Ray Brown
- ✓ Revised several figures and tables including the table on genes manipulated in pigs for xenotransplantation
- ✓ Added several new figures including a comparison of ex vivo and in vivo gene therapy

**Chapter 18: What About Prions and Viroids?**

- ✓ Updated general information throughout including more information on codon 219 and chronic wasting disease monitoring in Wisconsin
- ✓ Updated figures as needed including addition of a new figure showing how prions in the soil can be transported through plants

**Chapter 19: Plant Viruses**

- ✓ Updated information including more on the history of plant viruses and funding for research on cassava disease

**Chapter 20: The Best for Last: Bacteriophages**

- ✓ Updated information throughout
- ✓ Revision of several figures and captions

## TEACHING TOOLS - SUPPORT FOR INSTRUCTORS

The Publisher will provide a variety of Teaching Tools to assist instructors with preparing for and teaching their courses. These resources are available via digital download and multiple other formats.

- Lecture Slides in PowerPoint format
- Test Bank Materials
- Image Bank, including unlabeled versions of many illustrations for easy incorporation into course materials
- Instructor's Manual
- Animation files showing mechanisms for antiviral drugs
  - Mechanisms for Antiviral Drug: Acyclovir (DNA polymerase inhibitor)
  - Mechanism for Antiviral Drug: Relenza/Tamiflu/Peramivir (Neuraminidase inhibitors) for Influenza A virus
  - Mechanism for Antiviral Drug: Protease inhibitors of HIV
  - Mechanism for Antiviral Drug: Protease inhibitor of Hepatitis C virus
  - Mechanism for Antiviral Drug: ZMapp monoclonal antibody cocktail to inhibit Ebola virus
  - Mechanism for Antiviral Drug: Integrase inhibitors to block HIV
- Navigate 2 platform with course management tools, including an Assessment center with prepopulated quizzes and exams and Study Tools for your students

## EACH NEW PRINT BOOK COMES WITH NAVIGATE 2 ADVANTAGE ACCESS

Each new print book now comes packaged with access to Navigate 2 online learning solution at no extra cost. Navigate 2 delivers unbeatable value to students and instructors alike. Some of the great features include:

- A complete and interactive eBook including **Animations**, on-page practice questions, links to useful websites, and other unique features
- A virtual Study Center with Practice Activities and other learning tools for students
- An Assessment center with prepopulated quizzes and tests for instructors to assign
- A dashboard that reports actionable data on student use and progress to instructors

**PRICE BREAK!** Students can also purchase “standalone” access to Navigate 2 Advantage including the interactive eBook for just half the price of the print book.

Contact Your Publisher's Representative For More Information  
1-800-832-0034 • [info@jblearning.com](mailto:info@jblearning.com) • [www.jblearning.com](http://www.jblearning.com)