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0521832489 - Molecular Pathogenesis of Virus Infections

Edited by P. Digard, A. A. Nash and R. E. Randall

Frontmatter

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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.

Paul Digard is a Lecturer in Virology in the Department of Pathology at the University of Cambridge, UK.

Anthony A. Nash is Professor of Veterinary Pathology in the Division of Veterinary Biomedical Sciences at the University of Edinburgh, UK.

R. E. Randall is Professor of Molecular Virology in the School of Biology at the University of St Andrews, UK.

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SIXTY-FOURTH SYMPOSIUM OF THE
SOCIETY FOR GENERAL MICROBIOLOGY
HELD AT HERIOT-WATT UNIVERSITY APRIL 2005

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Published for the Society for General Microbiology



CAMBRIDGE
UNIVERSITY PRESS

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CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo
Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by
Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521832489

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First published 2005

Printed in the United Kingdom at the University Press, Cambridge

A catalogue record for this book is available from the British Library

ISBN 13 978 0 521 83248 9 hardback
ISBN 10 0 521 83248 9 hardback

Typeface Sabon (Adobe) 10·5/13·5 pt *System* QuarkXPress™ [SGM]

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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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CONTRIBUTORS

Alcami, A.

Department of Medicine, University of Cambridge, Addenbrooke's Hospital, Cambridge, UK, and Department of Molecular and Cellular Biology, Centro Nacional de Biotecnología (CSIC), Campus Universidad Autónoma, Cantoblanco 28049 Madrid, Spain

Alejo, A.

Department of Medicine, University of Cambridge, Addenbrooke's Hospital, Cambridge, UK, and Department of Molecular and Cellular Biology, Centro Nacional de Biotecnología (CSIC), Campus Universidad Autónoma, Cantoblanco 28049 Madrid, Spain

Andino, R.

Department of Microbiology and Immunology, University of California, San Francisco, CA 94143-2280, USA

Barron, R. M.

Institute for Animal Health, Neuropathogenesis Unit, Ogston Building, West Mains Road, Edinburgh EH9 3JF, UK

Barry, G.

Centre for Infectious Diseases, College of Medicine and Veterinary Medicine, University of Edinburgh, Edinburgh EH9 1QH, UK

Borrow, P.

Viral Immunology Group, The Edward Jenner Institute for Vaccine Research, Compton, Newbury RG20 7NN, UK

Breakwell, L.

Centre for Infectious Diseases, College of Medicine and Veterinary Medicine, University of Edinburgh, Edinburgh EH9 1QH, UK

Decman, V.

Department of Ophthalmology and Graduate Program in Immunology, University of Pittsburgh School of Medicine, Pittsburgh, PA 15213, USA

Dixon, C. M.

Centre for Infectious Diseases, College of Medicine and Veterinary Medicine, University of Edinburgh, Edinburgh EH9 1QH, UK

Dixon, L. K.

Institute for Animal Health, Pirbright Laboratory, Ash Road, Pirbright, Woking GU24 0NF, UK

Dye, C.

Department of Molecular and Cellular Medicine, University of Bristol, Bristol BS8 1TD, UK

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viii Contributors

Ebrahimi, B.

Centre for Comparative Infectious Diseases, University of Liverpool, Duncan Building,
Daulby Street, Liverpool L69 3GA, UK

Fazakerley, J. K.

Centre for Infectious Diseases, College of Medicine and Veterinary Medicine, University of
Edinburgh, Edinburgh EH9 1QH, UK

Freeman, M. L.

Department of Ophthalmology and Graduate Program in Molecular Virology and
Microbiology, University of Pittsburgh School of Medicine, Pittsburgh, PA 15213, USA

Gray, L.

Bute Medical School, University of St Andrews, Bute Medical Buildings, Westburn Lane,
St Andrews, Fife KY16 9TS, UK

Haller, O.

Abteilung Virologie, Institut für Medizinische Mikrobiologie und Hygiene, Universität
Freiburg, D-79008 Freiburg, Germany

Hartman, A. L.

Special Pathogens Branch, Division of Viral and Rickettsial Diseases, Centers for Disease
Control and Prevention, Atlanta, GA 30306, USA

Hendricks, R. L.

Departments of Ophthalmology, Immunology and Molecular Genetics and Biochemistry,
University of Pittsburgh School of Medicine, Pittsburgh, PA 15213, USA

Herrington, C. S.

Bute Medical School, University of St Andrews, Bute Medical Buildings, Westburn Lane,
St Andrews, Fife KY16 9TS, UK

Hoffmann, E.

Division of Virology, Department of Infectious Diseases, St. Jude Children's Research
Hospital, 332 North Lauderdale St, Memphis, TN 38105, USA

Hughes, D.

Centre for Comparative Infectious Diseases, University of Liverpool, Duncan Building,
Daulby Street, Liverpool L69 3GA, UK

Jolly, C.

Bute Medical School, University of St Andrews, Bute Medical Buildings, Westburn Lane,
St Andrews, Fife KY16 9TS, UK

Kochs, G.

Abteilung Virologie, Institut für Medizinische Mikrobiologie und Hygiene, Universität
Freiburg, D-79008 Freiburg, Germany

Lemon, S. M.

Department of Microbiology & Immunology, Institute for Human Infections & Immunity,
University of Texas Medical Branch, Galveston, TX 77555-0428, USA

Li, K.

Department of Microbiology & Immunology, Institute for Human Infections & Immunity,
University of Texas Medical Branch, Galveston, TX 77555-0428, USA

Lipatov, A. S.

Division of Virology, Department of Infectious Diseases, St. Jude Children's Research
Hospital, 332 North Lauderdale St, Memphis, TN 38105, USA

Manson, J. C.

Institute for Animal Health, Neuropathogenesis Unit, Ogston Building, West Mains Road,
Edinburgh EH9 3JF, UK

Mongkolsapaya, J.

Department of Immunology, Hammersmith Hospital, Imperial College, Du Cane Road,
London W12 0NN, UK

Nichol, S.

Special Pathogens Branch, Division of Viral and Rickettsial Diseases, Centers for Disease
Control and Prevention, Atlanta, GA 30306, USA

Roaden, L.

Centre for Comparative Infectious Diseases, University of Liverpool, Duncan Building,
Daulby Street, Liverpool L69 3GA, UK

Ruiz-Argüello, M. B.

Department of Medicine, University of Cambridge, Addenbrooke's Hospital, Cambridge,
UK, and Centro de Investigación en Sanidad Animal (INIA), Valdeolmos, Madrid, Spain

Screaton, G.

Department of Immunology, Hammersmith Hospital, Imperial College, Du Cane Road,
London W12 0NN, UK

Siddell, S.

Department of Molecular and Cellular Medicine, University of Bristol, Bristol BS8 1TD,
UK

Stewart, J. P.

Centre for Comparative Infectious Diseases, University of Liverpool, Duncan Building,
Daulby Street, Liverpool L69 3GA, UK

Towner, J. S.

Special Pathogens Branch, Division of Viral and Rickettsial Diseases, Centers for Disease
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x Contributors

Turnbull, E.

Viral Immunology Group, The Edward Jenner Institute for Vaccine Research, Compton, Newbury RG20 7NN, UK

van Rij, R. P.

Department of Microbiology and Immunology, University of California, San Francisco, CA 94143-2280, USA

Weber, F.

Abteilung Virologie, Institut für Medizinische Mikrobiologie und Hygiene, Universität Freiburg, D-79008 Freiburg, Germany

Webster, R. G.

Division of Virology, Department of Infectious Diseases, St. Jude Children's Research Hospital, 332 North Lauderdale St, Memphis, TN 38105, USA

Whitton, J. L.

Department of Neuropharmacology, CVN-9, The Scripps Research Institute, 10550 N Torrey Pines Rd, La Jolla, CA 92037, USA

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 Ocadiz-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.