## 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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*Front cover illustration:* Coloured scanning electron micrograph of a cluster of coronavirus particles. Eye of Science / Science Photo Library.

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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.Â  The extensive studies of the pathogenesis of MHV and the resulting host immune response have been reviewed (206, 214, 242).Â  Infection of macrophages then leads to viremia and systemic spread of the virus, including inflammation of the abdominal and thoracic cavities and causing occasional ocular and neurological disorders (1, 71). A complication of FIPV infection involves immune-mediated pathology (138). Regarding the molecular pathogenesis, the hemagglutinin protein (H) plays a crucial role both in the antigenic recognition and the viral interaction with SLAM and nectin-4, the host cellsâ€™ receptors. These cellular receptors have been studied widely as CDV receptors in vitro in different cellular models.Â  chimeric viruses that are to be employed in different fields such as pathogenesis studies, vaccine development, and gene therapy vectors [ 13 ]. As with other members of the Paramyxoviridae family, the H glycoprotein facilitates the virus binding to the host cell membrane and the F protein achieves the viral and the host membraneâ€™s fusion, enabling the viral RNPâ€™s entrance into the cytoplasm [ 12 ].Â  CDV proteins have a specific activity regarding virus replication and in the infection cycle. Epsteinâ€“Barr virus (EBV)-infected humanized mice reproduce cardinal features of EBV-associated B-cell lymphoproliferative disease and EBV-associated hemophagocytic lymphohistiocytosis (HLH). Erosive arthritis morphologically resembling rheumatoid arthritis (RA) has also been recapitulated in these mice. Low-dose EBV infection of humanized mice results in asymptomatic, persistent infection.Â  In this review, recent findings on the recapitulation of human EBV infection and pathogenesis in these mouse models, as well as their application to preclinical studies of experimental anti-EBV therapies, are described. Infections with Epsteinâ€“Barr virus (EBV) can be initiated in mice by adding components of the human immune system. @article{Horzinek1987MolecularPO, title={Molecular pathogenesis of virus infections}, author={Marian C. Horzinek}, journal={Experientia}, year={1987}, volume={43}, pages={1193-1196} }. Marian C. Horzinek. Although a very wide range of viral diseases exists in vertebrates, certain generalizations can be made regarding pathogenetic pathways on the molecular level. The presentation will focus on interactions of virions and their components with target cells. Using coronaviruses as examples the changes in virulence have been traced back to single mutational events; recombination, however, is likel