Molecular pathogenesis of virus infections

Virus and prion diseases remain a major public health threat, in both developed and developing countries. The worldwide HIV pandemic is but one example of a newly emerged virus disease; other potential threats come from exotic viruses such as SARS, Ebola and Hantaan viruses. Older human viruses such as influenza, papilloma, herpes and the hepatitis viruses still cause major health problems. Furthermore, as well as causing acute infections, some viruses may also establish persistent infections which can lead to the development of chronic diseases, including cancer. This symposium book covers central factors that influence the pathogenicity of virus and prion infections. Topics range from innate and adaptive immune responses and virus evasion of host defences to details of selected virus–host interactions, including those involving dengue virus, HIV, influenza viruses, coronaviruses, hepatitis C virus, herpesviruses, papillomaviruses, African swine fever virus and poxviruses.

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The molecular mechanisms of replication as well as the pathogenesis of several coronaviruses have been actively studied since the 1970s. Some of the animal viruses, such as porcine transmissible gastroenteritis virus (TGEV), bovine coronavirus (BCoV), and avian infectious bronchitis viruses (IBV), are of veterinary importance. The murine coronavirus mouse hepatitis virus (MHV) is studied as a model for human disease. Group II also includes viruses that infect both mice and rats. The role of the immune response to MHV infection in viral clearance and pathogenesis in the CNS has been well characterized (157). Both antibody- and cell-mediated immune responses are required to protect against coronavirus infections. Open access peer-reviewed chapter. Pathogenesis of Viral Respiratory Infection. By Ma. Eugenia Manjarrez-Zavala, Dora Patricia Rosete-Olvera, Luis Horacio Gutierrez-Gonzalez, Rodolfo Ocadiiz-Delgado and Carlos Cabello-Gutierrez. Molecular interactions between the virus and the cell result in a phenomenon called pathogenesis. It can be analyzed at different levels ranging from the early interactions (cellular receptors) to the expression and suppression of cellular and viral genes, resulting in the production of inflammatory, pro-apoptotic or anti-apoptotic proteins, whose presence or absence induce the activation of complex networks of proteins that interact in cellular signaling pathways [3]. The sensitivity or resistance of a cell to.