The Development of a Reverse Transcriptase-polymerase Chain Reaction (RT-PCR) for Diagnosis of Porcine Epidemic Diarrhea Virus

Emerging and Transboundary Animal Viruses

Virology Methods Manual

An Epidemic of Absence

Brucellosis in Humans and Animals

Bacterial Pathogenesis and Antibacterial Control

Coronavirus Replication and Reverse Genetics

Porcine Viruses

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Nutrition, Immunity and Viral Infections

Fenner's Veterinary Virology

African swine fever (ASF) detection and diagnosis

Nucleic Acid Sensing and Immunity, Part ASAR

The Coronaviridae

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Prospects of Plant-Based Vaccines in Veterinary Medicine

Coronaviruses

Molecular Detection of Animal Viral Pathogens

Diseases of Swine

Characterization and Application of Monoclonal Antibodies Against Porcine Epidemic Diarrhea Virus

Manual on Livestock Disease Surveillance and Information Systems

Host And Pathogen Mechanisms Underpinning Viral Ecology And Emerging Infections

Swine Disease Manual

Preventing Transmission of Pandemic Influenza and Other Viral Respiratory Diseases

Validating Preventive Food Safety and Quality Controls

Coronavirus Disease 2019 (COVID-19)

Corona- and Related Viruses

Emerging Swine Viruses

Vesicular Diseases

Coronaviruses

Veterinary Microbiology

Foodborne Disease Outbreaks

Emerging and Re-emerging Infectious Diseases of Livestock

Salmonella

Animal Health at the Crossroads

Nidoviruses

The first volume to cover the entire nidovirus order, including arteriviruses, toroviruses, roniviruses, and several recently identified human coronaviruses. Provides crucial information for researchers in virology, epidemiology, biochemistry, cell biology, pathogenesis, and antiviral drug development. Synthesizes the most recent research on the basic microbiology of nidoviruses, their genetic replication, and immune system responses.
Addresses the impact of the recently developed systems for nidovirus reverse genetics, the unique mechanism of nidovirus RNA synthesis, virus-host cell interactions, emerging nidovirus infections, and potential targets for therapeutic interventions. Serves as essential reading for specialists and for those interested in viral replication and pathogenesis.

This book deals with the microorganism Salmonella. This bacterium is well known for a long time, being involved in systemic (typhus and paratyphus infections) and nonsystemic diseases such as food poisoning. Major and minor Salmonellae are widespread worldwide in developing countries and industrialized areas, respectively. In 2015, about 3576 Salmonella strains have been isolated from human infections in Italy. S. typhimurium and S. enteritidis are the most prevalent serotypes and represent 80% of cases of infections over the last 10 years. The antibiotic susceptibility decrease over the last decades is a big issue in the management of this bacterium, once considered easy to treat. The use of antibiotic combinations in order to overcome the microorganism resistance should be hoped.

The Virology Methods Manual is a comprehensive source of methods for the study, manipulation, and detection of viruses. Edited by Brian Mahy and Hillar Kangro, this work describes the most up-to-date, definitive techniques, provided by experts in each area, and presented with easy-to-use, step-by-step protocols. This new manual will satisfy the needs of virologists and all those working with viruses who need a practical guide to methods that work! Provides up-to-date techniques by experts worldwide Presents common, step-by-step protocols in an attractive, easy-to-use fashion Contains useful appendices including virus taxonomy, metabolic inhibitors, and Bio-safety in the virology laboratory

Provides a fully revised Eleventh Edition of the definitive reference to swine health and disease Diseases of Swine has been the definitive reference on swine health and disease for over 60 years. This new edition has been completely revised to include the latest information, developments, and research in the field. Now with full color images throughout, this comprehensive and authoritative resource has been redesigned for improved consistency
and readability, with a reorganized format for more intuitive access to information. Diseases of Swine covers a wide range of essential topics on swine production, health, and management, with contributions from more than 100 of the foremost international experts in the field. This revised edition makes the information easy to find and includes expanded information on welfare and behavior. A key reference for anyone involved in the swine industry, Diseases of Swine, Eleventh Edition: Presents a thorough revision to the gold-standard reference on pig health and disease Features full color images throughout the book Includes information on the most current advances in the field Provides comprehensive information on swine welfare and behavior Offers a reorganized format to make the information more accessible Written for veterinarians, academicians, students, and individuals and agencies responsible for swine health and public health, Diseases of Swine, Eleventh Edition is an essential guide to swine health.

Nucleic Acid Sensing and Immunity – PART A, Volume 344, provides a comprehensive overview of the nucleic acid machinery, from plants to mammalian, as well as their regulation. Specific chapters in this updated release include Molecular bases of discrimination between self from non-self nucleic acids, Intracellular RNA sensing in mammalian cells, Nuclear DNA damage and nucleic acid sensing, Negative regulation of nucleic acid sensing, Dendritic cell responses to exogenous nucleic acids, Activating the nucleic acid-sensing machinery for anticancer immunity, and Nucleic acid sensing and inflammasomes, amongst other topics. Provides an accurate, state-of-the-art resource on RNA sensing Includes the work of a well-known tumor immunologist Links intestinal host defense and viral nucleic acid sensing Presents a chapter on the negative regulation of DNA sensing, a timely topic

This book provides a comprehensive overview of recent novel coronavirus (SARS-CoV-2) infection, their biology and associated challenges for their treatment and prevention of novel Coronavirus Disease 2019 (COVID-19). Discussing various aspects of COVID-19 infection, including global epidemiology, genome organization, immunopathogenesis, transmission cycle, diagnosis, treatment, prevention, and control strategies, it highlights host-pathogen interactions.
interactions, host immune response, and pathogen immune invasion strategies toward developing an immune intervention or preventive vaccine for COVID-19. An understanding of the topics covered in the book is imperative in the context of designing strategies to protect the human race from further losses and harm due to SARS-CoV-2 infection causing COVID-19.

Molecular Detection of Animal Viral Pathogens presents expert summaries on state-of-the-art diagnostic approaches for major animal viral pathogens, with a particular emphasis on identification and differentiation at the molecular level. Written by specialists in related research areas, each chapter provides a concise overview of an individual virus.

Coronaviruses were recognized as a group of enveloped, RNA viruses in 1968 and accepted by the International Committee on the Taxonomy of Viruses as a separate family, the Coronaviridae, in 1975. By 1978, it had become evident that the coronavirus genomic RNA was infectious (i.e., positive strand), and by 1983, at least the framework of the coronavirus replication strategy had been perceived. Subsequently, with the application of recombinant DNA techniques, there have been remarkable advances in our understanding of the molecular biology of coronaviruses, and a mass of structural data concerning coronavirus genomes, mRNAs, and proteins now exists. More recently, attention has been focused on the role of essential and accessory gene products in the coronavirus replication cycle and a molecular analysis of the structure-function relationship of coronavirus proteins. Nevertheless, there are still large gaps in our knowledge, for instance, in areas such as the genesis of coronavirus subgenomic mRNAs or the function of the coronavirus RNA-dependent RNA polymerase. The diseases caused by coronaviruses have been known for much longer than the agents themselves. Possibly the first coronavirus-related disease to be recorded was feline infectious peritonitis, as early as 1912. The diseases associated with infectious bronchitis virus, transmissible gastroenteritis virus, and murine hepatitis virus were all well known before 1950.

A controversial, revisionist approach to autoimmune and allergic disorders considers the...
perspective that the human immune system has been disabled by twentieth-century hygiene and medical practices.

This is the first book to focus entirely on viruses in foods. It collates information on the occurrence, detection, transmission, and epidemiology of viruses in various foods. Although methods for bacterial detection in food are available, methods for detection of viruses in food, with the exception of shellfish, are not available. It is important, therefore, to develop methods for direct examination of food for viruses and to explore alternate indicators that can accurately reflect the virological quality of food. This book addresses these issues along with strategies for the prevention and control of viral contamination of food.

In 2009, the H1N1 influenza pandemic brought to the forefront the many unknowns about the virulence, spread, and nature of the virus, as well as questions regarding personal protective equipment (PPE) for healthcare personnel. In this book, the Institute of Medicine assesses the progress of PPE research and identifies future directions for PPE for healthcare personnel.

Corona- and related viruses are important human and animal pathogens that also serve as models for other viral-mediated diseases. Interest in these pathogens has grown tremendously since the First International Symposium was held at the Institute of Virology and Immunobiology of the University of Würzburg, Germany. The Sixth International Symposium was held in Quebec City from August 27 to September 1, 1994, and provided further understanding of the molecular biology, immunology, and pathogenesis of corona-, toro-, and arterivirus infections. Lectures were given on the molecular biology, pathogenesis, immune responses, and development of vaccines. Studies on the pathogenesis of coronavirus infections have been focused mainly on murine coronavirus, and mouse hepatitis virus. Neurotropic strains of MHV (e.g., JHM, A59) cause a demyelinating disease that has served as an animal model for human multiple sclerosis. Dr. Samuel Dales, of the University of Western Ontario, London, Canada,
gave a state-of-the-art lecture on our current understanding of the pathogenesis of JHM-induced disease.

The severe acute respiratory syndrome virus (SARS) first emerged in southern China in November 2002 and in the following months spread to 12 other countries in the Western Pacific region (where 95 per cent of the global cases took place) with devastating force. By July 2004, when the epidemic was finally declared over, it had killed nearly 800 people including many healthcare workers. Although by some standards, this first emerging and readily transmissible disease of the 21st century was not a big killer, it caused more fear and social disruption than any other outbreak of our time. Written largely by the public health experts and scientists involved in efforts to control the epidemic, this publication examines the emergence and spread of SARS, the public health measures taken to deal with it, the epidemiology of the SARS coronavirus (SAR-CoV) and vaccine development, and its impact on people and economies in individual countries, in the region and around the world.

Bacterial pathogens have been becoming the main problem in hospital and community-acquired infections. It is hard to treat the strains that are resistant to antibiotics, due to the causing recurrent and untreatable infections. In recent years, the combination treatments and the novel technologies have been preferred to overcome the emergence of antibacterial resistance of pathogens. In this book, examples of pathogenesis by clinical cases, control by antibiotics and bioactive antimicrobials, control by novel technologies with the collection of up-to-date researches and reviews are presented. This book can be useful for researchers interested in antibacterials, bioactive compounds, and novel technologies.

This book provides an in-depth explanation of the advantages and current limitations of recombinant plant-made vaccines for use in veterinary medicine, including for livestock, pets, and wild animals. Written by top scientists in the field, it discusses the background to and latest scientific advances in plant-made vaccines for the most commonly targeted veterinary infections. With the recent high-profile research into recombinant plant-made
therapeutics for Ebola and Zika viruses, it is likely that the products will be commercialized and widely used in the future. Plant-made therapeutics have a variety of advantages over those made in traditional systems; however, their most fruitful application may be in veterinary medicine, due to less stringent regulations and a greater need for low-cost products.

This book provides comprehensive knowledge on diseases in livestock that are caused by viruses, parasites and bacteria. Emerging and re-emerging pathogens are presented in detail for various animal groups and in-depth insights into pathogenesis and epidemiology will be provided for each of them. In addition, state-of-the-art treatment possibilities, control measures as well as vaccination strategies are discussed. The recent years have witnessed a sharp increase in the number of emerging and re-emerging infectious diseases of livestock and many of these, including Influenza, Corona and Hanta are of public health importance. The reasons for this development are manifold: changes in the climate, life cycle of vectors and increased global travel. Also, due to extensive deforestation, livestock are increasingly coming in direct contact with wild animals that are reservoirs of many emerging pathogens. Recent progress in diagnosis and management of emerging infectious diseases are also topic of this book.

Given the current worsening of the African swine fever situation worldwide, this field manual will be aimed to assist veterinarians in the prompt recognition and detection of the disease and the immediate control steps at farm level.

A comprehensive review of the current knowledge written by prominent scientists.

Porcine epidemic diarrhea virus (PEDV) causes acute diarrhea to pigs at all ages, resulting in high mortality rate of 80-100% in piglets less than one week old. Within one year after the outbreak in April 2013, PEDV has rapidly spread in the US and causes the loss of over 10% of the US pig population. Monoclonal antibody (mAb) is a key reagent for rapid diagnosis of
PEDV infection. In this study, we produced a panel of mAbs against nonstructural protein 8 (nsp8), spike (S) protein, and nucleocapsid (N) protein of PEDV. Four mAbs were selected, which can be used in various diagnostic assays, including indirect immunofluorescence assay (IFA), enzyme-linked immunoabsorbent assay (ELISA), Western Blot, immunoprecipitation (IP), immunohistochemistry (IHC) test and fluorescence in situ hybridization (FISH). The mAb 51-79 recognizes amino acid (aa) 33-60 of nsp8, mAb 70-100 recognizes aa1371-1377 of S2 protein, and mAb 66-155 recognizes aa 241-360 of N protein, while mAb 13-519 is conformational. Using the mAb70-100, the immunoprecipitated S2 fragment was examined by protein N-terminal sequencing, and cleavage sites between S1 and S2 was identified. In addition, this panel of mAbs was further applied to determine the infection site of PEDV in the pig intestine. IHC test result showed that PEDV mainly located at the mid jejunum, distal jejunum and ileum. Results from this study demonstrated that this panel of mAbs provides a useful tool for PEDV diagnostics and pathogenesis studies.

This detailed volume provides diagnosticians and researchers with practical methodologies and approaches to tackle animal coronaviruses. It explores conventional immunohistochemistry, virus neutralization, enzyme-linked immunosorbent assays, expression and purification of recombinant viral proteins, and various molecular assays, including conventional and real-time reverse transcription-PCR, reverse genetics methodology, and next generation sequencing and sequence analyses. As part of the Springer Protocols Handbooks series, chapters contain readily reproducible laboratory protocols as well as expert tips on troubleshooting and avoiding known pitfalls. Practical and authoritative, Animal Coronaviruses serves as an ideal reference for researchers examining a wide variety of coronavirus species in the Coronaviridae.

This book, which is the first volume of the book series-Livestock Diseases and Management, summarizes the prominence and implications of the emerging and transboundary animal viruses. Although the livestock plays an important role in the economy of many countries, the emerging and transboundary animal viral diseases possess a serious risk to the animal-agriculture
sector and food security globally. The book describes the precise and up-to-date information on animal viral diseases which have emerged in the recent past or are re-emerging due to various environmental factors and those which are not bounded in restricted national boundaries and attained the transboundary status. The chapters summarize the recent advancements in the molecular state-of-art tools towards the development of diagnostics, prophylactics, and therapeutics of these viruses. It also explicitly describes the challenges imposed by the emerging and transboundary viral infections and our preparedness to counter them.

This detailed new edition provides a comprehensive collection of protocols applicable to all members of the Coronavirinae sub-family currently and that are also transferrable to other fields of virology. Beginning with a section on detection, discovery, and evolution, the volume continues with coverage of propagation and titration of coronaviruses, genome manipulation, study of virus-host interactions, as well as imaging coronavirus infections. Written for the highly successful Methods in Molecular Biology series, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, Coronaviruses: Methods and Protocols, Second Edition serves as a valuable guide to researchers working to identify and control viruses with increased potential to cross the species barrier and to develop the diagnostics, vaccines, and antiviral therapeutics that are required to manage future outbreaks in both humans and animals.

Defining importance of diseases; FAO/EMPRES: a new emphasis; Early detection; The need for surveillance; What is surveillance?; Surveillance on the ground; Putting a surveillance system in place; Surveillance for what?; Surveillance when and how?; Surveillance in resource-poor countries; Information systems; Setting the goals; Determining needs and outputs; Computerisation; Questionnaire design; Databases; Data quality control; Feedback; The role of GIS; Motivating and training field staff; Awareness creation among decision-makers; Using
surveillance as a management tool; FAO involvement in surveillance and information systems development; Examples of questionnaires.

The Swine Disease Manual is an informative reference for students, instructors, practitioners, technicians, and anyone working in the swine industry. It provides a concise overview of most diseases and syndromes affecting swine, with diseases grouped by etiologic agent. The fourth edition has been completely revised and updated, and contains new information on clostridial disease, salmonellosis, porcine circovirus, and more! The book is 170 pages, indexed, and contains a section of tables that provide a quick overview of diseases affecting a single body system and aid in differential diagnosis. An excellent study guide for veterinary board examinations!—publisher website.

Coronaviruses represent a major group of viruses of both molecular biological interest and clinical significance in animals and humans. During the past two decades, coronavirus research has been an expanding field and, since 1980, an international symposium was held every 3 years. We organized the yth symposium for providing an opportunity to assess important progress made since the last symposium in Cambridge (U. K.) and to suggest areas for future investigations. The symposium, held in September 1992, in Chantilly, France, was attended by 120 participants representing the majority of the laboratories engaged in the field. The present volume collects 75 papers which were presented during the yth symposium, thus providing a comprehensive view of the state of the art of Coronavirology. The book is divided into 7 chapters. The first chapters gather reports dealing with genome organization, gene expression and structure-function relationships of the viral polypeptides. New sequence data about as yet poorly studied coronaviruses – canine coronavirus CCY and porcine epidemic diarrhoea virus PEDY – are presented. Increasing efforts appear to be devoted to the characterization of products of unknown function, encoded by various open reading frames present in the coronavirus genomes or derived from the processing of the large polymerase polyprotein. Due to the extreme size of their genome, the genetic engineering
of coronaviruses through the production of full length cDNA clones is presently viewed as an unachievable task.

The Microbiome in Health and Disease, Volume 171 in the Progress in Molecular Biology and Translational Science series, provides the most topical, informative and exciting monographs available on a wide variety of research topics. The series includes in-depth knowledge on the molecular biological aspects of organismal physiology, with this release including chapters on Microbiome in health and disease, CNS development and microbiome in infants, A gut feeling in ALS, Microbiome (Virome) and virus infection, Bugs and Drugs: microbiome in medicine metabolism, Immunity, T cells, and microbiome, Salmonella (Bacterial) infection and cancer: of mice and men, and many other highly researched topics. Provides a novel theme and multiple disciplinary topics of microbiome research in basic and translational studies Presents an updated collection on bacteria, virus, fungi and their interactions in microbiome Includes a timely discussion on the tools and methods used for modeling and analysis of microbiome data

Validating Preventive Food Safety and Quality Controls: An Organizational Approach to System Design and Implementation is a how-to-guide for food industry personnel providing essential preventative control system guidance to help design and implement scientifically verifiable food safety controls in food processes. This reference includes proven tools and techniques to move positively towards the validating preventive control challenges that the food industry is facing, and helps implement compliance strategies to adhere to the food safety and modernization act requirements. Covers a systematic strategy for validating preventive controls Presents ways to learn how to improve control over suppliers and includes strategies to evaluate food risk and supplier performance Prepares your business to comply with changing food safety and quality planning, standards, and audits Includes Chipotle case study which challenges students to plan a valid preventive system

Human coronaviruses caused the SARS epidemic that infected more than 8000 people, killing about ten percent of them in 32 countries. This book provides essential information on these
viruses and the development of vaccines to control coronavirus infections.

Brucellosis, also known as undulant fever, Mediterranean fever, or Malta fever, is an important human disease in many parts of the world. It is a zoonosis and the infection is almost invariably transmitted to people by direct or indirect contact with infected animals or their products. These Guidelines are designed as a concise, yet comprehensive, statement on brucellosis for public health, veterinary and laboratory personnel without access to specialized services. They are also to be a source of accessible and updated information for such others as nurses, midwives and medical assistants who may have to be involved with brucellosis in humans. Emphasis is placed on fundamental measures of environmental and occupational hygiene in the community and in the household as well as on the sequence of actions required to detect and treat patients.

Fenner's Veterinary, Virology, Fourth Edition, is the long awaited new edition of Veterinary Virology, 3e, which was published in 1999. Fully revised and updated by the new author team, part I presents the fundamental principles of virology related to animal infection and disease, and part II addresses the clinical features, pathogenesis, diagnosis, epidemiology and prevention of individual diseases. New to this Edition New author team - one main author to ensure that the book reads like an authored book but with the benefit of using experts to contribute to specific topics Text has been refocused - part I has been condensed and where appropriate incorporated into part II to make it more user friendly The number of figures have been increased and are now in full color Fully revised and updated to include the latest information in the field of veterinary virology Beautifully illustrated color figures throughout Organized and current information provided by an expert team of authors

"These guidelines have been written for public health practitioners, food and health inspectors, district and national medical officers, laboratory personnel and others who may undertake or participate in the investigation and control of foodborne disease outbreaks."--P. 4 of cover.
Veterinary Microbiology, Third Edition is a comprehensive reference on the bacterial, fungal, and viral pathogenic agents that cause animal disease. Now in full color with improved images throughout, the new edition has been thoroughly updated to reflect information from current research and diagnostic and clinical publications. Key changes include a review of microbial cell structure and function and increased emphasis on the key points of pathogenesis and host responses to infection. Organized into four sections, the Third Edition begins with an updated and expanded introductory section on infectious disease pathogenesis, diagnosis and clinical management. The second section covers bacterial and fungal pathogens, and the third section describes viral diseases and viruses. The final section presents a systematic approach of describing infection and disease of animals. Equally useful for beginning veterinary students and seasoned practitioners, Veterinary Microbiology offers a thorough introduction and reference text for veterinary infectious disease.

The confirmed case of "mad cow" disease (BSE) in June 2005 illustrates the economic impact of disease outbreaks, as additional countries closed their markets to U.S. beef and beef products. Emerging diseases also threaten public health---11 out of 12 of the major global disease outbreaks over the last decade were from zoonotic agents (that spread from animals to humans). Animal Health at the Crossroads: Preventing, Detecting, and Diagnosing Animal Diseases finds that, in general, the U.S. animal health framework has been slow to take advantage of state-of-the-art technologies being used now to protect public health; better diagnostic tests for identifying all animal diseases should be made a priority. The report also recommends that the nation establish a high-level, authoritative, and accountable coordinating mechanism to engage and enhance partnerships among local, state, and federal agencies, and the private sector.

This book is a printed edition of the Special Issue "Porcine Viruses" that was published in Viruses
Hardly a day goes by without news headlines concerning infectious disease threats. Currently the spectre of a pandemic of influenza A|H1N1 is raising its head, and heated debates are taking place about the pro’s and con’s of vaccinating young girls against human papilloma virus. For an evidence-based and responsible communication of infectious disease topics to avoid misunderstandings and overreaction of the public, we need solid scientific knowledge and an understanding of all aspects of infectious diseases and their control. The aim of our book is to present the reader with the general picture and the main ideas of the subject. The book introduces the reader to methodological aspects of epidemiology that are specific for infectious diseases and provides insight into the epidemiology of some classes of infectious diseases characterized by their main modes of transmission. This choice of topics bridges the gap between scientific research on the clinical, biological, mathematical, social and economic aspects of infectious diseases and their applications in public health. The book will help the reader to understand the impact of infectious diseases on modern society and the instruments that policy makers have at their disposal to deal with these challenges. It is written for students of the health sciences, both of curative medicine and public health, and for experts that are active in these and related domains, and it may be of interest for the educated layman since the technical level is kept relatively low.

Sequence of the nucleocapsid PCR fragment revealed two amino acid difference between the two isolates. Analysis of the spike PCR fragments revealed deletions, insertions, and substitutions between the two isolates. The significance of the sequence variation is not known. Pigs were inoculated with PEDV and clinical samples evaluated by an indirect immunoperoxidase antibody test, electron microscopy, RT-PCR, and virus isolation. Virus isolation attempts were not successful. Coronavirus particles were detected on days two through five post-inoculation. Antibodies were detected 2 weeks postinoculation. PEDV RNA was detected in fecal samples from day one through day nine.