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Editorial: Recent advances in diagnosis, prognosis, and therapy of oncogenic virus- driven tumors

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Editorial on the Research Topic

Recent advances in diagnosis, prognosis, and therapy of oncogenic
virus-driven tumors

In recent years, the understanding of the molecular mechanisms underlying virus-induced tumorigenesis has grown exponentially, leading to breakthroughs in diagnosis, prognosis, and therapy. The development of cancer malignancy is multifaceted, involving a complex interplay of various factors rather than relying solely on one aspect. This intricate process encompasses genetic mutations, epigenetic modifications, environmental factors, and lifestyle choices. While numerous factors play a role in cancer, it is noteworthy that certain viruses, known as oncogenic viruses, can drive the cancer onset and progression in humans (1, 2). Remarkably, oncogenic viruses are implicated in a notable proportion of human cancers, accounting for >20% of cases across different cancer types (3, 4).

Oncogenic viruses are commonly classified as either DNA or RNA viruses. Notable viral agents, including high-risk types of human papillomavirus (HPV) (5), human polyomaviruses (HPyV) (6), Epstein-Barr virus (EBV), hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus type 1 (HIV-1), human T cell lymphotropic virus type 1 (HTLV-1), and human herpesvirus type 8 (HHV-8 or Kaposi's sarcoma herpesvirus, KSHV), have been designated as human carcinogens (Group 1) by the International Agency for Research on Cancer (IARC) (<https://monographs.iarc.who.int/list-of-classifications/>), while additional viruses, such as Merkel cell polyomavirus (MCPyV), are currently considered as probably carcinogenic in humans (Group 2A). Furthermore, several other viruses have been postulated, to varying degrees, to potentially contribute to oncogenesis. Of note, patients affected by immune system impairments, such as those immune-suppressed/immune-compromised, are more prone to develop oncogenic virus-driven tumors because unable to counteract in full, with their immune system, the oncogenic potential of DNA and RNA tumor viruses.

Viruses are recognized for their ability to replicate by hijacking host mechanisms to serve their own purposes. Oncogenic viruses possess the unique ability to induce tumorigenesis, facilitating the spread of malignancy from infected cells to adjacent healthy cells (1, 3, 4). The

Recent Advances In Virus Diagnosis

**Vivek K. Chaturvedi, Dawesh P.
Yadav, Mohan P. Singh**



Recent Advances In Virus Diagnosis:

Recent Advances in Virus Diagnosis M.S. McNulty, J.B. McFerran, 2012-12-06 The traditional approach to diagnosis of virus infections by isolation of the causative virus is usually both slow and expensive. More recently the emphasis has been on the direct detection of viruses or viral antigens in clinical specimens. This can be done using established techniques such as immunofluorescence or electron microscopy or by newly developed biochemical methods. The purpose of this meeting was to review these and other developments in the laboratory diagnosis of virus infections. We would like to thank all those who contributed to the success of this meeting. In particular we are grateful to the CEC for financial sponsorship to Professor C Dow, Director of the Veterinary Research Laboratories for help in organising the meeting and to Miss B Hamilton for her excellent typing of the manuscripts.

M S McNulty J B McFerran VII CONTENTS Page Preface V VIRAL DIAGNOSIS BY IMMUNOFLUORESCENCE P S Gardner APPLICATIONS OF IMMUNOFLUORESCENCE IN VETERINARY VIRAL DIAGNOSIS M S McNulty and G M Allan 15 TAGGING OF VIRAL ANTIGENS USING IMMUNOPEROXIDASE AND IMMUNOGOLD TECHNIQUES R Ducatelle F Castryck and J Hoorens 27 DETECTION OF BVD VIRUS IN VIRAEMIC CATTLE BY AN INDIRECT IMMUNOPEROXIDASE TECHNIQUE A Meyling 37 VIRAL DIAGNOSIS BY ELECTRON MICROSCOPY J D Almeida 47 CAPTURE ASSAYS FOR THE DETECTION OF VIRUS SPECIFIC IgM ANTIBODY R S Tedder 60 DETECTION AND IDENTIFICATION OF PAPILLOMAVIRUSES IN BENIGN AND MALIGNANT TILM JRS OF CATTLE M S Campo 72 DETECTION OF VIRAL NUCLEIC ACIDS IN CELL CULTURES

Recent Advances in the Diagnosis and Management of Plant Diseases L.P. Awasthi, 2015-11-19 This book is a compilation of the most challenging and significant chapters on the diagnosis and management of important bacterial, fungal, viral, viroid, phytoplasma, non-parasitic diseases and various physiological disorders in various crops. The chapters have been contributed by eminent plant pathologists having wide experience of teaching and research on various crops with different types of diseases which cause great economic losses. The book would be very useful for students, teachers and researchers of plant pathology. This book highlights recent advances made in the development of new types of resistance in host plants and alternative strategies for managing plant diseases to improve food quality and reduce the negative public health impact associated with plant diseases. Having entered into 21st century, advancements in the diagnosis of plant pathogens and plant disease management need to be closely examined and adequately applied so that newer challenges facing plant pathology could be adequately addressed in attaining food security for the growing population. Substantial advancements have been made in terms of expanding knowledge base of the biology of plant-microbial interactions, disease management strategies and application and practice of plant pathology. Application of molecular biology in plant pathology has greatly improved our ability to detect plant pathogens and in increasing our understanding of their ecology and epidemiology. Similarly, new technologies and resources have been evolved for the development of sustainable crop protection systems by different control strategies against various pests and pathogens that

are important components of the integrated pest management programme Natural products and chemical compounds discovered as a result of basic research and molecular mechanisms of pathogenesis have led to the development of biorational pesticides Biological control has been found to be the most significant approach to plant health management during the twentieth century and promises using modern biotechnology to be even more significant in the twenty first century

Recent Advances in Animal Virology Yashpal Singh Malik,Raj Kumar Singh,Mahendra Pal Yadav,2019-11-14 This book discusses the prominence and implication of the viral diseases that are a major threat to animals around the globe A number of these diseases have also shown links with human populations which has implications for public health This book offers detailed and up to date information on viral diseases in livestock and poultry that were and or are still a problem Including cutting edge developments it also highlights several landmark contributions in the field of virology from India Additionally the book features tables and figures showing important clinical data and recommendations with references for further information It also explores the economic impact of viral diseases for farmers and the livestock industry providing several examples Further it presents the latest information on viral diseases in global context with a focus on state of art molecular tools for the development of diagnostics prophylactics and therapeutics Lastly the book also describes the challenges posed by the emerging and transboundary viral infections and our preparedness to counter them

Recent Advances in Cancer Diagnostics and Therapy Anjana Pandey,Saumya Srivastava,2022-01-18 This book provides information about different types and stages of cancer and their subtypes with their respective molecular mechanisms etiology histopathology and cellular origins This book also provides detailed information about cancer incidence mortality and different types of technologies both bio and nano employed in cancer diagnosis and screening and their applications in cancer therapies This book informs readers about molecular mechanisms of cancer diagnosis and therapies along with different computational techniques used on a single platform The chapters include a broad and integrated perspective on cancer related topics This book covers both conventional and emerging techniques employed in cancer screening and diagnosis including imaging biomarker and electrochemical nanosensor based approaches with detailed information on sensor development Similarly this book also covers the mechanisms of different conventional and emerging herbal and nano therapies used in cancer treatment The authors discuss applications of different computational and mathematical tools such as machine learning methods that can be employed in cancer diagnosis and therapy at the level of personalized medicine Features Offers an integrated approach to provide information about all aspects of cancer biology diagnosis and therapy Focuses on both conventional and emerging tools techniques applicable in cancer screening and diagnosis Covers the mechanisms of conventional and emerging anticancer drugs and therapies Provides insights about a personalized medicine based approach in cancer diagnosis and therapy This book is essential for university students course lecturers researchers and industrialists working in the fields of cancer biology medicine and pharmacology

New Advances in Crop Disease

Management Sangita Sahni, Ganesh Thapa, Bishun Deo Prasad, 2024-11-08 Crop protection is becoming increasingly important due to the need for food security and to meet growing environmental challenges This new book New Advances in Crop Disease Management provides readers with an updated and comprehensive overview of diverse crop protection strategies with special emphasis on the recent advances in crop protection approaches fundamental concepts principles methodology relationships and benefits for crop protection and human health It covers a variety of disciplines such as plant pathology biochemistry cell and molecular biology plant physiology host pathogen interactions precision agriculture decision analysis disease risk new ways of exploiting host genetic diversity including host resistance deployment biological control and microbial interactions surveillance and detection technologies and the consequences of climate change and signaling The book contains twenty chapters and begins with the role of biotechnology and its implications in crop disease detection and protection It then discusses the plant response to pathogen attack molecular basis of host pathogen interaction and induction of defense response viz R gene phytoalexins etc and advancement in early detection methodologies It also delves into induced mutation as new technology for resistant crop development The last part details the recent approaches and applications of resistant crop lines development including resistant pulses development approaches mining and mapping of R genes gene pyramiding lactic acid bacteria as biocontrol agents effecteromics and nanotechnology in crop disease management and the applications of phytochemicals and CRISPR Cas in the development of disease resistant crops for future New Advances in Crop Disease Management will be a key reference in the field of crop science and plant pathology agriculture for faculty and industry professionals as well as a valuable textbook reference for undergraduate and graduate students

Respiratory Virus Infection: Recent Advances Kelvin To, Ville Peltola, Shin-Ru Shih, 2020-07-14 Recent Advances in Psychiatry from Psycho-Neuro-Immunology Research: Autoimmunencephalitis, Autoimmune-Encephalopathy, Mild Encephalitis

Karl Bechter, David Brown, Souhel Najjar, 2019-08-12 Growing evidence derived from cerebrospinal fluid CSF neuropathological imaging genetic and epidemiological studies link neuroinflammation and immune dysregulation to a subset of individuals with a variety of severe mental disorders SMDs including affective and non affective psychotic disorders Further the recent discoveries of neuronal surface antibodies NSAs in autoimmune encephalitis AE presenting with diverse neuropsychiatric disorders such as psychosis and cognitive decline among many others provides further support to the notion that CNS autoimmunity and neuroinflammation can contribute to the neurobiology of psychiatric disturbances Further these immune mechanisms may contribute to a subset of patients currently diagnosed as having treatment resistant SMDs such as schizophrenia and major depressive disorder Additionally mounting data indicate that various infections can serve as an immunological trigger of aberrant immune responses presumably by causing release of excess neural antigen thereby giving rise to NSAs or aberrant immune cellular responses to give rise to primary or secondary psychiatric disorders such as schizophrenia and those associated with AE respectively Collectively these findings support the mild encephalitis hypothesis

of SMD The significant overlap among AE associated psychosis systemic autoimmune disorder associated psychosis and psychotic disorders associated with pathological processes involving inflammation and immune dysregulation has also prompted some authors to adopt the term autoimmune psychosis AP This term reflects that this psychosis subtype is mechanistically linked to complex neuroimmune and inflammatory signalling abnormalities that can be responsive to early immunomodulatory treatment It also suggests that a subset of AP might represent an incomplete or forme fruste subtype of AE presenting with dominant or pure psychiatric symptoms mimicking primary psychiatric illnesses Because data indicate that delayed diagnosis and treatment may lead to permanent sequelae early recognition of AP utilizing neurodiagnostic workup e g CSF analysis neuroimaging and EEG and its early treatment with appropriate immunotherapy are paramount to a meaningful recovery This eBook will provide an overview of the current knowledge and research areas from epidemiology risk factors and diagnosis to the management of these conditions in this rapidly emerging field helping to bridge the gaps in knowledge that currently exist in the disciplines of Psychiatry Neurology and Neuroimmunology

Recent Advances in AI-enabled Automated Medical Diagnosis Richard Jiang,Li Zhang,Hua-Liang Wei,Danny Crookes,Paul Chazot,2022-10-20

Developments in deep learning in the past decade have led to phenomenal growth in AI based automated medical diagnosis opening a door to a new era of both medical research and medical industry It is a golden age for researchers involved in the development and application of advanced machine learning techniques for medical and clinical problems This book captures the most recent important advances in this cross disciplinary topic and brings the latest advances to a wide audience including experts researchers students industry developers and medical services

Advances and Insights in the Diagnosis of Viral Infections and Vaccines Development in Animals Jingqiang Ren,Hongliang Chai,Lihua Wang,Jianke Wang,Hewei Zhang,2024-07-09 Viral infections in animals occasionally develop potentially fatal diseases that affect almost all organs Especially in zoonotic diseases the causative agents that usually exist in animals can be transmitted between animal species to humans directly or via a vector Throughout recent history disease outbreaks and pandemics including SARS H7N9 Ebola and COVID 19 have led to a dramatic loss of human life worldwide and harmed economic growth The most effective strategies for the control of disease are vaccination and early diagnosis Vaccines directed against viral and bacterial pathogens prevent catastrophic losses of life in humans other animals and plants and are considered among the greatest public health achievements Rapid and accurate detection of pathogens and identification of the aetiologic agent play a crucial role at every step of disease management In the case of zoonotic illnesses early detection of wildlife aids in the establishment of a surveillance system allowing for the introduction of efficient and timely disease control interventions to prevent transmission from animal to human At present variations and deletions in the genome of the virus are of common occurrence during evolution coupled with the new emerging disease and cross species disease transmission which are increasing the potential for the transmissibility and severity of the disease For this reason developing safe and effective

vaccines and enhancing the sensitivity and specificity of the diagnostic methods are urgently required The scope of this research topic will share and discuss findings in the areas of diagnosis of viral diseases or vaccine development for all animal species including terrestrial and aquatic mammals fishes insects birds etc Recent Advances in Liver Diseases and Surgery

Hesham Abdeldayem,Ahmed Elshaarawy,Tary Salman,2015-10-28 This book presents the most recent advances in the field of liver diseases and surgery including the remarkable advances in Hepatitis C therapy liver tumors injuries cysts resections transplantation and preoperative management of patients with liver diseases The editors are the dean and vice deans of the National Liver Institute Menoufia University a dedicated international center of excellence and a leading medical institution in the Middle East for the diagnosis and management of liver diseases and advanced training and research in hepatobiliary sciences The authors are leading experts from four continents across the globe North America Europe Asia and Africa In other words the book team reflects an international dream team of experts in the area of liver diseases **Recent Advances in Diagnostic Neuroradiology**

Ph. Demaerel,2013-12-20 Diagnostic neuroradiology is undergoing such rapid change that standard texts are quickly becoming outdated in important respects Recent Advances in Diagnostic Neuroradiology is designed to complement the general textbooks of neuroradiology by documenting and discussing the progress that has been achieved Following six introductory chapters 26 important topics in brain and spinal imaging are discussed in detail with appropriate illustrations and a review of the most recent literature Each of these topics has specifically been chosen in order to summarize recent developments and to document the state of the art in the field This book written by acknowledged experts in the field will be of relevance and importance to all with an interest in neuroradiology *Innovative Approaches in Diagnosis and Management of Crop Diseases*

Rakesh Kumar Singh,Gopala,2021-09-28 This book is the first of the 3 volume Innovative Approaches in Diagnosis and Management of Crop Diseases which provides an abundance of new research and information on major diseases of various crops along with new techniques and technology for the detection of plant pathogens along with appropriate management strategies Divided into three volumes and with chapters written by renowned and expert scientists working in different areas of plant pathology the volumes cover important diseases of crops incited by bacteria fungi viruses viroids phytoplasma and nematodes It addresses these disease challenges to commercial field and horticultural crops and their management Chapters cover recent advances in diagnosis and detection of diseases of rice wheat pulses guava aonla cucurbits ginger sesame cotton pigeonpea field pea small millets maize and cruciferous vegetables as well as ornamental plants Innovative Approaches in Diagnosis and Management of Crop Diseases Volume 1 focuses on the Mollicute class of bacteria It looks at the detection diagnosis and management of phytoplasma diseases and viroids CRISPR Cas9 genome editing in plants for virus resistance next generation sequencing technologies and more Key features Presents diverse research of leading plant pathologists on detection diagnosis and management of crop diseases Shares innovative and emerging techniques for diagnosis and management of

major plant diseases Covers a vast array of important crops and their diseases Volume 2 looks specifically at the diseases of field and horticultural crops while Volume 3 reviews the advances in the use of nanomolecules and biocontrol agents

Diagnosis and management of biotic stresses play a pivotal role in efficient agriculture production and together these volumes of Innovative Approaches in Diagnosis and Management of Crop Diseases provide reviews of crucial research to effectively advance the detection diagnosis and management of crop diseases

Veterinary Virology Frank J. Fenner, Peter A. Bachmann, E. Paul J. Gibbs, 2014-06-28 *Veterinary Virology* deals with basic biomedical virology and the clinical discipline of infectious diseases The book discusses the principles of virology as effecting future developments in the search for preventive and management of infectious diseases in animals whether singly or as a whole herd or flock Part I explains the principles of animal virology including the structure composition classification nomenclature cultivation and assay of viruses This part also discusses viral genetics replication and evolution including mutation and genetic engineering The book also reviews the pathogenesis of viruses host resistance and susceptibility as well as the mechanisms of persistent infections and tumor induction Part II deals with viruses found in domestic animals this part also explains in detail the properties replication methods pathogenesis immunity diagnosis and control of some common viruses The book discusses some other families of viruses of which no members are yet known as to have caused serious or important diseases in animals Veterinarians immunologists virologists molecular researchers students and academicians in the discipline of virology and cellular biology as well as livestock owners will find this book helpful

Recent Advances in Biosensor Technology: Volume 2 Vivek K. Chaturvedi, Dawesh P. Yadav, Mohan P. Singh, 2023-09-18 *Recent Advances in Biosensor Technology* Volume 1 is a comprehensive guide to the latest developments in biosensor technology written by experts in bioengineering and biosensor development The book is an essential resource for researchers and biomedical engineers interested in the latest developments in biosensor technology The volume covers the applications of biosensors in different fields It features 9 chapters that cover key themes in this area including biosensors for natural bioactive compounds wearable biosensors in healthcare 3D bioprinting and biosensors biosensors for neurodegenerative diseases protein biosensing and pathogen detection biosensors for diabetes diagnosis paper based biosensors in diagnostics enzymatic biosensors and their applications and nanobiosensors in agriculture One of the key features of this book is its detailed discussion of the novel research findings in biosensor technology providing readers with the most up to date information in the field Each chapter includes a comprehensive review of relevant literature as well as practical examples to demonstrate the potential applications of biosensors in various fields Furthermore this book includes detailed references for further reading making it an excellent resource for readers looking to deepen their understanding of biosensor technology

Recent Advances on Soft Computing and Data Mining Rozaida Ghazali, Nazri Mohd Nawi, Mustafa Mat Deris, Jemal H. Abawajy, 2019-12-04 This book provides an introduction to data science and offers a practical overview of the concepts and techniques that readers

need to get the most out of their large scale data mining projects and research studies It discusses data analytical thinking which is essential to extract useful knowledge and obtain commercial value from the data Also known as data driven science soft computing and data mining disciplines cover a broad interdisciplinary range of scientific methods and processes The book provides readers with sufficient knowledge to tackle a wide range of issues in complex systems bringing together the scopes that integrate soft computing and data mining in various combinations of applications and practices since to thrive in these data driven ecosystems researchers data analysts and practitioners must understand the design choice and options of these approaches This book helps readers to solve complex benchmark problems and to better appreciate the concepts tools and techniques used

Advanced Nanomaterials for Point of Care Diagnosis and Therapy Sushma Dave,Jayashankar Das,Sougata Ghosh,2022-03-11 Advanced Nanomaterials for Point of Care Diagnosis and Therapy provides an overview of technological and emerging novel trends in how point of care diagnostic devices are designed miniaturized built and delivered at different healthcare set ups It describes the significant technological advances in fundamental diagnostic components and recent advances in fully integrated devices designed for specific clinical use The book covers state of the art fabrication of advances materials with broad spectrum therapeutic applications It includes drug delivery biosensing bioimaging and targeting and outlines the development of inexpensive effective and portable in vitro diagnostics tools for any purpose that can be used onsite Sections also discuss drug delivery biosensing bioimaging and targeting and various metal metal oxide and non metal based nanomaterials that are developed surface modified and are being explored for diagnosis targeting drug delivery drug release and imaging The book concludes with current needs and future challenges in the field Outlines the needs and challenges of point of care diagnostics Describes the fundamentals of application of nanomaterials as interesting building blocks for biosensing Overviews the different detection methods offered by using nanomaterials Explains the advantages and drawbacks of nanomaterial based sensing strategies Describes the opportunities offered by technology as a cost efficient biosensing platform

Recent Developments in Applied Microbiology and Biochemistry Viswanath Buddolla,2020-10-15 Recent Developments in Applied Microbiology and Biochemistry Vol 2 provides a comprehensive treatment and understanding on application oriented microbial concepts giving readers insights into recent developments in microbial biotechnology and medical agricultural and environmental microbiology Discusses microbial proteome analyses and their importance in medical microbiology Explores emerging trends in the prevention of current global health problems such as cancer obesity and immunity Shows recent approaches in the production of novel enzymes from environmental samples by enrichment culture and metagenomics approaches Guides readers through the status and recent developments in analytical methods for the detection of foodborne microorganisms

Training Bulletin ,1980 **New Advances on Zika Virus Research** Luis Martinez-Sobrido,Fernando Almazan Toral,2019-04-02 Zika virus ZIKV is a mosquito borne member of the Flaviviridae family that historically has been associated with mild febrile illness However the recent outbreaks in Brazil in

2015 and its rapid spread throughout South and Central America and the Caribbean together with its association with severe neurological disorders including fetal microcephaly and Guillain Barr syndrome in adults have changed the historic perspective of ZIKV. Currently ZIKV is considered an important public health concern that has the potential to affect millions of people worldwide. The significance of ZIKV in human health and the lack of approved vaccines and/or antiviral drugs to combat ZIKV infection have triggered a global effort to develop effective countermeasures to prevent and/or treat ZIKV infection. In this Special Issue of Viruses we have assembled a collection of 32 research and review articles that cover the more recent advances on ZIKV molecular biology, replication and transmission, virus-host interactions, pathogenesis, epidemiology, vaccine development, antivirals and viral diagnosis. Current advances in genomics and gene editing tools for crop improvement in a changing climate scenario Vijay Rani Rajpal, Deepmala Sehgal, Ravi Valluru, Sukhwinder Singh, 2023-07-10

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