

Understanding Viruses

This book explains what viruses are and their positive and negative effect on humans in a clear and easy to understand question and answer format. Key words are explained at the start of the book to help aid easy understanding of this important and fascinating subject. Major viral diseases such as AIDS and yellow fever are explained along with possible biotechnological and medical uses of viruses.

Understanding Viruses Jones & Bartlett Publishers

"Combining the molecular, clinical, and historical aspects of virology, Understanding Viruses is a textbook for the modern undergraduate virology course. The text provides an introduction to human viral diseases. Additional chapters on viral diseases of animals; the history of clinical trials, gene therapy, and xenotransplantation; prions and viroids; plant viruses; and bacteriophages add to the coverage."--Jacket.

New viral diseases are emerging continuously. Viruses adapt to new environments at astounding rates. Genetic variability of viruses jeopardizes vaccine efficacy. For many viruses mutants resistant to antiviral agents or host immune responses arise readily, for example, with HIV and influenza. These variations are all of utmost importance for human and animal health as they have prevented us from controlling these epidemic pathogens.

This book focuses on the mechanisms that viruses use to evolve, survive and cause disease in their hosts. Covering human, animal, plant and bacterial viruses, it provides both the basic foundations for the evolutionary dynamics of viruses and specific examples of emerging diseases. * NEW - methods to establish relationships among viruses and the mechanisms that affect virus evolution * UNIQUE - combines theoretical concepts in evolution with detailed analyses of the evolution of important virus groups * SPECIFIC - Bacterial, plant, animal and human viruses are compared regarding their interaction with their hosts

Molecular Virology

Origin and Evolution of Viruses

4D an Augmented Reading Science Experience

Turning Despair to Deliverance: a Road Map for Covid-19

Principles of Molecular Virology

Viruses interact with host cells in ways that uniquely reveal a great deal about general aspects of molecular and cellular structure and function. Molecular and Cellular Biology of Viruses leads students on an exploration of viruses by supporting engaging and interactive learning. All the major classes of viruses are covered, with separate chapters for their replication and expression strategies, and chapters for mechanisms such as attachment that are independent of the virus genome type. Specific cases drawn from primary literature foster student engagement. End-of-chapter questions focus on analysis and interpretation with answers being given on the website (half for students, all for instructors). Examples come from the most-studied and medically important viruses such as HIV, influenza, and poliovirus. Plant viruses and bacteriophages are also included. There are chapters on the overall effect of viral infection on the host cell. Coverage of the immune system is focused on the interplay between host defenses and viruses, with a separate chapter on medical applications such as anti-viral drugs and vaccine development. The final chapter is on virus diversity and evolution, incorporating contemporary insights from metagenomic research. Key selling feature: Readable but rigorous coverage of the molecular and cellular biology of viruses Molecular mechanisms of all major groups, including plant viruses and bacteriophages, illustrated by example Host-pathogen interactions at the cellular and molecular level emphasized throughout Medical implications and consequences included Quality illustrations available to instructors Extensive questions and answers for each chapter

Viruses: From Understanding to Investigation provides students with a map for lifetime learning by presenting the definition and unique characteristics of viruses, including major topics, such as the virus lifecycle, structure, taxonomy, evolution, history, host-virus interactions and methods to study viruses. In addition, the book assesses the connections between, and among, the aforementioned topics, providing an integrated approach and in-depth understanding of how viruses work. Employs a comparative strategy to emphasize unique structural and molecular characteristics that inform transmission, disease processes, vaccine strategies and host responses Presents a review of host cell and molecular biology and the immune system Features topical areas of research, including genomics in virus discovery, the virome, and beneficial interactions between viruses and their hosts Includes text boxes throughout with experimental approaches used by virologists Covers learning objectives for each chapter, methods and advances, question sets, quizzes and a glossary

Over the last ten years, much effort has been devoted to improving the biophysical techniques used in the study of viruses. This has resulted in the visualization of these large macromolecular assemblages at atomic level, thus providing the platform for functional interpretation and therapeutic design. Structural Virology covers a wide range of topics and is split into three sections. The first discusses the vast biophysical methodologies used in structural virology, including sample production and purification, confocal microscopy, mass spectrometry, negative-stain and cryo-electron microscopy, X-ray crystallography and nuclear magnetic resonance spectroscopy. The second discusses the role of virus capsid protein structures in determining the functional roles required for receptor recognition, cellular entry, capsid assembly, genome packaging and mechanisms of host immune system evasion. The last section discusses therapeutic strategies based on virus protein structures, including the design of antiviral drugs and the development of viral capsids as vehicles for foreign gene delivery. Each topic covered will begin with a review of the current literature followed by a more detailed discussion of experimental procedures, a step in the viral life cycle, or strategies for therapeutic development. With contributions from experts in the field of structural biology and virology this exceptional monograph will appeal to biomedical scientists involved in basic and /or applied research on viruses. It also provides up-to-date reference material for students entering the field of structural virology as well as scientists already familiar with the area.

Harnessing the Power of Viruses explores the application of scientific knowledge about viruses and their lives to solve practical challenges and further advance molecular sciences, medicine and agriculture. The book contains virus-based tools and approaches in the fields of: i) DNA manipulations in vitro and in vivo; ii) Protein expression and characterization; and iii) Virus-Host interactions as a platform for therapy and biocontrol are discussed. It steers away from traditional views of viruses and technology, focusing instead on viral molecules and molecular processes that enable science to better understand life and offer means for addressing complex biological phenomena that positively influence everyday life. The book is written at an intermediate level and is accessible to novices who are willing to acquire a basic level of understanding of key principles in molecular biology, but is also ideal for advanced readers interested in expanding their biological knowledge to include practical applications of molecular tools derived from viruses. Explores virus-based tools and approaches in DNA manipulation, protein expression and characterization and virus-host interactions Provides a dedicated focus on viral molecules and molecular processes that enable science to better understand life and address complex biological phenomena Includes an overview of modern technologies in biology that were developed using viral components/elements and knowledge about viral processes

Harnessing the Power of Viruses

Viruses: Actions and Reactions

Viruses

4D An Augmented Reading Science Experience

Chikungunya and Zika Viruses

While many scientists believed influenza would cause the next great pandemic, no one was prepared for the new strain of coronavirus that appeared in 2019. SARS-CoV-2, the virus that causes COVID-19, has infiltrated every country and put global public health and the economy at risk. Health-care systems have been pushed to the limit as protective gear, life-saving equipment, tests, and vaccines are scarce and in high demand. From the initial infection to the widespread impact on daily life, Understanding Coronaviruses examines the intricacies of SARS-CoV-2 and COVID-19 and how they compare to previous viruses and pandemics.

Approximately 75% of emerging infectious diseases are zoonoses, and the rate of emergence of zoonotic diseases is on the rise. Bats are being increasingly recognised as an important reservoir of zoonotic viruses of different families, including SARS coronavirus, Nipah virus, Hendra virus and Ebola virus. Understanding bats' role in emerging zoonotic diseases is crucial to this rapidly expanding area of research. Bats and Viruses: A New Frontier of Emerging Infectious Diseases provides an updated overview of research focusing on bat biology and the role bats play as hosts of many major zoonotic viruses. The text covers bat biology, immunology, and genomics. Chapters also delve into the various major bat-borne virus families, including lyssaviruses, paramyxoviruses, coronaviruses, filoviruses and reoviruses, among others. Edited by leaders in the field, Bats and Viruses: A New Frontier of Emerging Infectious Diseases is a timely, invaluable reference for bat researchers studying microbiology, virology and immunology, as well as infectious disease workers and epidemiologists, among others.

In graphic novel format, follows the adventures of Max Axiom as he explains the science behind viruses

Chikungunya and Zika Viruses: Global Emerging Health Threats is the go-to resource for both historical and current information on this important virus that is rapidly increasing its global range. Epidemics since 2005 have spread from Africa and Asia, and through Europe, and an ongoing epidemic has caused nearly two million cases in the Americas. It causes severe crippling arthritis, with symptoms lasting for months or years. As no vaccine or treatment is available, there is international interest in the virus, thus funding opportunities for research have dramatically increased. This book presents our understanding of the virus, bringing comprehensive knowledge in a single source. Provides a comprehensive collection of the state-of-the-art on CHIKV biology in a go-to reference book Edited by leaders in the field who provide a single, up-to-date source of information Gives a better understanding of the transmission and spread of chikungunya virus, a clear, coherent description of the outcomes of infection (both acute and chronic), and its biology and risk factors Pulls relevant background information to justify projects of many professionals developing vaccines and mosquito vector control approaches

Staying Safe from Viruses

Viruses and Society

Molecular and Cellular Biology of Viruses

Understanding Viruses (Second Edition)

Encounters in Virology

How complex systems theory sheds new light on the adaptive dynamics of viral populations Viruses are everywhere, infecting all sorts of living organisms, from the tiniest bacteria to the largest mammals. Many are harmful parasites, but viruses also play a major role as drivers of our evolution as a species and are essential regulators of the composition and complexity of ecosystems on a global scale. This concise book draws on complex systems theory to provide a fresh look at viral origins, populations, and evolution, and the coevolutionary dynamics of viruses and their hosts. New viruses continue to emerge that threaten people, crops, and farm animals. Viruses constantly evade our immune systems, and antiviral therapies and vaccination campaigns can be powerless against them. These unique characteristics of virus biology are a consequence of their tremendous evolutionary potential, which enables viruses to quickly adapt to any environmental challenge. Ricard Solé and Santiago Elena present a unified framework for understanding viruses as complex adaptive systems. They show how the application of complex systems theory to viral dynamics has provided new insights into the development of AIDS in patients infected with HIV-1, the emergence of new antigenic variants of the influenza A virus, and other cutting-edge advances. Essential reading for biologists, physicists, and mathematicians interested in complexity, Viruses as Complex Adaptive Systems also extends the analogy of viruses to the evolution of other replicators such as computer viruses, cancer, and languages.

The fourth edition of the hugely successful Principles of Molecular Virology takes on a molecular approach, presenting the principles of virology in a clear and concise manner. This work explores and explains the fundamental aspects of virology, including structure of virus particles and genome, replication, gene expression, infection, pathogenesis and subviral agents. The self-assessment questions, glossary and abbreviations section provide excellent revision aids and serve as handy references to students, tutors and researchers alike. NEW TO FOURTH EDITION: * New material on virus structure and virus evolution * Updated pathogenesis section covering Ebola, SARS and HIV * New section on Bioterrorism * Fully updated references * New material on virus structure, virus evolution, zoonoses, bushmeat, SARS and bioterrorism

This book provides an intimate portrait of multiple outbreaks of Ebola in Africa and reveals how the results of that experience can help us fight COVID-19. Michael B.A. Oldstone, who led the Viral-Immunobiology Laboratory at the Scripps Research Institute worked with Ebola, teams up with Madeleine Rose Oldstone to give a detailed account of the 2013-2016 and 2018-2020 Ebola outbreaks. The authors trace the origin of the disease, its spread like a tsunami thru Guinea, Sierra Leone and Liberia, the collapse of economies, and the development of anti-viral therapies against Ebola. They compare the outbreaks of one of the world's deadliest viruses with today's struggle to overcome the COVID-19 pandemic. You will gain intimate knowledge of a deadly pathogen that devastated a region of the world that lacks resources to fight it, and learn why the world was unprepared for the Ebola outbreak. You will meet people who fought heroically with limited resources, including Sheik Kahn who died fighting Ebola and was declared a national hero by the Sierra Leone government, Pardis Sabeti, a geneticist working in infectious diseases from Harvard and MIT who was named "Scientist of the Year" by Time magazine, and Robert Garry, who headed the fight against viral hemorrhagic diseases and kept the White House and the press informed. Sabeti and Garry worked with Oldstone and provided information about the outbreak to the authors, making the narrative particularly incisive and timely. Ebola's Evolution will give you a fast paced, detailed, and fascinating picture of a feared disease that killed thousands of people and threatening to become a global pandemic before it was stopped.

Named a Most Anticipated Book of 2022 by Literary Hub A leading microbiologist tackles the scientific and sociopolitical impact of viruses in twelve striking essays. Invisible in the food we eat, the people we kiss, and inside our own bodies, viruses flourish—with the power to shape not only our health, but our social, political, and economic systems. Drawing on his expertise in microbiology, Joseph Osmundson brings readers under the microscope to understand the structure and mechanics of viruses and to examine how viruses like HIV and COVID-19 have redefined daily life. Osmundson's buoyant prose builds on the work of the activists and thinkers at the forefront of the HIV/AIDS crisis and critical scholars like José Esteban Muñoz to navigate the intricacies of risk reduction, draw parallels between queer theory and hard science, and define what it really means to "go viral." This dazzling multidisciplinary collection offers novel insights on illness, sex, and collective responsibility. Virology is a critical warning, a necessary reflection, and a call for a better future.

Finding Genius: Understanding Viruses

A Guide to Understanding Viruses

Understanding Corona Virus (COVID-19): The Only Manual You Will Need

30 Questions, 25 Geniuses, 100 Amazing Insights

Virology: Essays for the Living, the Dead, and the Small Things in Between

Viruses are contagious. They can be passed from person to person. They can also be passed to a person by an animal. Discover more in How Does a Virus Spread?, part of the Understanding Viruses series.

How viruses emerge to cause pandemics, how our immune system combats them, and how diagnostic tests, vaccines, and antiviral therapies work. Throughout history, humans have contended with pandemics. History is replete with references to plagues, pestilence, and contagion, but the devastation wrought by pandemics had been largely forgotten by the twenty-first century. Now, the enormous human and economic toll of the rapidly spreading COVID-19 disease offers a vivid reminder that infectious disease pandemics are one of the greatest existential threats to humanity. This book provides an accessible explanation of how viruses emerge to cause pandemics, how our immune system combats them, and how diagnostic tests, vaccines, and antiviral therapies work-- concepts that are a foundation for our public health policies.

For years, scientists have been warning us that a pandemic was all but inevitable. Now it's here, and the rest of us have a lot to learn. Fortunately, science writer Carl Zimmer is here to guide us. In this compact volume, he tells the story of how the smallest living things known to science can bring an entire planet of people to a halt--and what we can learn from how we've defeated them in the past. Planet of Viruses covers such threats as Ebola, MERS, and chikungunya virus; tells about recent scientific discoveries, such as a hundred-million-year-old virus that infected the common ancestor of armadillos, elephants, and humans; and shares new findings that show why climate change may lead to even deadlier outbreaks. Zimmer's lucid explanations and fascinating stories demonstrate how deeply humans and viruses are intertwined. Viruses helped give rise to the first life-forms, are responsible for many of our most devastating diseases, and will continue to control our fate for centuries. Thoroughly readable, and, for all its honesty about the threats, as reassuring as it is frightening, A Planet of Viruses is a fascinating tour of a world we all need to better understand.

Encounters in Virology, by author and educator Teri Shors, engages readers with 14 fascinating and thought-provoking case studies pulled from headline news. Each account describes an individual viral disease, along with the signs and symptoms that accompany it, and asks students to become medical detectives as they move along to identify and diagnosis these potentially life-threatening viral diseases. An ideal supplement to any microbiology or virology course, as well as an entertaining and informative read, Encounters in Virology is sure to bring these realistic medical tales to life as readers race against time to solve these medical mysteries.

Structural Virology

Ebola's Evolution

Second Edition

Parallels in the Research Trajectories of Tumor and Bacterial Viruses

SARS, MERS, and the COVID-19 Pandemic

A virus is a type of germ so small that it can only be seen with a microscope. Viruses were discovered in the late 1880s. Discover more in What Is a Virus?, part of the Understanding Viruses series.

People who feel unwell should try to avoid others. This helps stop the spread of the virus. The more contact people have with an infected person, the faster a virus spreads. Discover more in Staying Safe from Viruses, part of the Understanding Viruses series.

While viruses—the world's most abundant biological entities—are not technically alive, they invade, replicate, and evolve within living cells. Michael Cordingley goes beyond our familiarity with infections to show how viruses spur evolutionary change in their hosts and shape global ecosystems, from ocean photosynthesis to drug-resistant bacteria.

Describing the fundamental molecular features of viruses, this edition emphasizes the medical importance of understanding viruses at the molecular level. It contains a detailed summary of current knowledge and provides information for any reader requiring an introduction to the field of virology.

How Does a Virus Spread?

Understanding Viruses is the Key to Effective Management

What Is a Virus?

Viruses, Pandemics, and Immunity

Understanding Viruses: 30 Questions, 25 Geniuses, 100 Amazing Insights

In 1965, French microbiologist André Lwoff was awarded the Nobel Prize in Physiology or Medicine for his work on lysogeny—one of the two types of viral life cycles—which resolved a contentious debate among scientists about the nature of viruses. A Tale of Two Viruses is the first study of medical virology to compare the history of two groups of medically important viruses—bacteriophages, which infect bacteria, and sarcoma agents, which cause cancer—and the importance of Lwoff's discovery to our modern understanding of what a virus is. Although these two groups of viruses may at first glance appear to have little in common, they share uniquely parallel histories. The lysogenic cycle, unlike the lytic, enables viruses to replicate in the host cell without destroying it and to remain dormant in a cell's genetic material indefinitely, or until induced by UV radiation. But until Lwoff's discovery of the mechanism of lysogeny, microbiologist Félix d'Herelle and pathologist Peyton Rous, who themselves first discovered and argued for the viral identity of bacteriophages and certain types of cancer, respectively, faced opposition from contemporary researchers who would not accept their findings. By following the research trajectories of the two virus groups, Sankaran takes a novel approach to the history of the development of the field of medical virology, considering both the flux in scientific concepts over time and the broader scientific landscapes or styles that shaped those ideas and practices.

Viruses and Society is geared towards professionals and students in college-level introductory biology courses devoted to understanding viruses, vaccines, and their global impact. The beginning of the book introduces cells, DNA, and viruses themselves. There follows a review of how the immune system works and how scientists and physicians harness the immune system to protect people through vaccines. Specific chapters will focus on the 1918 influenza pandemic, the fight to eradicate polio, the HIV/AIDS pandemic, and our current COVID-19 crisis. Additionally, the book reviews the uses of viruses in genetic engineering and in gene therapy as well. The book will conclude by describing public health initiatives to keep emerging viruses in check and the role of scientific communication in how viruses are perceived and have an impact on our society. Key Features 1) The text employs approachable and simplified language 2) Provides all the essential elements for

understanding virus biology 3) Includes details on how viruses affect individuals 4) Describes the ways public health decisions are made in light of how viral pathogens spread 5) Highlights up to date scientific findings on the features of emerging viruses that will always be with us

Understanding Viruses continues to set the standard for the fundamentals of virology. This classic textbook combines molecular, clinical, and historical aspects of human viral diseases in a new stunning interior design featuring high quality art that will engage readers. Preparing students for their careers, the Third Edition greatly expands on molecular virology and virus families. This practical text also includes the latest information on influenza, global epidemiology statistics, and the recent outbreaks of Zika and Ebola viruses to keep students on the forefront of cutting-edge virology information. Numerous case studies and feature boxes illuminate fascinating research and historical cases stimulate student interest, making the best-selling Understanding Viruses the clear choice in virology. Each new print copy includes Navigate 2 Advantage Access that unlocks a comprehensive and interactive eBook, student practice activities and assessments, a full suite of instructor resources (available to adopting instructors with course ID), and learning analytics reporting tools (available to adopting instructors with course ID).

Coronavirus disease is caused by a virus that is part of a large family of viruses - coronaviruses (CoV). It has been known to cause common respiratory infections ranging from common diseases like the common cold to more critical illness such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS). However, the coronavirus disease-causing virus (COVID-19) is a new strain of the coronaviruses that was discovered in 2019, which has never been previously identified in humans. Coronaviruses (CoV) are known to be zoonotic - that is, they are usually transmitted between humans and animals. Several investigations proved that SARS was transmitted to humans from civet cats, and MERS was also transmitted from dromedary camels to humans. There are still several strains of coronaviruses known in animals that are yet to infect humans. Coronaviruses got their name from the resemblance of the spikes protruding from their surface with a crown and the sun's corona. They infect humans and animals, thereby causing illness in the respiratory tracts. Every year, there are at least four different strains of the coronaviruses that cause mild infections such as the common cold. Most people will get infected with at least one of these viruses at some point in their lives.

Bats and Viruses

Understanding Viruses

Finding Genius

A Tale of Two Viruses

Join Max Axiom as he explores the science behind viruses. Max helps young readers understand how virus attack our bodies and what we can do to protect against them. These newly revised editions feature Capstone 4D augmented reality prompts, discussion questions, and a hands-on activity. Fans of augmented reality will love learning beyond the book!

The study of viruses is known as virology. It focuses on the structure, evolution and behavior of viruses. Studying them is vital, as they cause various infectious diseases like dengue, yellow fever, smallpox, etc. The classification of viruses they infect, like fungal viruses, bacteriophages, animal viruses, etc. This book attempts to assist those with a goal of delving into the field of virology. Coherent flow of topics, student-friendly language and extensive use of examples make knowledge.

This money-saving bundle includes Understanding Viruses, Third Edition Includes Navigate 2 Advantage access AND the entertaining and informative Encounters in Virology case studies.

This book is the result of 30+ interviews of genius-level science professionals in various fields. They have all been asked the same set of questions, and have answered, to the best of their ability and knowledge. What you're about to read is not from all the individuals, but from the most interesting 4 or 5 who answered each question. These interviews are for two kinds of audiences: 1) curious amateurs, and 2) science, engineering, or other professionals who have a general knowledge of the field but who are not experts in the field being covered. At the start of my journey in science, I already had a B.S. in Chemical Engineering, but that was from 1998, certainly not 2016 when I started. Reading scientific papers was difficult at first, but as I interviewed more scientists, researchers, clinicians and others, I started to pick up the vocabulary and thinking process needed to read scientific papers. After a year of reading, my comprehension increased, and now I can read papers in areas of Physics or other sciences in which I'm not conversant, I understand about 30%. In advanced math, since it's a language unto itself, especially at high levels, I am back to the 10% level. Apply yourself, and you'll be surprised at what you can learn.

Viruses as Complex Adaptive Systems

Understanding Coronaviruses

Itk Understanding Viruses 3e

Understanding Viruses, Third Edition and Encounters in Virology

Understanding Viruses Instructor Toolkit