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## REFERENCES

- Abelson H.T., Smith, G.H., Hoffman, H.A. and Rowe, W.P. (1969) Use of enzyme-labelled antibody for electron microscope localization of lymphocytic choriomeningitis virus antigens in infected cell cultures. *J. Natl. Cancer Inst.* 42, 497–502.
- Ackermann, R. (1973) Epidemiologic aspects of lymphocytic choriomeningitis in man. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 233–237. Springer-Verlag, Berlin.
- Ackermann, R., Scheid, W. and Jocheim, K.A. (1962) Der Einfluss der Lagerung auf die neutralisierenden Fähigkeiten von Serum gegenüber dem Virus der Lymphozytosen Choriomeningitis. *Zbl. Bakt. I. Abt. Orig.* 185, 434–454.
- Ackermann, R., Bloadhorn, H., Kupper, B., Winkens, I. and Scheid, W. (1964) Über die Verbreitung des Virus der Lymphocytären Choriomeningitis unter den Mäusen in Westdeutschland. I. Untersuchungen überwiegend an Hausmäusen (*Mus musculus*). *Zbl. Bakt. I. Abt. Orig.* 194, 407–430.
- Ackermann, R., Stille, W., Blumenthal, W., Helm, E.B., Keller, K. and Baldus, O. (1972) Syrische Goldhamster als Überträger von Lymphozytärer Choriomeningitis. *Dtsche Med. Wochenschr.* 97, 1725–1731.
- Allison, L.M., Salter, M., Buchmeier, M.J., Lewicki, H. and Howard, C.R. (1984) Neutralization of arenaviruses: reaction of Tacaribe virus and variants with monoclonal antibodies. In *Segmented Negative Strand Viruses*, Eds. R.W. Compans and D.H.L. Bishop, pp. 209–216. Academic Press, Orlando.
- Allison, L.M., Salter, M., Mann, G. and Howard, C.R. (1985) Thermal inactivation of Pichinde virus. *J. Virol. Methods*, 11, 259–264.
- Anderson, J., Byrne, J.A., Schreiber, R., Patterson, S. and Oldstone, M.B.A. (1985) Biology of cloned cytotoxic T lymphocytes specific for lymphocytic choriomeningitis virus: clearance of virus and in vitro properties. *J. Virol.* 53, 552–560.
- Andrews, B.S., Theofilopoulos, A.N., Peters, C.J., Loskutoff, D.J., Brandt, W.E. and Dixon, F.J. (1978) Replication of Dengue and Junin virus in cultured rabbit and human endothelial cells. *Infect. Immun.* 20, 776–781.
- Anon, M.C., Grau, O., Martinez-Segovia, Z.M. and Franz-Fernandez, M.T. (1976) RNA composition of Junin virus. *J. Virol.* 18, 833–838.

- Arata, A.A. and Gratz, N.G. (1975) The structure of rodent faunas associated with arenaviral infections. *Bull. WHO* 52, 621–627.
- Armstrong, C.R. (1941) Studies on choriomeningitis and poliomyelitis. *Bull. N.Y.Acad. Sci.* 17, 295–318.
- Armstrong, C.R. and Dickens, P.E. (1935) Benign lymphocytic choriomeningitis (acute aseptic meningitis). A new disease entity. *Public Health Rep. (Washington)* 50, 831–842.
- Armstrong, C.R. and Lillie, R.D. (1934) Experimental lymphocytic choriomeningitis of monkeys and mice produced by a virus encountered in studies of the 1933 St Louis encephalitis epidemic. *Public Health Rep. (Washington)* 49, 1019–1027.
- Armstrong, C.R. and Sweet, L.K. (1939) Lymphocytic choriomeningitis – report of two cases with recovery of the virus from gray mice (*Mus musculus*) trapped in two infected households. *Public Health Rep. (Washington)* 54, 673–684.
- Armstrong, D., Fortner, J.G., Rowe, W.P. and Parker, J.C. (1969) Meningitis due to lymphocytic choriomeningitis virus endemic in a hamster colony. *J. Am. Med. Assoc.* 209, 265–267.
- Arribalzaga, R.A. (1955) Una nueva enfermedad epidemica a germen desconocida: hipertemia nefrotóxica, leucopenia y enatemica. *Dia Medico* 27, 1204–1210.
- Auperin, D.D., Dimock, K., Cash, P., Rawls, W.E. and Bishop, D.H.L. (1982a) Analysis of the genomes of prototype Pichinde arenavirus and a virulent derivative of Pichinde Munchique: evidence for sequence conservation at the 3' termini of their viral RNA species. *Virology* 116, 363–367.
- Auperin, D.D., Compans, R.W. and Bishop, D.H.L. (1982b) Nucleotide sequence conservation at the 3' termini of the virion RNA species of New World and Old World arenaviruses. *Virology* 121, 200–203.
- Auperin, D.D., Galinski, M. and Bishop, D.H.L. (1984a) The sequences of the N Protein gene and intergenic region of the S RNA of Pichinde arenavirus. *Virology* 134, 208–219.
- Auperin, D.D., Romanowski, V., Galinski, M. and Bishop, D.H.L. (1984b) Sequencing studies of Pichinde arenavirus S RNA indicate a novel coding strategy, an ambisense viral S RNA. *J. Virol.* 52, 897–904.
- Avila, M.M., Samoilovich, S.R. and Weissenbacher, M.C. (1979) Infeccion del Cobayo con la Cepa Atenuada del virus Junin XJCl3. *Medicina (Buenos Aires)* 39, 597–603.
- Avila, M.M., Laguens, R.M., Laguens, R.P. and Weissenbacher, M.C. (1981a) Selectividad tisular e indicaciones de viremia de tres cepas del virus Junin. *Medicina (Buenos Aires)* 41, 157–166.
- Avila, M.M., Galassi, N.V. and Weissenbacher, M.C. (1981b) Argentine haemorrhagic fever: a biologic marker. *Intervirology* 15, 97–102.
- Avila, M.M., Frigerio, M.J., Weber, E.L., Rondinone, S., Samoilovich, S.R., Laguens, R.P., de Guerrero, L.B. and Weissenbacher, M.C. (1985) Attenuated Junin virus infection in *Callithrix jacchus*. *J. Med. Virol.* 15, 93–100.
- Banerjee, S.N., Buchmeier, M. and Rawls, W.E. (1975/76) Requirement of cell nucleus for the replication of an Arenavirus. *Intervirology* 6, 190–196.
- Barrera Oro, J.G. (1970) Evidencias serologicas preliminares de la actividad de un 'arenavirus' relacionado con el de al acoriomeningitis linfocitaca (LCM) en presuntas enfermos de fiebre Hemorragica Argentina (FHA). *Rev. Asoc. Argent. Microbiol.* 2, 185.
- Barrera Oro, J.G., Girola, R.A. and Gutman Frugone L. (1967) Estudios inmunologics con virus Junin. II. Inmunidad adquirida por cobayos inoculados con virus inactivado par formol. *Medicina (Buenos Aires)* 27, 179–181.

- Barrera Oro, J.G., Grela, M.E., Zannoli, V.H. and Garcia, C.A. (1977) Anticuerpos contra virus Junin y LCM en casos presuntivos de fiebre hemorragica Argentina. *Medicina (Buenos Aires)* 37, 69-77.
- Barrios, H.A., Rondinone, S.N., Blejer, J.L. and Giovanniello, O.A. (1982) Development of specific immune response in mice infected with Junin virus. *Acta Virol.* 26, 156-164.
- Bauer, D.J. (1977) Specific treatment of virus diseases MTP, Lancaster.
- Baum, S.G., Lewis, A.M., Rowe, W.P. and Huebner, R.J. (1966) Epidemic non-meningitic lymphocytic-choriomeningitis virus infection. An outbreak in a population of laboratory personnel. *N. Engl. J. Med.* 274, 934-936.
- Benda, R., Danes, L. and Fuchosava, M. (1964) Experimental inhalation infection of guinea-pigs with the virus of lymphocytic choriomeningitis. *J. Hyg. Epidemiol. (Prague)* 8, 87-99.
- Benda, R., Hronovsky, V., Cerva, L. and Cinatl, J. (1965) Demonstration of lymphocytic choriomeningitis virus in cell cultures and mouse brain by the fluorescent antibody technique. *Acta Virol.* 9, 347-351.
- Besuschio, S.C., Weissenbacher, M.C. and Schmunis, G.A. (1973) Different histopathological responses to arenavirus infection in thymectomized mice. *Arch. Gesamte Virusforsch.* 40, 21-28.
- Biggar, R.J., Woodall, J.P., Walter, P.D. and Haughie, G.E. (1975) Lymphocytic choriomeningitis outbreak associated with pet hamsters. Fifty-seven cases from New York State. *J. Am. Med. Assoc.* 274, 934-936.
- Blackburn, M.K., Searle, L. and Taylor, P. (1982) Viral haemorrhagic fever outbreaks in Zimbabwe schoolchildren. *Trans. R. Soc. Trop. Med. Hyg.* 76, 803-805.
- Blanden, R.V. and Mims, C.A. (1973) Macrophage activation in mice infected with ectromelia or lymphocytic choriomeningitis viruses. *Aust. J. Exp. Biol. Med. Sci.* 51, 393-398.
- Biechschmidt, M., Gerlich, W. and Thomssen, R. (1977) Radioimmunoassay for LCM virus antigens and anti-LCM virus antibodies and its application in an epidemiologic survey of people exposed to syrian hamsters. *Med. Microbiol. Immunol.* 163, 67-76.
- Blejer, J.L., Galassi, N.V., Nejamkis, M.R., Barrios, H. and Nota, N.R. (1981) Marcadores inmunologicos de antenacion en cabayos infectados con cepas o variantes del virus Junin. *Medicina (Buenos Aires)* 41, 44-52.
- Blejer, J.L., Galassi, N.V., Saavedra, V.M. and Nejamkis, M.R. (1984) Protection conferred against Junin virus infection in rats. *Intervirology* 21, 174-177.
- Bloch, A. (1978) A serological survey of Lassa fever in Liberia. *Bull. WHO* 56, 811-813.
- Boersma, D.P., Saleh, F., Nakamura, K. and Compans, R.W. (1982) Structure and glycosylation of Tacaribe viral glycoproteins *Virology* 123, 452-456.
- Borden, E.C. and Nathanson, N. (1974) Tacaribe virus infection of the mouse: an immunopathologic disease model. *Lab. Invest.* 30, 465-473.
- Borden, E.C., Murphy, F.A., Nathanson, N. and Monath, T.P.C. (1971) Effect of anti-lymphocyte serum on Tacaribe virus infection in infant mice. *Infect. Immun.* 3, 466-471.
- Boxaca, M.C. (1970) Establecimiento y características de una sublinea de celulas Vero persistentemente infectada con virus Junin. *Medicina (Buenos Aires)* 30 (Suppl. 1) 50-61.
- Boxaca, M.C., Parodi, A.S., Rugiero, H. and Blay, R. (1961) Fiebre hemorragica experimental en el cabayo (virus Junin). *Rev. Soc. Argent. Biol.* 37, 170-179.

- Boxaca, M.C., de Guerrero, L.B., Parodi, A.S., Rugiero, H.R. and Gonzalez, S. (1965) Viremia en enfermos de fiebre hemorragica Argentina. *Rev. Assoc. Med. Argent.* 79, 230–238.
- Boxaca, M.C., de Guerrero, L.B. and Savy, V.L. (1973) The occurrence of virus interferon and circulating antibodies in mice after experimental infection with Junin virus. *Arch. Gesamte Virusforsch.* 40, 10–20.
- Boxaca, M.C., de Guerrero, L.B., Frigerio, M.J., Rondinone, S.N. and Rabinovich, R.D. (1980) Algunos aspectos de la infeccion experimental del cobayo con una variante atenuada del virus Junin. *Medicina (Buenos Aires)* 40, 521–530.
- Boxaca, M.C., de Guerrero, L.B., Weber, E.L. and Malumbres, E. (1981) Proteccion inducida en cobayo por la variante XJo del virus Junin. *Medicina (Buenos Aires)* 41, 25–34.
- Boxaca, M.C., Gomez, M.M., Berria, M.I. and Iacono, R.F. (1984a) Transplacental infection in guinea pigs inoculated with an attenuated strain of Junin virus. *Intervirolgy* 21, 178–180.
- Boxaca, M.C., de Guerrero, L.B. and Malumbres, E. (1984b) Modification of Junin virus neurotropism in the guinea pig model. *Acta Virol.* 28, 198–203.
- Brinton, M.A. (1980) In *Genetic Control of Natural Resistance to Infection and Malignancy*, Eds. E. Skamene, P.A.L. Kongshavn and M. Landy, pp. 297–303. Academic Press, New York.
- Bro-Jorgensen, K. (1971) Characterization of virus-specific antigen in cell cultures infected with lymphocytic choriomeningitis virus. *Acta Pathol. Microbiol. Scand.* 798, 466–474.
- Bro-Jorgensen, K. and Knudson, S. (1977) Changes in hemopoiesis during the course of acute LCM infection in mice. *Blood* 49, 47–57.
- Bro-Jorgensen, K. and Volkert, M. (1972a) Haemopoietic defects in mice infected with lymphocytic choriomeningitis virus. 1. The enhanced X-ray sensitivity of virus infected mice. *Acta Pathol. Microbiol. Scand. Sect. B*; 80, 845–852.
- Bro-Jorgensen, K. and Volkert, M. (1972b) Haemopoietic defects in mice infected with lymphocytic choriomeningitis virus. 2. The viral effect upon the function of colony-forming stem cells. *Acta Pathol. Microbiol. Scand. Sect. B*; 80, 853–862.
- Bro-Jorgensen, K. and Volkert, M. (1974) Defects in the immune system of mice infected with lymphocytic choriomeningitis virus. *Infect. Immun.* 9, 605–614.
- Bro-Jorgensen, K., Guttler, F., Jorgensen, P.N. and Volkert, M. (1975) T lymphocyte function as the principal target of lymphocytic choriomeningitis virus-induced immunosuppression. *Infect. Immun.* 11, 622–629.
- Brown, P. (1968) Evolution of lymphocytic choriomeningitis virus infection from neonatal inoculation through development of adult 'late onset disease' and glomerulonephritis. An immunofluorescence study in mice. *Arch. Gesamte Virusforsch.* 24, 220–230.
- Brown, W.J. and Kirk, B.E. (1969) Complement-fixing antigen from BHK-21 cell cultures infected with lymphocytic choriomeningitis virus. *Appl. Microbiol.* 18, 496–499.
- Bruno-Lobo, G.G., Bruno-Lobo, M., Johnson, K.M., Webb, P.A. and de Paola, D. (1968) Pathogenesis of Junin virus infection in the infant hamster. *Ann. Microbiol. (Brasil)* 15, 11–68.
- Bruns, M. and Lehmann-Grube, F. (1983) Lymphocytic choriomeningitis virus. V. Proposed structural arrangement of proteins in the virion. *J. Gen. Virol.* 64, 2157–2167.
- Bruns, M. and Lehmann-Grube, F. (1984a) Lymphocytic choriomeningitis virus. VII.

- Structural alterations of the virion by treatment with proteolytic enzymes without loss of infectivity. *J. Gen. Virol.* 65, 1431–1435.
- Bruns, M. and Lehmann-Grube, F. (1984b) Lymphocytic choriomeningitis virus. VIII. Reciprocal formation of pseudotypes with vesicular stomatitis virus. *Virology* 137, 49–57.
- Bruns, M., Martinez Peralta, L. and Lehmann-Grube, F. (1983a) Lymphocytic choriomeningitis virus. III. Structural proteins of the virion. *J. Gen. Virol.* 64, 599–611.
- Bruns, M., Cihak, J., Muller, G. and Lehmann-Grube, F. (1983b) Lymphocytic choriomeningitis virus. VI. Isolation of a glycoprotein mediating neutralization. *Virology* 130, 247–251.
- Buchmeier, M.J. (1984) Antigenic and structural studies on the glycoproteins of lymphocytic choriomeningitis virus. In *Segmented Negative Strand Viruses*, Eds. R.W. Compans and D.H.L. Bishop, pp. 193–200. Academic Press, New York.
- Buchmeier, M.J. and Knobler, R.L. (1984) Experimental models for immune-mediated and immune-modulated diseases. In *Neuroimmunology*, Eds. P. Behan and F. Spreafico, pp. 219–228. Raven Press, New York.
- Buchmeier, M.J. and Oldstone, M.B.A. (1978a) Identity of the viral protein responsible for serologic cross-reactivity among the Tacaribe complex arenaviruses. In *Negative Strand Viruses and the Host Cell*, Eds. B.W.J. Mahy and R.D. Barry, pp. 91–97. Academic Press, London.
- Buchmeier, M.J. and Oldstone, M.B.A. (1978b) Virus induced immune complex disease: identification of specific viral antigens and antibodies deposited in complexes during chronic lymphocytic choriomeningitis virus infection. *J. Immunol.* 120, 1297–1304.
- Buchmeier, M.J. and Oldstone, M.B.A. (1979) Protein structure of lymphocytic choriomeningitis virus: evidence for a cell-associated precursor of the virion glycopeptides. *Virology* 99, 111–120.
- Buchmeier, M.J. and Oldstone, M.B.A. (1981) Molecular studies of LCM virus induced immunopathology: development and characterisation of monoclonal antibodies to LCM virus. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 71–77. Elsevier/North-Holland, New York.
- Buchmeier, M.J. and Rawls, W.E. (1977) Variation between strains of hamsters in the lethality of Pichinde virus infections. *Infect. Immun.* 16, 413–421.
- Buchmeier, M.J., Adam, E. and Rawls, W.E. (1974) Serologic evidence of infection by Pichinde virus among laboratory workers. *Infect. Immun.* 9, 821–823.
- Buchmeier, M.J., Gee, S.R. and Rawls, W.E. (1977) Antigens of Pichinde virus. I. Relationship of soluble antigens derived from infected BHK-21 cells to the structural components of the virion. *J. Virol.* 22, 175–186.
- Buchmeier, M.J., Elder, J.H. and Oldstone, M.B.A. (1978) Protein structure of lymphocytic choriomeningitis virus: identification of the virus structural and cell-associated polypeptides. *Virology* 89, 133–145.
- Buchmeier, M.J., Welsh, R.M., Dutko, F.J. and Oldstone, M.B.A. (1980a) The virology and immunobiology of lymphocytic choriomeningitis virus infection. *Adv. Immunol.* 30, 275–331.
- Buchmeier, M.J., Lewicki, H.A., Tomori, O. and Johnson, K.M. (1980b) Monoclonal antibodies to lymphocytic choriomeningitis virus react with pathogenic arenaviruses. *Nature (London)* 288, 486–487.
- Buchmeier, M.J., Lewicki, H.A., Tomori, O. and Oldstone, M.B.A. (1981) Monoclonal antibodies to lymphocytic choriomeningitis and Pichinde viruses: generation, characterization and cross-reactivity with other arenaviruses. *Virology* 113, 73–85.
- Buck, L.L. and Pfau, C.J. (1969) Inhibition of lymphocytic choriomeningitis virus replication by actinomycin D and 6-azauridine. *Virology* 37, 698–701.

- Buckley, S.M. (1965) Junin and Tacaribe work in HeLa cells. *Am. J. Trop. Med. Hyg.* 14, 792-794.
- Buckley, S.M. and Casals, J. (1970) Lassa fever, a new virus disease of man from West Africa. III. Isolation and characterization of the virus. *Am. J. Trop. Med. Hyg.* 19, 680-691.
- Buckley, S.M. and Casals, J. (1978) Pathobiology of Lassa fever. *Int. Rev. Exp. Pathol.* 18, 97-136.
- Buckley, S.M., Casals, J. and Downs, W.G. (1970) Isolation and antigenic characterization of Lassa virus. *Nature (London)* 227, 174.
- Budzko, D.B. (1965) Electroforesis de las proteínas sericas de cobayo inoculado con virus Junin (en papel y gel de poliacrilamida). *Rev. Soc. Argent. Biol.* 41, 91-101.
- Burnet, F.M. and Fenner, F. (1949) *The Production of Antibodies*, Macmillan, London.
- Byrne, J.A. and Oldstone, M.B.A. (1984) Biology of cloned cytotoxic T lymphocytes specific for lymphocytic choriomeningitis virus: clearance of virus in vivo. *J. Virol.* 51, 682-686.
- Byrne, J.A., Ahmed, R. and Oldstone, M.A. (1984) Biology of cloned cytotoxic T lymphocytes specific for lymphocytic choriomeningitis virus. I. Generation and recognition of virus strains and H-2b mutants. *J. Immunol.* 133, 433-439.
- Calisher, C.H., Tzianabos, T., Lord, R.D. and Coleman, P.H. (1970) Tamiami virus, a new member of the Tacaribe group. *Am. J. Trop. Med. Hyg.* 19, 520-526.
- Callis, R.T., Jahrling, P.B. and De Paoli, A. (1982) Pathology of Lassa virus infection in the rhesus monkey. *Am. J. Trop. Med. Hyg.* 31, 1038-1045.
- Camyre, K.P. and Pfau, C.J. (1968) Biophysical and biochemical characterization of lymphocytic choriomeningitis virus. IV. Strain differences. *J. Virol.* 2, 161-166.
- Carballal, G. (1977) El modelo cobayo en la FHA experimental. *Cienc. Invest.* 33, 225.
- Carballal, G. and Frigerio, M.J. (1973) Accion de los inmunoseros sobre la respuesta inmune et la fiebre hemorragica experimental. *Medicina (Buenos Aires)* 23, 68-77.
- Carballal, G., Rodriguez, M., Frigerio, M.J. and Vasquez, C. (1975) Ultrastructural de medula osea y sangre periferica del cabayo infectado con virus Junin. *Medicina (Buenos Aires)* 35, 437-438.
- Carballal, G., Rodriguez, M., Frigerio, M.J. and Vasquez, C. (1977a) Junin virus infection in guinea pigs: electron microscopic studies of peripheral blood and bone marrow. *J. Infect. Dis.* 135, 367-373.
- Carballal, G., Laguens, R.P., Cossio, P.M., Meckert, P.C., Rabinovich, A., Vasquez, C., Maiztegui, J.I. and Arana, R.M. (1977b) Alteraciones del tejido hemopoyetico del cobayo en la infeccion experimental con virus Junin. *Medicina (Buenos Aires)* 37 (Suppl. 3) 101-107.
- Carballal, G., Cossio, P.M., Arana, P.M., Nagle, C. and Casanova, M.B. (1980a) El cebus sp como model experimental para la fiebre hemorragia Argentina. *Medicina (Buenos Aires)* 40, 734.
- Carballal, G., Cossio, P.M., Rabinovich, A., Oubina, J. and Arana, R.M. (1980b) Description of a BHK-21 cell line persistently infected with Junin virus: its use in diagnostic procedures. *Intervirology* 14, 173-179.
- Carballal, G., Cossio, P.M., Laguens, R.P., Ponzinibbio, C., Oubina, J.R., Mekert, P.C., Rabinovich, A. and Arana, R.M. (1981a) Junin virus infection in guinea pigs: immunohistochemical and ultrastructural studies of hemopoietic tissue. *J. Infect. Dis.* 143, 7-14.
- Carballal, G., Oubina, J.R., Rondinone, S.N., Elsner, B. and Frigerio, M.J. (1981b)

- Cell-mediated immunity and lymphocyte populations in experimental Argentine haemorrhagic fever (Junin virus). *Infect. Immun.* 34, 323–327.
- Carballal, G., Cossio, P.M., Oubina, J.R., de la Vega, M.T., Nagle, C., Casanova, M.B., Gonzalez, P.H. and Arana, R.M. (1983) Infeccion experimental de un primate sudamericano el *Cebus* sp, con la cepa XJ de virus Junin. *Medicina (Buenos Aires)* 43, 639–646.
- Carey, D.E., Kemp, G.E., White, H.A., Pinneo, L., Addy, R.F., Fom, A.L.M.D., Stroh, G., Casals, J. and Henderson, B.E. (1972) Lassa fever. Epidemiological aspects of the 1970 epidemic, Jos, Nigeria. *Trans. R. Soc. Trop. Med. Hyg.* 66, 402–408.
- Carter, M.F., Biswal, N. and Rawls, W.E. (1973a) Characterization of nucleic acid of Pichinde virus. *J. Virol.* 11, 61–68.
- Carter, M.F., Murphy, F.A., Brunschwig, J.P., Noonan, C. and Rawls, W.E. (1973b) Effects of actinomycin D and ultraviolet and ionizing radiation on Pichinde virus. *J. Virol.* 12, 33–38.
- Carter, M.F., Biswal, N. and Rawls, W.E. (1974) Polymerase activity of Pichinde virus. *J. Virol.* 13, 577–583.
- Casali, P. and Oldstone, M.B.A. (1983) Immune complexes in viral infection. *Curr. Top. Microbiol. Immunol.* 104, 7–48.
- Casals, J. (1975) Arenaviruses. *Yale J. Biol. Med.* 48, 115–140.
- Casals, J. (1977) Serological reactions with arenaviruses. *Medicina (Buenos Aires)* 37, (Suppl. 3) 59–68.
- Casals, J., Buckley, S.M. and Cedeno, R. (1975) Antigenic properties of the arenaviruses. *Bull. WHO* 52, 421–427.
- Chan, M., Clark, D. and Rawls, W.E. (1983) Pichinde virus-specific cell-associated suppression of primary foot-pad swelling in an inbred strain of Syrian hamsters. *J. Immunol.* 130, 925–931.
- Chanas, A.C. (1982) Non-neutralizing antibodies and virus-cell interactions. PhD Thesis, University of London.
- Chanas, A.C., Mann, G., Young, P., Ellis, D.S., Stamford, S. and Howard, C.R. (1980) Evaluation of plaque size reduction as a method for the detection of Pichinde virus antibody. *Arch. Virol.* 65, 157–167.
- Chastel, C. (1970) Immunodiffusion studies on a fluorocarbon-extracted antigen of lymphocytic choriomeningitis virus. *Acta Virol.* 14, 500–509.
- Child, P.L., McKenzie, R.B., Valverde, L.R. and Johnson, K.M. (1967) Bolivian Haemorrhagic fever: a pathologic description. *Arch. Pathol.* 83, 434–435.
- Chinault, D.N., Thompson, H.A. and Gangemi, J.D. (1981) Polypeptide synthesis catalysed by components of Pichinde virus disrupted by detergent. *J. Gen. Virol.* 55, 213–217.
- Chinel, L.V. (1978) South American Haemorrhagic fevers. In *Ebola Virus Haemorrhagic Fever*, Ed. S.R. Patyn, pp. 293–300. Elsevier/North-Holland, Amsterdam.
- Christoffersen, P.J. and Bro-Jorgensen, K. (1977) Erythropoietic activity and interferon production in LCM virus infected nude mice. *Acta Pathol. Microbiol. Scand. Sect. B:* 85, 435–439.
- Christoffersen, P.J., Volkert, M. and Rygaard, J. (1976) Immunological unresponsiveness of nude mice to LCM virus infection. *Acta Pathol. Microbiol. Scand. Sect. C:* 84, 520–523.
- Cihak, J. and Lehmann-Grube, F. (1978) Immunological tolerance to lymphocytic choriomeningitis virus in neonatally infected virus carrier mice: evidence supporting a clonal inactivation mechanism. *Immunology* 34, 265–275.



- Clegg, J.C.S. (1984) Possible approaches to a vaccine against Lassa fever. *Trans. R. Soc. Trop. Med. Hyg.* 78, 307–310.
- Clegg, J.C.S. and Lloyd, G. (1983) Structural and cell-associated protein of Lassa virus. *J. Gen. Virol.* 64, 1127–1136.
- Clegg, J.C.S. and Lloyd, G. (1984) The African arenaviruses Lassa and Mopeia: biological and immunochemical comparisons. In *Segmented Negative Strand Viruses*, Eds. R.W. Compans and D.H.L. Bishop, pp. 341–347. Academic Press, Orlando.
- Cohen, S.M., Triandaphilli, I.A., Barlow, J.L. and Hotchin, J. (1966) Immunofluorescent detection of antibody to lymphocytic choriomeningitis virus in man. *J. Immunol.* 96, 777–784.
- Cole, G.A., Nathanson, N. and Prendergast, R.A. (1972) Requirement for theta-bearing cells in lymphocytic choriomeningitis virus-induced central nervous system disease. *Nature (London)* 238, 335–337.
- Coligan, J.E., Kindt, T.J., Uehara, H., Martinko, J. and Nathanson, S.G. (1981) Primary structure of a murine transplantation antigen. *Nature (London)* 291, 35–39.
- Collins, D.N., Weigand, H. and Hotchin, J. (1961) The effects of pre-treatment with X-rays on the pathogenesis of lymphocytic choriomeningitis in mice. 2. The pathological histology. *J. Immunol.* 87, 682–687.
- Compans, R.W., Boersma, D.P., Cash, P., Clerx, J.P.M., Gimenez, H.B., Kirk, W.E., Peters, C.J., Vezza, A.C. and Bishop, D.H.L. (1981) Molecular and genetic studies of Tacaribe, Pichinde and Lymphocytic choriomeningitis viruses. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 31–42. Elsevier/North-Holland, New York.
- Contigiani, M.S. and Sabattini, M.S. (1983) Letalidad producida por una cepa atenuada de virus Junin en ratos lactantes. *Medicina (Buenos Aires)* 43, 737.
- Cooper, C.B., Gransden, W.R., Webster, M., King, M., O'Mahony, M., Young, S. and Banatvala, J.E. (1982) A case of Lassa fever: experience at St Thomas' Hospital. *Br. Med. J.* 285, 1003–1005.
- Cossio, P.M., Laguens, R.P., Rabinovich, A., Carballal, C., Meckert, C., Maiztegui, J.I., Vasquez, C. and Arana, R.M. (1977) Estudios Inmunohistoquímicos y ultraestructurales del Rinon de cabayo infectado experimentalmente con virus Junin. *Medicina (Buenos Aires)* 37 (Suppl. 3) 108–113.
- Cossio, P.M., Rabinovich, A., Maiztegui, J.I., Carballal, G., Casanova, M.D., Ritacco, V. and Arana, R.M. (1979) Immunofluorescent anti-Junin virus antibodies in Argentine haemorrhagic fever. *Intervirology* 12, 26–31.
- Cossio, P.M., Carballal, G., Oubina, J.R., Laguens, R.P., Meckert, P.C. and Arana, R.M. (1983) Infeccion del Pulmon con virus Junin en la fiebre hemorragica Argentina experimental del cabayo. *Medicina (Buenos Aires)* 43, 21–25.
- Coto, C.E. (1974) Junin virus. *Prog. Med. Virol.* 18, 127–142.
- Coto, C.E. and Help, G.I. (1975) Multiplicacion de los arenaviruses, virus Junin y Tacaribe, en celulas humonas. *Medicina (Buenos Aires)* 35, 141–148.
- Coto, C.E. and Leon, M.E. (1978) Susceptibilidad exacerbada del raton de la dias a la infeccion con arenavirus. *Medicina (Buenos Aires)* 38, 281–289.
- Coto, C.E. and Parodi, A.S. (1968) Purificacion del virus Junin (fiebre hemorragica Argentina) a partir de cerebro de raton infectado. *Rev. Soc. Argent. Biol.* 44, 77–84.
- Coto, C.E. and Parodi, A.S. (1969) Purification du virus Junin a partir du cerveau de souris infectees. *C.R. Soc. Biol. (Paris)* 163, 990–991.
- Coto, C.E. and de Vombergar, M.D. (1969) The effect of 5-iododeoxyuridine and actinomycin D on the multiplication of Junin virus. *Arch. Gesamte Virusforsch.* 27, 307–316.

- Coto, C.E., Help, G.I. and Tkaczeuski, L.Z. (1972) Biological properties of Junin virus purified from infected mouse brain. *Medicina (Buenos Aires)* 32, 281–286.
- Coto, C.E., Weissenbacher, M.C. and Calello, M.A. (1976) Proteccion del cabayo contra la fiebre hemorragica Argentina por inoculacion de virus del complejo Tacaribe. *Medicina (Buenos Aires)* 36, 9–16.
- Coto, C.E., Damonte, E.B., Help, G.I. and Leon, M.E. (1977) Infeccion cronica in vitro con virus Junin. *Medicina (Buenos Aires)* 37 (Suppl. 3) 39–45.
- Coto, C.E., Leon, M.E., Peralta, L.M., Help, G. and Laguens, R.P. (1979) Induction of infectious virus and viral surface antigen in Vero cells persistently infected with Junin virus. In *Humoral Immunity in Neurological Diseases*, Eds. D. Karcher, A. Lowenthal and A.D. Strosberg, pp. 405–415. Plenum Press, New York.
- Coto, C.E., Damonte, E.B., Calello, M.A. and Weissenbacher, M.C. (1980) Protection of guinea pigs inoculated with Tacaribe virus against lethal doses of Junin virus. *J. Infect. Dis.* 141, 389–393.
- Coto, C.E., Vidal, M. del C, D'aiutolo, A.C. and Damonte, E.B. (1981) Selection of spontaneous ts mutants of Junin and Tacaribe viruses in persistent infections. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 59–64. Elsevier/North-Holland, New York.
- Cresta, B., Padula, P. and Segovia, Z.M. de M. (1980) Biological properties of Junin virus proteins. I. Identification of the immunogenic glycoprotein. *Intervirology* 13, 284–288.
- D'Aiutolo, A.C., Lampuri, J.S. and Coto, C.E. (1979) Reactivacion del virus Junin inactivado por la luz ultravioleta. *Medicina (Buenos Aires)* 39, 801.
- Dalldorf, G. (1938) The simultaneous occurrence of the viruses of canine distemper and lymphocytic choriomeningitis. A correction of 'Canine distemper in the rhesus monkey'. *J. Exp. Med.* 70, 19–27.
- Dalton, A.J., Rowe, W.P., Smith, G.H., Wilsnack, R.E. and Pugh, W.E. (1968) Morphological and cytochemical studies on lymphocytic choriomeningitis virus. *J. Virol.* 2, 1465–1478.
- Damonte, E.B. and Coto, C.E. (1979a) Nuevo marcador biologico para diferenciar las virus Tacaribe y Junin: celullas RK13. *Medicina (Buenos Aires)* 39, 223–228.
- Damonte, E.B. and Coto, C.E. (1979b) Temperature sensitivity of the arenavirus Junin isolated from persistently infected Vero cells. *Intervirology* 11, 282–287.
- Damonte, E.B., Coto, C.E., Calello, M.A. and Weissenbacher, M.C. (1978a) Inmunizacion heterologa contra virus Junin. *Medicina (Buenos Aires)* 38, 226–232.
- Damonte, E.B., Mersich, S.E. and Coto, C.E. (1978b) Susceptibilidad viral de celulas vero infectadas persistentemente con arenavirus: formacion aparente de suedotipos. *Rev. Asoc. Argent. Microbiol.* 10, 78–81.
- Damonte, E.B., Calello, M.A., Coto, C.E. and Weissenbacher, M.C. (1981a) Inmunizacion de cabayos contra la fiebre hemorragica Argentinian con virus Tacaribe replicado en celulas diploides humanas. *Medicina (Buenos Aires)* 41, 467–470.
- Damonte, E.B., Calello, M.A., Weissenbacher, M.C. and Coto, C.E. (1981b) Condiciones optimas para el mentenimiento de la infectividad del virus Tacaribe ante las variaciones de temperatura. *Rev. Asoc. Argent. Microbiol.* 13, 49–52.
- Damonte, E.B., Mersich, S.E. and Coto, C.E. (1983) Response of cells persistently infected with arenaviruses to superinfection with homotypic and heterotypic viruses. *Virology* 129, 474–478.
- Davis, D.H.S. (1965) Classification problems of African muridae. *Zool. Afr.* 1, 121–135.

- De Bracco, M.M.E., Rimoldi, M.T., Cassio, P.M., Rabinovich, A., Maiztegui, J.I., Carballal, G. and Arana, R.M. (1978) Argentine hemorrhagic fever, alterations of the complement system and anti-Junin virus humoral response. *N. Engl. J. Med.* 299, 216–221.
- Deibel, R., Woodall, J.P., Decker, W.J. and Schryver, G.D. (1975) Lymphocytic choriomeningitis in man. Serologic evidence of association with pet hamsters. *J. Am. Med. Assoc.* 232, 501–504.
- Della-Porta, A.J. and Westaway, E.G. (1978) A multi-hit model for the neutralization of animal viruses. *J. Gen. Virol.* 38, 1–19.
- De Maeyer, E. and De Maeyer-Guignard, J. (1969) Gene with quantitative effect on circulating interferon induced by Newcastle Disease Virus. *J. Virol.* 3, 506–512.
- Dimmock, N.J. (1967) Differences between the thermal inactivation of picornaviruses at 'high' and 'low' temperatures. *Virology* 31, 338–353.
- Dimock, K., Harnish, D.G., Sisson, G., Leung, W-C. and Rawls, W.E. (1982) Synthesis of virus-specific polypeptides and genomic RNA during the replicative cycle of Pichinde virus. *J. Virol.* 43, 273–283.
- Doherty, P.C., Zinkernagel, R.M. and Ramshaw, I.A. (1974) Specificity and development of cytotoxic thymus-derived lymphocytes in lymphocytic choriomeningitis. *J. Immunol.* 112, 1548–1552.
- Douglas, Jr., G.R., Wiebenga, N.H. and Couch, R.B. (1965) Bolivian hemorrhagic fever probably transmitted by personal contact. *Am. J. Epidemiol.* 82, 85–91.
- Dowdle, W.R. (1980) Exotic viral diseases. *Yale J. Biol. Med.* 53, 109–115.
- Downs, W.G., Anderson, C.R., Spence, L., Aitken, T.H.G. and Greenhall, A.H. (1963) Tacaribe virus, a new agent isolated from Artibeus bats and mosquitoes in Trinidad, West Indies. *Am. J. Trop. Med. Hyg.* 12, 640–646.
- Doyle, L.B., Doyle, M.V. and Oldstone, M.B.A. (1980) Susceptibility of new born mice with H-2k backgrounds to lymphocytic choriomeningitis virus infection. *Immunology* 40, 589–596.
- Doyle, M.V. and Oldstone, M.B.A. (1978) Interaction between viruses and lymphocytes. In vivo replication of lymphocytic choriomeningitis virus in mononuclear cells during both chronic and acute viral infections. *J. Immunol.* 121, 1262–1269.
- Dulout, F.N., Carballal, G., Bianchi, N.O. and van Guradze, H.N. (1983) Cytogenic effect of two strains of Junin virus in the guinea pig. *Intervirol.* 19, 44–46.
- Dunlop, M.B.C. and Blanden, R.V. (1977a) Mechanisms of suppression of cytotoxic T-cell responses in murine lymphocytic choriomeningitis virus infection. *J. Exp. Med.* 145, 1131–1143.
- Dunlop, M.B.C. and Blanden, R.V. (1977b) Induction of a primary cytotoxic T-cell response to lymphocytic choriomeningitis virus-infected cells in vitro. I. Kinetics of response and nature of effector cells. *Cell. Immunol.* 28, 190–197.
- Dutko, F.J. and Oldstone, M.B.A. (1983) Genomic and biologic variation among commonly used lymphocytic choriomeningitis virus strains. *J. Gen. Virol.* 64, 1689–1698.
- Dutko, F.J. and Pfau, C.J. (1978) Arenavirus defective interfering particles mask the cell-killing potential of standard virus. *J. Gen. Virol.* 38, 195–208.
- Dutko, F.J., Wright, E.A. and Pfau, C.J. (1976) The RNA's of defective interfering Pichinde virus. *J. Gen. Virol.* 31, 417–427.
- Dutko, F.J., Kennedy, S.I.T. and Oldstone, M.B.A. (1981) Genome structure of lymphocytic choriomeningitis virus: cohesive complementary termini? In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 43–49. Elsevier/North-Holland, New York.

- Earle, D.P. (1954) Analysis of sequential physiologic derangements in epidemic haemorrhagic fever with a commentary on management. *Am. J. Med.* 16, 690–709.
- East, J., Parrott, D.M.V. and Seamer, J. (1964) The ability of mice thymectomized at birth to survive infection with lymphocytic choriomeningitis virus. *Virology* 22, 160–162.
- Eddy, G.A. and Cole, Jr., F.E. (1978) The development of a vaccine against African hemorrhagic fever. In *Ebola Virus Haemorrhagic fever*, Ed. S.R. Patyn, pp. 237–242. Elsevier/North-Holland, Amsterdam.
- Eddy, G.A., Scott, S.K., Wagner, F.S. and Brand, O.M. (1975a) Pathogenesis of Machupo virus infection in primates. *Bull. WHO* 52, 517–521.
- Eddy, G.A., Wagner, F.S., Scott, S.K. and Mahlandt, B.J. (1975b) Protection of monkeys against Machupo virus by the passive administration of Bolivian haemorrhagic fever immunoglobulin (human origin). *Bull. WHO* 52, 723–727.
- Edelman, R. and Wheelock, E.F. (1967) Specific role of each human leucocyte type of viral infection. I. Monocyte as host cell for vesicular stomatitis virus replication in vitro. *J. Virol.* 1, 1139–1149.
- Edington, G.M. and White, H.A. (1972) The pathology of Lassa fever. *Trans. R. Soc. Trop. Med. Hyg.* 66, 381–389.
- Elliott, L.E., McCormick, J.B. and Johnson, K.M. (1982) Inactivation of Lassa, Marburg and Ebola viruses by gamma irradiation. *J. Clin. Microbiol.* 16, 704–708.
- El Mekki, A.A. and van der Groen, G. (1981) A comparison of indirect immunofluorescence and electron microscopy for the diagnosis of some haemorrhagic viruses in cell cultures. *J. Virol. Methods* 3, 61–69.
- Elsnér, B., Schwarz, E., Mando, O.G., Maiztegui, J. and Vilches, A. (1973) Pathology of 12 fatal cases of Argentine haemorrhagic fever. *Am. J. Trop. Med. Hyg.* 22, 229–236.
- Emond, R.T.D., Bannister, B., Lloyd, G., Southee, T.J. and Bowen, E.T.W. (1982) A case of Lassa fever: clinical and virological findings. *Br. Med. J.* 285, 1001–1002.
- Enria, D.A., Briggiler, A.M., Fernandez, N.J., Levis, S.C. and Maiztegui, J.I. (1984) Importance of dose of neutralizing antibodies in treatment of Argentine haemorrhagic fever with immune plasma. *Lancet* 2, 255–256.
- Etchison, J.R., Robertson, J.S. and Summers, D.F. (1977) Partial structural analysis of the oligosaccharide moieties of the vesicular stomatitis virus glycoprotein by sequential chemical and enzymatic degradation. *Virology* 78, 375–392.
- Eustatia, J.M. and van der Veen, J. (1971) Viral replication in cultures of phytohaemagglutinin treated mouse lymphocytes. *Proc. Soc. Exp. Biol. Med.* 137, 424–428.
- Fallon, R.J. (1982) A case of Lassa fever. *Br. Med. J.* 285, 1350.
- Fagbami, A.H. (1980) Viral haemorrhagic fevers of Africa. *East Afr. Med. J.* 57, 678–686.
- Faras, A.J. and Erikson, R.L. (1969) L-cell virion ribonucleic acid. *J. Virol.* 4, 31–35.
- Farber, F.E. and Rawls, W.E. (1975) Isolation of ribosome-like structure from Pichinde virus. *J. Gen. Virol.* 26, 21–31.
- Farmer, T.W. and Janeway, C.A. (1942) Infections with the virus of lymphocytic choriomeningitis. *Medicine (Baltimore)* 21, 1–63.
- Fazekas de St Groth, S. (1962) The neutralization of viruses. *Adv. Virus Res.* 9, 1–125.
- Findlay, G.M. and Stern, R.O. (1936) Pathological changes due to infection with the virus of lymphocytic choriomeningitis. *J. Pathol. Bacteriol.* 43, 327–338.
- Fisher-Hoch, S.P. (1983) The haemostatic defect in viral haemorrhagic fevers. *Br. J. Haematol.* 55, 565–571.

- Fleming, P. (1971) Thermal inactivation of Semliki, Forest virus. *J. Gen. Virol.* 13, 385–391.
- Frame, J.D. (1975) Surveillance of Lassa fever in missionaries in West Africa. *Bull. WHO* 52, 421–427.
- Frame, J.D., Baldwin, Jr., J.M., Gocke, D.J. and Troup, J.M. (1970) Lassa fever, a new virus disease of man from West Africa. I. Clinical description and pathological findings. *Am. J. Trop. Med. Hyg.* 19, 670–676.
- Frame, J.D., Casals, J. and Dennis, E.A. (1979) Lassa virus antibodies in hospital personnel in western Liberia. *Trans. R. Soc. Trop. Med. Hyg.* 73, 219–224.
- Frame, J.D., Jahrling, P.B., Yalley-Ogunro, J.E. and Monson, M.H. (1984a) Endemic Lassa fever in Liberia. II. Serological and virological findings in hospital patients. *Trans. R. Soc. Trop. Med. Hyg.* 78, 656–660.
- Frame, J.D., Yalley-Ogunro, J.E. and Hanson, A.P. (1984b) Endemic Lassa fever in Liberia. V. Distribution of Lassa virus activity in Liberia: hospital staff surveys. *Trans. R. Soc. Trop. Med. Hyg.* 78, 761–763.
- Fraser, D.W., Campbell, C.C., Monath, T.P., Goff, P.A. and Gregg, M.B. (1974) Lassa fever in the Eastern province of Sierra Leone, 1970–1972. I. Epidemiological studies. *Am. J. Trop. Med. Hyg.* 23, 1131–1139.
- Frigerio, M.J. (1977) Immunologic aspects of guinea pigs infected with Junin virus. *Medicina (Buenos Aires)* 37, (Suppl. 3) 96–100.
- Frigerio, M.J., Rondinone, S.N., Callelo, M.A., Paradisi, E.R. and Weissenbacher, M.C. (1982) Junin virus infection of *Calthrix Jacchus*: haematological findings. *Acta Virol.* 26, 270–278.
- Fuller, J.G. (1974) *Fever: the Hunt for a New Killer Virus*. Hart-Davis, MacGibbon, London.
- Gaidamovich, S.Y., Cherednichenko, Y.N. and Zhdanov, V.M. (1978) On the mechanism of the persistence of lymphocytic choriomeningitis virus in the continuous cell line Detroit-6. *Intervirology* 9, 156–161.
- Gallardo, F. (1982) Fiebre hemorrágica Argentina. Hallazgos anatomopatológicos en 10 necropsias. *Medicina (Buenos Aires)* 30 (Suppl. 1) 77–85.
- Gangemi, J.D., Connell, E.V., Mahlandt, B.G. and Eddy, G.A. (1977) Arenavirus concentration by molecular filtration. *Appl. Environ. Microbiol.* 34, 330–332.
- Gangemi, J.D., Rosato, R.R., Connell, E.V., Johnson, E.M. and Eddy, G.A. (1978) Structural polypeptides of Machupo virus. *J. Gen. Virol.* 41, 183–188.
- Gard, G.P., Vezza, A.C., Bishop, D.H.L. and Compans, R.W. (1977) Structural proteins of Tacaribe and Tamiami virions. *Virology* 83, 84–95.
- Gee, S.R., Clark, D.A. and Rawls, W.E. (1979) Differences between Syrian hamster strains in natural killer cell activity induced by infection with Pichinde virus. *J. Immunol.* 123, 2618–2626.
- Gee, S.R., Chan, M.A., Clark, D.A. and Rawls, W.E. (1981) Role of natural killer cells in Pichinde virus infection of Syrian hamsters. *Infect. Immun.* 31, 919–928.
- Gianantonio, C.A., Vitacco, M., Mendilahurzo, F., Rutty, A. and Mendilahurzo, J. (1964) The hemolytic-uraemic syndrome. *J. Pediatr.* 64, 478–491.
- Gianantonio, C.A., Vitacco, M., Mendilahurzo, F. and Gallo, G. (1968) The haemolytic-uraemic syndrome, renal status of 76 patients at long-term follow-up. *J. Pediatr.* 72, 757–765.
- Gilden, D.H., Cole, G.A., Monjan, A.A. and Nathanson, N. (1972a) Immunopathogenesis of acute central nervous system disease produced by lymphocytic choriomeningitis

- virus. I. Cyclophosphamide mediated induction of the virus-carrier state in adult mice. *J. Exp. Med.* 135, 860–873.
- Gilden, D.H., Cole, G.A. and Nathanson, N. (1972b) Immunopathogenesis of acute central nervous system disease produced by lymphocytic choriomeningitis virus. II. Adoptive immunisation of virus carriers. *J. Exp. Med.* 135, 874–889.
- Gimenez, H.B. and Compans, R.W. (1980) Defective interfering Tacaribe virus and persistently infected cells. *Virology* 107, 229–239.
- Gimenez, H.B. and Compans, R.W. (1981) Oligonucleotide fingerprint analysis of Tacaribe virion RNA. *J. Gen. Virol.* 55, 219–222.
- Gimenez, H.B., Boersma, D.P. and Compans, R.W. (1983) Analysis of polypeptides in Tacaribe virus-infected cells. *Virology* 128, 469–473.
- Giovanniello, O.A., Nejamkis, M.R., Galassi, N.V. and Nota, N.R. (1980) Immunosuppression in experimental Junin virus infection of mice. *Intervirology* 13, 122–125.
- Goldwasser, R.A., Elliott, L.H. and Johnson, K.M. (1980) Preparation and use of erythrocyte-globulin conjugates to Lassa virus in reversed passive haemagglutination and inhibition. *J. Clin. Microbiol.* 11, 593–599.
- Gomez, M.M. and Boxaca, M.C. (1981) Efecto de la infeccion experimental de Cobayos preñadas con virus Junin. *Rev. Assoc. Argent. Microbiol.* 13, 35–40.
- Gonzalez, J.P., McCormick, J.B., Saluzzo, J.F., Herve, J.P., Georges, A.J. and Johnson, K.M. (1983) An arenavirus isolated from wild-caught rodents (*Praomys* species) in the Central African Republic. *Intervirology* 19, 105–112.
- Gonzalez, J.P., McCormick, J.B., Georges, A.J. and Kiley, M.P. (1984a) Mobala virus: biological and physicochemical properties of a new arenavirus isolated in the Central African Republic. *Ann. Virol. (Institute Pasteur)* 135E, 145–158.
- Gonzalez, J.P., Buchmeier, M.J., McCormick, J.B., Mitchell, S.W., Elliott, L.H. and Kiley, M.P. (1984b) Comparative analysis of Lassa and Lassa-like arenaviruses isolates from Africa. In *Segmented Negative Strand Viruses*, Eds. R.W. Compans and D.H.L. Bishop, pp. 201–208, Academic Press, New York.
- Gonzalez, P.H., Cossio, P.M., Arana, R., Maiztegui, J.I. and Laguens, R.P. (1980) Lymphatic tissue in Argentine hemorrhagic fever. Pathologic features. *Arch. Pathol. Lab. Med.* 104, 250–254.
- Gonzalez, P.H., Lampuri, J.S., Coto, C.E. and Laguens, R.P. (1982) In vitro infection of murine macrophages with Junin virus. *Infect. Immun.* 35, 356–358.
- Gonzalez, P.H., Laguens, R.P., Frigerio, M.J., Callelo, M.A. and Weissenbacher, M.C. (1983) Junin virus infection of *Callithrix Jacchus*: pathological features. *Am. J. Trop. Med. Hyg.* 32, 417–423.
- Grau, O., Franze-Fernandez, M.T., Romanowski, V., Rustici, S.M. and Roasas, M.F. (1981) Junin virus structure. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 11–14. Elsevier/North-Holland, New York.
- Green, C.A., Gordon, D.H. and Lyons, W.F. (1978) Biological species in *Praomys* (*Nastomys*) *Natalensis* (Smith), a rodent carrier of Lassa virus and bubonic plague in Africa. *Am. J. Trop. Med. Hyg.* 27, 627–629.
- Gregg, M.B. (1975) Recent outbreaks of lymphocytic choriomeningitis in the United States of America. *Bull. WHO* 52, 549–553.
- Grela, M.E., Garcia, C.A., Zannoli, V.H. and Barrera Oro, J.G. (1975) Serologia de la FHA. Comparacion de la prueba indirecta de anticuerpos fluorescentes con la fijacion de complemento. *Acta Bioq. Clin. Latinoam.* 9, 141–146.
- Gresser, I., Morel-Maroger, L., Verroust, P., Riviere, Y. and Guillon, J.C. (1978) Anti-interferon globulin inhibits the development of glomerulonephritis in mice infected at

- birth with lymphocytic choriomeningitis virus. *Proc. Natl. Acad. Sci. USA* 75, 3413–3416.
- Grundy, D.J., Bowen, E.T. and Lloyd, G. (1980) Isolated case of Lassa fever in Zaria, Northern Nigeria. *Lancet* 2, 649–650.
- Gschwender, H.H. and Lehmann-Grube, F. (1973) Antigenic properties of the LCM virus: virion and complement-fixing antigen. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 25–35, Springer-Verlag, Berlin.
- Gschwender, H.H. and Lehmann-Grube, F. (1975) Micromethod for the titration of lymphocytic choriomeningitis virus in cell cultures. *J. Gen. Virol.* 26, 205–208.
- Gschwender, H.H., Rutter, G. and Popescu, M. (1975) Use of iodinated organic compounds for the density gradient centrifugation of viruses. *Arch. Virol.* 49, 359–364.
- Gschwender, H.H., Rutter, G. and Lehmann-Grube, F. (1976) Lymphocytic choriomeningitis virus. II. Characterization of extractable complement-fixing activity. *Med. Microbiol. Immunol.* 162, 119–131.
- Guerrero, L.B. de (1977) Vacunas experimentales contra la fiebre hemorrágica Argentina. *Medicina (Buenos Aires)* 37, 252–259.
- Guerrero, L.B. de and Boxaca, M.C. (1980) Estudio preliminar de una variante atenuada del virus Junin derivada de la cepa prototipo XJ. *Medicina (Buenos Aires)* 40, 267–274.
- Guerrero, L.B. de, Weissenbacher, M.C. and Parodi, A.S. (1969) Inmunización contra la fiebre hemorrágica Argentina con una cepa atenuada del virus Junin. I. Estudio de una cepa modificada del virus Junin inmunización de cabayos. *Medicina (Buenos Aires)* 29, 1–5.
- Guerrero, L.B. de, Boxaca, M.C., Weissenbacher, M.C. and Frigerio, M.J. (1977) Infección experimental del cabayo con virus Junin. II. Cuadro clínico, diseminación y eliminación de virus. *Medicina (Buenos Aires)* 37, 271–278.
- Guerrero, L.E. de, Boxaca, M.C., Malumbres, E. and Gomez, M. de las M. (1985) Pathogenesis of attenuated Junin virus in the guinea pig model. *J. Med. Virol.* 15, 197–202.
- Guttler, F., Bro-Jorgensen, K. and Jorgensen, P.N. (1975) Transient impaired cell-mediated tumour immunity after acute infection with lymphocytic choriomeningitis virus. *Scand. J. Immunol.* 4, 327–336.
- Hanaoka, M., Suzuki, S. and Hotchin, J. (1969) Thymus-dependent lymphocytes: destruction by lymphocytic choriomeningitis virus. *Science* 163, 1216–1219.
- Hannover Larsen, J. (1968) Studies on immunological tolerance to LCM virus. 9. Induction of immunological tolerance to the virus in adult mice. *Acta Pathol. Microbiol. Scand.* 73, 106–114.
- Harnish, D.G., Leung, W.C. and Rawls, W.E. (1981) Characterization of polypeptides immunoprecipitable from Pichinde virus-infected BHK-21 cells. *J. Virol.* 38, 840–848.
- Harnish, D.G., Dimock, K., Bishop, D.H.L. and Rawls, W.E. (1983) Gene mapping in Pichinde virus: assignment of viral polypeptides to genomic L and S RNAs. *J. Virol.* 46, 638–641.
- Harper, G.J. (1981) Contamination of the environment by special purpose centrifuges used in clinical laboratories. *J. Clin. Pathol.* 34, 1114–1123.
- Hasson, E.R., Bianchi, M.A. de and Bianchi, N.O. (1983) Analisis de aberraciones cromosómicas e intercambios de cromátidas. Hermonas en cultivos de linfocitos humanos infectados con virus Junin (cepa XJ-clon 3). *Medicina (Buenos Aires)* 43, 735–736.

- Help, G.I. and Coto, C.E. (1980) Genesis de Particulas interferentes durante la multiplicacion del virus Junin in vivo. *Medicina (Buenos Aires)* 40, 531–536.
- Help, G.I. and Coto, C.E. (1981) Propiedades de las particulas interferentes generadas por el virus Junin en celulas Vero. *Medicina (Buenos Aires)* 41, 19–24.
- Help, G.I., Leon, M.E. and Coto, C.E. (1976) Interferencia asociada a cultivos celulares cronicamente infectados con virus Junin. *Rev. Asoc. Argent. Microbiol.* 8, 45–53.
- Henderson, B.E., Gary, G.W., Kissling, R.E., Frame, J.D. and Carey, D.E. (1972) Lassa fever. Virological and serological findings. *Trans. R. Soc. Trop. Med. Hyg.* 66, 409–416.
- Henderson, J.R. and Downs, W.G. (1965) Junin and Tacaribe plaque reduction in rhesus monkey kidney cell monolayers. *Am. J. Trop. Med. Hyg.* 14, 796–797.
- Hershkovitz, P. (1959) Nomenclature and taxonomy of the neotropical mammals described by Olfers, 1818. *J. Mammol.* 40, 337–353.
- Hershkovitz, P. (1966) Mice, land bridges and Latin American faunal interchange. In *Ectoparasites of Panama*, Eds. R.L. Wenzel and V.J. Tipton. Field Museum of Natural History, Chicago, USA.
- Herwitz, J.L., Pan, S., Wettstein, P.J. and Doherty, P.C. (1983) Cross-reactivity patterns of vaccinia-specific cytotoxic T lymphocytes from H-2K<sup>b</sup> mutants. *Immunogenetics* 17, 79–88.
- Hinman, A.R., Fraser, D.W., Douglas, R.G., Bowen, G.S., Kraus, A.L., Winkler, W.G. and Rhodes, W.W. (1975) *Am. J. Epidemiol.* 101, 103–110.
- Holland, J.J., Villareal, L.P., Breindl, M., Semler, B.L. and Kohne, D. (1976) Defective interfering virus particles attenuate virus lethality in vivo and in vitro. In *Animal Virology*, Eds. D. Baltimore, A.S. Huang and C.F. Fox, pp. 773–786. Academic Press, New York.
- Holstein, B.L.A. de, Teyssie, A.R., Knecher, L.M., Samilovich, S.R., Coto, C.E. and Weissenbacher, M.C. (1981) Induccion de interferon por el virus Tacaribe. *Medicina (Buenos Aires)* 41, 177–181.
- Hotchin, J. (1962) The biology of lymphocytic choriomeningitis infection: virus induced immune disease. *Cold Spring Harbour Symp. Quant. Biol.* 27, 479–499.
- Hotchin, J. (1971a) Persistent and slow virus infections. *Monogr. Virol.* 3, S. Karger, Basel.
- Hotchin, J. (1971b) Virus, cell surface, and self: lymphocytic choriomeningitis of mice. *Am. J. Clin. Pathol.* 56, 333.
- Hotchin, J. (1973) Transient virus infection; spontaneous recovery mechanisms of lymphocytic choriomeningitis virus-infected cells. *Nature (London) New Biol.* 24, 270–272.
- Hotchin, J. and Cinits, M. (1958) Lymphocytic choriomeningitis infection of mice as a model for the study of latent virus infection. *Can. J. Microbiol.* 4, 149–163.
- Hotchin, J. and Kinch, W. (1975) Microplaque reduction: new assay for neutralizing antibody to lymphocytic choriomeningitis virus. *J. Infect. Dis.* 131, 186–188.
- Hotchin, J. and Seegal, R. (1977) Virus-induced behavioural alteration of mice. *Science* 196, 671–674.
- Hotchin, J. and Sikora, E. (1973) Low pathogenicity variant of lymphocytic choriomeningitis virus. *Infect. Immun.* 7, 825–826.
- Hotchin, J. and Sikora, E. (1975) Laboratory diagnosis of lymphocytic choriomeningitis. *Bull. WHO* 52, 555–559.
- Hotchin, J. and Weigand, H. (1961a) The effects of pretreatment with X-rays on the



- pathogenesis of lymphocytic choriomeningitis in mice. 1. Host survival, virus multiplication and leucocytosis. *J. Immunol.* 87, 675–681.
- Hotchin, J. and Weigand, H. (1961b) Studies of lymphocytic choriomeningitis in mice. I. The relationship between age at inoculation and outcome of infection. *J. Immunol.* 86, 392–400.
- Hotchin, J., Kinch, W. and Benson, L. (1971) Lytic and turbid plaque-type mutants of lymphocytic choriomeningitis virus as the cause of neurological disease or persistent infection. *Infect. Immun.* 4, 281–286.
- Hotchin, J., Sikora, E., Kinch, W., Hinman, A. and Woodall, J. (1974) Lymphocytic choriomeningitis virus in a hamster colony causes infection of hospital personnel. *Science* 185, 1173–1174.
- Hotchin, J., Carballal, G., Sikora, E. and Kinch, W. (1977) Experimental vaccination against lymphocytic choriomeningitis virus. *Medicina (Buenos Aires)* 37 (Suppl. 3) 232–236.
- Howard, C.R. and Buchmeier, M.J. (1983) A protein kinase activity in lymphocytic choriomeningitis virus and identification of the phosphorylated product using monoclonal antibody. *Virology* 126, 538–547.
- Howard, C.R. and Simpson, D.I.H. (1980) The biology of arenaviruses. *J. Gen. Virol.* 51, 1–14.
- Howard, C.R., Chanas, A., Ellis, D., Young, P., Lloyd, D. and Simpson, D.I.H. (1983) The ultrastructure and antigenic composition of arenaviruses. In *Proceedings of an International Symposium on Tropical Arboviruses and Haemorrhagic Fevers*, Ed. F. Pinheiro, pp. 205–214. Brazilian Academy of Sciences.
- Howard, C.R., Lewicki, H., Allison, L., Salter, M. and Buchmeier, M.J. (1985) Properties and characterization of monoclonal antibodies to Tacaribe virus. *J. Gen. Virol.* 66, 1383–1395.
- Huang, A. and Baltimore, D. (1977) Defective interfering animal viruses. *Compr. Virology* 10, 73–116.
- Hunt, L.A., Etchison, J.R. and Summers, D.F. (1978) Oligosaccharide chains are trimmed during synthesis of the envelope glycoprotein of vesicular stomatitis virus. *Proc. Natl. Acad. Sci. USA* 75, 754–758.
- Ihara, T., Akashi, H. and Bishop, D.H.L. (1984) Novel coding strategy (ambisense genomic RNA) revealed by sequence analysis of Punta Toro phlebovirus S RNA. *Virology* 136, 293–306.
- Iorio, R.M. and Bratt, M. (1984) Neutralization of Newcastle disease virus by monoclonal antibodies to haemagglutinin neuraminidase glycoprotein: requirement for antibodies to four sites for complete neutralization. *J. Virol.* 51, 445–451.
- Isaacson, M. (1975) The ecology of *Praomys (Mastomys) natalensis* in southern Africa. *Bull. WHO* 52, 629–636.
- Ivanoff, B., Duquesnoy, P., Languillat, G., Saluzzo, J.F., Georges, A., Gonzalez, J.P. and McCormick, J. (1982) Haemorrhagic fever in Gabon. I. Incidence of Lassa, Ebola and Marburg viruses in Haut-Ogoov'e. *Trans. R. Soc. Trop. Med. Hyg.* 76, 719–720.
- Ivanov, A.P., Rezapkin, G.V., Dzagurova, T.K. and Tkachenko, E.A. (1984) Indirect solid-phase immunosorbent assay for detection of arenavirus antigens and antibodies. *Acta Virol.* 28, 240–245.
- Jacobs, R.P. and Cole, G.A. (1976) Lymphocytic choriomeningitis virus-induced immunosuppression: a virus-induced macrophage defect. *J. Immunol.* 117, 1004–1009.
- Jahrling, P.B. (1983) Protection of Lassa virus-infected guinea pigs with Lassa-immune plasma of guinea pig, primate and human origin. *J. Med. Virol.* 12, 93–102.

- Jahrling, P.B. and Peters, C.J. (1984) Passive antibody therapy of Lassa fever in cynomolgus monkeys: importance of neutralizing antibody and Lassa virus strain. *Infect. Immun.* 44, 528–533.
- Jahrling, P.B., Hesse, R.A., Eddy, G.A., Johnson, K.M., Callis, R.T. and Stephen, E.L. (1980) Lassa virus infection of rhesus monkeys: pathogenesis and treatment with ribavirin. *J. Infect. Dis.* 141, 580–589.
- Jahrling, P.B., Hesse, R.A., Rhoderick, J.B., Elwell, M.A. and Moe, J.B. (1981) Pathogenesis of a Pichinde virus strain adapted to produce lethal infections in guinea pigs. *Infect. Immun.* 32, 872–880.
- Jahrling, P.B., Smith, S., Hesse, R.A. and Rhoderick, J.B. (1982) Pathogenesis of Lassa virus infection in guinea pigs. *Infect. Immun.* 37, 771–778.
- Jahrling, P.B., Peters, C.J. and Stephen, E.L. (1984) Enhanced treatment of Lassa fever by immune plasma combined with ribavirin in Cynomolgus monkeys. *J. Infect. Dis.* 149, 420–427.
- Jahrling, P.B., Frame, J.D., Rhoderick, J.B. and Monson, M. (1985) Endemic Lassa fever in Liberia. IX. Selection of optimally effective plasma for treatment by passive immunization. *Trans. R. Soc. Trop. Med. Hyg.* (in press).
- Jennings, W.L., Lewis, A.L., Sather, G.E., Pierce, L.V. and Bond, J.O. (1970) Tamiami virus in the Tampa Bay area. *Am. J. Trop. Med. Hyg.* 19, 527–536.
- Jocheim, K.A., Scheid, W., Liedtke, G., Hansen, I. and Stausberg, G. (1957) Komplexbindende Antikörper gegen das Virus der lymphozytären Choriomeningitis in serum von versuchstieren und Beobachtungen zur Immunität. *Arch. Gesamte Virusforsch.* 7, 143–162.
- Johnson, E.D., Monjan, A.A. and Morse, H.C. (1978) Lack of B-cell participation in acute lymphocytic choriomeningitis disease of the central nervous system. *Cell. Immunol.* 36, 143–150.
- Johnson, I. and Clamp, J.R. (1971) The oligosaccharide units of a human type L immunoglobulin (macroglobulin). *Biochem. J.* 123, 739–745.
- Johnson, K.M. (1975) Status of arenavirus vaccines and their application. *Bull. WHO* 52, 725–735.
- Johnson, K.M. (1981) Arenaviruses in rodents. In *Comparative Diagnosis of Viral Diseases*, Eds. E. Kurstak and C. Kurstak, pp. 511–525. Academic Press, New York.
- Johnson, K.M. (1982) Haemorrhagic fevers. In *Viral Diseases in South East Asia and the Western Pacific*, Ed. J.S. Mackenzie, pp. 563–575. Academic Press, Sydney.
- Johnson, K.M., Mackenzie, R.B., Webb, P.A. and Kuns, M.L. (1965a) Chronic infection of rodents by Machupo virus. *Science* 150, 1618–1619.
- Johnson, K.M., Wiebanga, N.H., Mackenzie, R.B., Kuns, M.L., Tauraso, N.M., Shelokov, A., Webb, P.A., Justines, G. and Beye, H.K. (1965b) Virus isolations from human cases of haemorrhagic fever in Bolivia. *Proc. Soc. Exp. Biol. Med.* 118, 113–118.
- Johnson, K.M., Kuns, M.L., Mackenzie, R.B., Webb, P.A. and Yunker, C.E. (1966) Isolation of Machupo virus from wild rodent *calomys callosus*. *Am. J. Trop. Med. Hyg.* 15, 103–106.
- Johnson, K.M., Halstead, S.B. and Cohen, S.N. (1967) Hemorrhagic fevers of Southeast Asia and South America: a comparative appraisal. *Prog. Med. Virol.* 9, 105–108.
- Johnson, K.M., Webb, P.A. and Justines, G. (1973) Biology of Tacaribe-complex viruses. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 241–258. Springer-Verlag, Vienna.
- Johnson, K.M., Elliott, L.H. and Hayman, D.L. (1981) Preparation of polyvalent viral immunofluorescent intracellular antigens and use in human serosurveys. *J. Clin. Microbiol.* 14, 527–529.

- Johnson, R.T. (1965) Virus invasion of the central nervous system. A study of Sindbis virus infection in the mouse using fluorescent antibody. *Am. J. Pathol.* 46, 929–943.
- Justines, G. and Johnson, K.M. (1969) Immune tolerance in *Calomys callosus* infected with machupo virus. *Nature (London)* 222, 1090–1091.
- Kano, S., Bloom, B.R. and Howe, M.L. (1973) Enumeration of activated thymus-derived lymphocytes by the virus plaque assay. *Proc. Natl. Acad. Sci. USA* 70, 2299–2303.
- Katz, S., Leedham, C.L. and Kessler, W.H. (1952) Medical management of haemorrhagic fever. *J. Am. Med. Assoc.* 150, 1363.
- Keenlyside, R.A., McCormick, J.B., Webb, P.A., Smith, E., Elliott, L. and Johnson, K.M. (1983) Case-control study of *Mastomys natalensis* and humans in Lassa virus infected households in Sierra Leone. *Am. J. Trop. Med. Hyg.* 32, 829–837.
- Kenyon, R.H., Green, D.E. and Peters, C.J. (1985) Effect of immunosuppression on experimental Argentine haemorrhagic fever in guinea pigs. *J. Virol.* 53, 75–80.
- Kessler, S.W. (1976) Rapid isolation of antigens from cells with a staphylococcal protein A-antibody adsorbent. Parameters of the interaction of antigen-antibody complexes with Protein A. *J. Immunol.* 115, 1617–1624.
- Kierzembaum, F., Budzko, D. and Parodi, A.S. (1970) Alterations in the enzymatic activity of plasma in guinea pigs infected with Junin virus. *Arch. Gesamte Virusforsch.* 30, 217–223.
- Kiley, M.P., Lange, J.V. and Johnson, K.M. (1979) Protection of rhesus monkeys from Lassa virus by immunisation with closely related arenaviruses. *Lancet* 2, 738.
- Kiley, M.P., Tomori, O., Regnery, R.L. and Johnson, K.M. (1981) Characterization of the arenaviruses Lassa and Mozambique. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 1–9. Elsevier/North-Holland, New York.
- Kirk, W.E., Cash, P., Peters, C.J. and Bishop, D.H.L. (1980) Formation and characterization of an intertypic lymphocytic choriomeningitis recombinant virus. *J. Gen. Virol.* 51, 213–218.
- Knobloch, J., McCormick, J.B., Webb, P.A., Dietrich, M., Schumacher, H.H. and Dennis, E. (1980) Clinical observations in 42 patients with Lassa fever. *Tropenmed. Parasitol.* 31, 389–398.
- Kozak, M. (1984) Point mutations close to the AUG initiator codon effect the efficiency of translation of rat preproinsulin in vivo. *Nature (London)* 308, 241–246.
- Kundin, W.D., Liu, C., Hysell, P. and Hamachige, S. (1963) Studies on West Nile virus infection by means of fluorescent antibodies. I. Pathogenesis of West Nile virus infection in experimentally inoculated suckling mice. *Arch. Gesamte Virusforsch.* 12, 514–528.
- Kuns, M.L. (1965) Epidemiology of Machupo virus infection. II. Ecological and control studies of hemorrhagic fever. *Am. J. Trop. Med. Hyg.* 14, 813–816.
- Laguens, M., Chambo, J.G. and Laguens, R.R. (1983a) In vivo replication of pathogenic and attenuated strains of Junin virus in different cell populations of lymphatic tissue. *Infect. Immun.* 41, 1279–1283.
- Laguens, R.P., Meckert, P.C., Avila, M.M., Nejamkis, M.R. and Weissenbacher, M.C. (1983b) Infeccion cronica con virus Junin en la rata. *Medicina (Buenos Aires)* 43, 391–397.
- Lascano, E.F., Berria, M.I. and Martinez Segovia, Z.M. de (1979) Arenavirus: controversial aspects of their fine structure. *Medicina (Buenos Aires)* 39, 218–222.
- Laude, H. (1981) Thermal inactivation studies of a coronavirus. *J. Gen. Virol.* 56, 235–240.

- Lehmann-Grube, F. (1964) Lymphocytic choriomeningitis in the mouse. I. Growth in the brain. *Arch. Gesamte Virusforsch.* 14, 344–350.
- Lehmann-Grube, F. (1971) Lymphocytic Choriomeningitis Virus, *Virology Monographs* Vol. 10, Springer-Verlag, Vienna.
- Lehmann-Grube, F. (1978) An improved method for determining neutralizing antibody against lymphocytic choriomeningitis virus in human sera. *J. Gen. Virol.* 41, 377–383.
- Lehmann-Grube, F. (1984a) Portraits of viruses: arenaviruses. *Intervirology* 22, 121–145.
- Lehmann-Grube, F. (1984b) Replication and persistence of viruses in cells of the immune system. In *Bacterial and Viral Inhibition and Modulation of Host Defences*, Eds. G. Falcone, M. Campa, H. Smith and G.M. Scott, pp. 211–242. Academic Press, London.
- Lehmann-Grube, F. and Ambrassat, J. (1977) A new method to detect lymphocytic choriomeningitis virus-specific antibody in human sera. *J. Gen. Virol.* 37, 85–92.
- Lehmann-Grube, F. and Lohler, J. (1981) Immunopathologic alterations of lymphatic tissues of mice infected with lymphocytic choriomeningitis virus. II. Pathogenic mechanisms. *Lab. Invest.* 44, 205–213.
- Lehmann-Grube, F., Slencyka, W. and Tees, R. (1969) A persistent and inapparent infection of L cells with the virus of lymphocytic choriomeningitis. *J. Gen. Virol.* 5, 63–81.
- Lehmann-Grube, F., Popescu, M., Schaefer, H. and Gschwender, H.H. (1975) LCM virus infection of cells in vitro. *Bull. WHO* 52, 443–456.
- Lehmann-Grube, F., Kallay, M., Ibscher, B. and Schwartz, R. (1979) Serologic diagnosis of human infections with lymphocytic choriomeningitis virus: comparative evaluation of seven methods. *J. Med. Virol.* 4, 125–136.
- Lehmann-Grube, F., Varho, M. and Cihak, J. (1981) Reciprocal patterns of humoral and cell mediated anti-viral immune responses of mice infected with high and low doses of lymphocytic choriomeningitis virus (LCM). In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 85–92. Elsevier/North-Holland, New York.
- Lehmann-Grube, F., Tijerina, R., Zeller, W., Chaturvedi, U.C. and Lohler, J. (1983) Age-dependent susceptibility of murine T lymphocytes to lymphocytic choriomeningitis virus. *J. Gen. Virol.* 64, 1157–1166.
- Lehmann-Grube, F., Assman, U., Loliger, C., Moskophides, D. and Lohler, J. (1985) Mechanism of recovery from acute virus infection. I. Role of T lymphocytes in the clearance of lymphocytic choriomeningitis virus from spleens of mice. *J. Immunol.* 134, 608–615.
- Leifer, E., Gocke, D.J. and Bourne, H. (1970) Lassa fever, a new virus disease of man from West Africa. II. Report of a laboratory-acquired infection treated with plasma from a person recently recovered from the disease. *Am. J. Trop. Med. Hyg.* 19, 677–679.
- Leon, M.E., Coto, C.E. and Weissenbacher, M.C. (1976) Drogas inhibidoras de la multiplicacion del virus Junin: Glucosamina, 2-deoxi-D-glucosa y Bis-Bencimidazole. *Medicina (Buenos Aires)* 36, 406–410.
- Leon, M.E., Coto, C.E. and Weissenbacher, M.C. (1977) Drogas inhibidoras del virus Junin. *Medicina (Buenos Aires)* 37, (Suppl. 3) 225–231.
- Leung, W.C. (1978) Involvement of cellular DNA-dependent RNA polymerase II in the replication of Pichinde virus. Abstract, Fourth International Congress for Virology, pp. 446, The Hague, The Netherlands.

- Leung, W.C. and Rawls, W.E. (1977) Virion-associated ribosomes are not required for the replication of Pichinde virus. *Virology* 81, 174–176.
- Leung, W.C., Ghosh, H.P. and Rawls, W.E. (1977) Strandedness of Pichinde virus RNA. *J. Virol.* 22, 235–237.
- Leung, W.C., Leung, M.F.K.L. and Rawls, W.E. (1979) Distinctive RNA transcriptase, polyadenylic acid polymerase and polyuridylic acid polymerase activities associated with Pichinde virus. *J. Virol.* 30, 98–107.
- Leung, W.C., Harnish, D., Ramsingh, A., Dimock, K. and Rawls, W.E. (1981) Gene mapping in Pichinde virus. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 51–57. Elsevier/North-Holland, New York.
- Leung, W.C., Ramsingh, A., Jing, G., Mong, K., Taneja, A.K. and Hodges, R.S. (1984) Subgenomic RNA of arenavirus Pichinde and its implication in regulation of viral gene expression in productive infection and persistence. In *Segmented Negative Strand Viruses*, Eds. R.W. Compans and D.H.L. Bishop, pp. 109–116. Academic Press, Orlando.
- Levis, S.C., Saavedra, M.C., Ceccoli, C., Falcoff, E., Feuillade, M.R., Enria, D.A.M., Maiztegui, J.I. and Falcoff, R. (1984) Endogenous interferon in Argentine haemorrhagic fever. *J. Infect. Dis.* 149, 428–433.
- Lewin, B. (1980) *Gene Expression*, Vol. 3. Wiley, New York.
- Lewin, J.M. and Utz, J.P. (1961) Orchitis, parotitis and meningo-encephalitis due to lymphocytic choriomeningitis virus. *N. Engl. J. Med.* 265, 776–780.
- Lewis, A.M., Rowe, W.P., Turner, H.C. and Huebner, R.J. (1965) Lymphocytic choriomeningitis virus in hamster tumour: spread to hamsters and humans. *Science* 150, 363–364.
- Lillie, R.D. (1936) Pathologic histology of lymphocytic choriomeningitis in monkeys. *Public Health Rep. (Washington)* 51, 303–310.
- Lillie, R.D. and Armstrong, C. (1945) Pathology of Lymphocytic choriomeningitis in mice. *Arch. Pathol.* 40, 141–152.
- Lloyd, G., Bowen, E.T. and Slade, J.H. (1982) Physical and chemical methods of inactivating Lassa virus. *Lancet* 1, 1046–1048.
- Logan, J.C., Fox, M.P., Morgan, J.H., Makohon, A.M. and Pfau, C.J. (1975) Arenavirus inactivation in contact with N-substituted isatin beta-thiosemicabaznes and certain cations. *J. of Gen. Virol.* 28, 271–283.
- Lohler, J. and Lehmann-Grube, F. (1981) Immunopathologic alterations of lymphatic tissues of mice infected with lymphocytic choriomeningitis virus. I. Histopathologic findings. *Lab. Invest.* 44, 193–204.
- Lohler, J., Schwendemann, G. and Lehmann-Grube, F. (1980) Lymphocytic choriomeningitis of mice: pathogenesis of the chronic disease. In *Search for the Cause of Multiple Sclerosis and Other Chronic Diseases*, Ed. A. Boese, pp. 203–213. Verlag Chemie, Weinheim.
- Lukashevich, I.S., Maryankova, R.F. and Fidarou, F.M. (1983a) Reproduction of Lassa virus in different cell cultures. *Acta Virol.* 27, 282–285.
- Lukashevich, I.S., Lemeshko, N.N., Goluben, V.P., Stelmakh, T.A. and Petkevich, A.S. (1983b) Sedimentation analysis of the virion RNA of Machupo virus. *Vopr. Virusol.* 28, 69–74.
- Lukashevich, I.S., Stelmakh, T.A., Goluben, V.P., Stchesljenok, E.P. and Lemeshko, N.N. (1984) Ribonucleic acids of Machupo and Lassa viruses. *Arch. Virol.* 79, 189–203.
- Mackenzie, R.B. (1965) Epidemiology of Machupo virus infection. I. Pattern of human infection, San Joaquin, Bolivia, 1962–1964. *Am. J. Trop. Med. Hyg.* 14, 808–813.

- Mackenzie, R.B., Webb, P.A. and Johnson, K.M. (1965) Detection of complement-fixing antibody after Bolivian hemorrhagic fever, employing Machupo, Junin and Tacaribe virus antigens. *Am. J. Trop. Med. Hyg.* 14, 1079–1084.
- Mahy, B.W.J., Rowson, K.E.K. and Salaman, M.H. (1964) Plasma enzyme levels in virus-infected mice. *Virology* 23, 528–541.
- Maiztegui, J.I. (1975) Clinical and epidemiological patterns of Argentine hemorrhagic fever. *Bull. WHO* 55, 567–575.
- Maiztegui, J.I., Sabattini, M.S. and Barrera Oro, J.G. (1972) Actividad del virus de la coriomeningitis linfocítica (LCM) en el área endémica de fiebre hemorrágica Argentina (FHA). I. Estudios serológicos en roedores capturados en la ciudad de Pergamino. *Medicina (Buenos Aires)* 32, 131–137.
- Maiztegui, J.I., Laguens, R.P., Cossio, P.M., Casanova, M.B., De la Vega, M.T., Ritacco, V., Segal, A., Fernandez, N.J. and Arana, R.M. (1975) Ultrastructural and immunohistochemical studies in five cases of Argentine hemorrhagic fever. *J. of Infect. Dis.* 132, 35–43.
- Maiztegui, J.I., Fernandez, N.J. and de Damilano, A.J. (1979) Efficacy of immune plasma in treatment of Argentine haemorrhagic fever and association between treatment and a late neurological syndrome. *Lancet* 2, 1216–1217.
- Mannweiler, K. and Lehmann-Grube, F. (1973) Electron microscopy of LCM virus-infected L cells. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 37–48. Springer-Verlag, Berlin.
- Martinez Peralta, L.A. and Lehmann-Grube, F. (1983) Properties of lymphocytic choriomeningitis virus interfering particles. *Arch. Virol.* 77, 61–69.
- Martinez Peralta, L.A., Laguens, R.P., Cossio, P.M., Sabattini, M.S., Maiztegui, I. and Arana, R.M. (1979a) Presence of viral particles in the salivary gland of *Calomys musculinus* infected with Junin virus by a natural route. *Intervirology* 11, 111–116.
- Martinez Peralta, L.A., Leon, M.E., Coto, C.E. and Laguens, R.P. (1979b) Effect of glucosamine on the replication of the arenavirus Junin in Vero cells. *Intervirology* 11, 188–190.
- Martinez Peralta, L.A., Burns, M. and Lehmann-Grube, F. (1981) Biochemical composition of lymphocytic choriomeningitis virus interfering particles. *J. Gen. Virol.* 55, 475–479.
- Martinez Segovia, Z.M. de and De Mitri, M.I. (1977) Junin virus structural proteins. *J. Virol.* 21, 579–583.
- Martinez Segovia, Z.M. de and Diaz, A. (1968) Purification of Junin virus by an aqueous biphasic polymer system. *Appl. Microbiol.* 16, 1602–1604.
- Martinez Segovia, Z.M. de and Grazioli, F. (1969) The nucleic acid of Junin virus. *Acta Virol.* 13, 264–268.
- Martinez Segovia, Z.M. de, Arguelles, G. and Tokman, A. (1979) Capacidad antigenica del virus Junin inactivado mediante oxidación fotodinámica. *Medicina (Buenos Aires)* 40, 156–160.
- Martinez Segovia, Z.M. de, Arguelles, G. and Tokman, A. (1980) Capacidad antigenica del virus Junin inactivado mediante oxidación fotodinámica. *Medicina (Buenos Aires)* 40, 156–160.
- Matthews, R.E.F. (1982) Classification and nomenclature of viruses. *Intervirology* 17, 1–200.
- McCormick, J.B., Webb, P.A. and Johnson, K.M. (1980) Lassa immune plasma and ribavirin in the therapy of acute Lassa fever. In *Ribavirin: a Broad Spectrum Antiviral Agent*, Eds. R.A. Smith and W. Kirkpatrick, p. 213. Academic Press, New York.
- McFarland, H.F. (1974) In vitro studies of cell-mediated immunity in an acute viral infection. *J. Immunol.* 113, 173–180.

- McLeod, C.G., Stookey, J.L., Eddy, G.A. and Scott, S.K. (1976) Pathology of chronic Bolivian hemorrhagic fever in the rhesus monkey. *Am. J. Pathol.* 84, 211–224.
- McLeod, C.G., Stookey, J.L., White, J.D., Eddy, G.A. and Fry, G.A. (1978) Pathology of Bolivian hemorrhagic fever in the African green monkey. *Am. J. Trop. Med. Hyg.* 27, 822–826.
- Merigan, T.C., Oldstone, M.B.A. and Welsh, R.M. (1977) Interferon production during lymphocytic choriomeningitis virus infection of nude and normal mice. *Nature (London)* 268, 67–68.
- Mersich, S.E., Leon, M.E. and Coto, C.E. (1979) Cell nucleus participation in the multiplication of the arenavirus Tacaribe. *FEMS Microbiol. Lett.* 6, 205–207.
- Mersich S.E., Damonte, E.B. and Coto, C.E. (1981) Induction of RNA polymerase. II. Activity in Junin virus-infected cells. *Intervirology* 16, 123–127.
- Mertens, P.E., Patton, R., Baum, J.J. and Monath, T.P. (1973) Clinical presentation of Lassa fever cases during the hospital epidemic at Zorzor, Liberia, March–April 1972. *Am. J. Trop. Med. Hyg.* 22, 780–784.
- Mettler, N.E. and Casals, J. (1970) Susceptibility of mice aged 0–14 days to infection with Junin virus. *Proc. Soc. Exp. Biol. Med.* 134, 1051–1054.
- Mettler, N.E. and Casals, J. (1973) Paralytic sequelae and immunologic response of infant mice after infection with viruses of the Tacaribe group. *Acta Virol.* 17, 472–478.
- Mettler, N.E., Buckley, S. and Casals, J. (1961) Propagation of Junin virus, the aetiological agent of Argentinian hemorrhagic fever, in HeLa cell cultures. *Proc. Soc. Exp. Biol. Med.* 684–688.
- Mettler, N.E., Casals, J. and Shope, R.E. (1963) Study of the antigenic relationships between Junin virus, the aetiological agent of Argentine haemorrhagic fever and other arthropod-borne viruses. *Am. J. Trop. Med. Hyg.* 12, 647–652.
- Mifune, K., Carter, M. and Rawls, W.E. (1971) Characterization studies of the Pichinde virus – a member of the arenavirus group. *Proc. Soc. Exp. Biol. Med.* 136, 637–644.
- Milchev, G.I. and Hadjiolov, A.A. (1978) Association of poly (A) and poly (U) polymerases with cytoplasmic ribosomes. *Eur. J. Biochem.* 84, 113–121.
- Milzer, A. and Levinson, S.O. (1949) Active immunization of mice with ultraviolet-inactivated lymphocytic choriomeningitis virus vaccine and results of immune serum therapy. *J. Infect. Dis.* 85, 251–255.
- Mims, C.A. (1959) The response of mice to large intravenous injections of ectromelia virus. II. The growth of virus in the liver. *Br. J. Exp. Pathol.* 40, 543–550.
- Mims, C.A. (1966) Immunofluorescence study of the carrier state and mechanism of vertical transmission in lymphocytic choriomeningitis virus infection in mice. *J. Pathol. Bacteriol.* 91, 395–402.
- Mims, C.A. and Blanden, R.V. (1972) Antiviral action of immune lymphocytes in mice infected with lymphocytic choriomeningitis virus. *Infect. Immun.* 6, 695–698.
- Mims, C.A. and Subrahmanyam, T.P. (1966) Immunofluorescence study of the mechanism of resistance to superinfection in mice carrying the lymphocytic choriomeningitis virus. *J. Pathol. Bacteriol.* 91, 403–415.
- Mims, C.A. and Wainwright, S. (1968) The immunodepressive action of lymphocytic choriomeningitis virus in mice. *J. Immunol.* 101, 717–724.
- Mitri, M.I. de and Martinez Segovia, Z.M. (1980) Biological activities of Junin virus proteins. II. Complement fixing polypeptides associated with the soluble antigen and purified virus particles. *Intervirology* 14, 84–90.
- Molinas, F.C., Paz, R.A., Rimoldi, M.T. and de Braccio, M.M.E. (1978) Studies of blood coagulation and pathology in experimental infection of guinea pigs with Junin virus. *J. Infect. Dis.* 137, 740–746.

- Molinas, F.C., De Bracco, N.M.E. and Maiztegui, J.I. (1981) Coagulation studies in Argentine hemorrhagic fever. *J. Infect. Dis.* 143, 1–6.
- Monath, T.P. (1973) Lassa fever. *Trop. Doctor* 4, 155–161.
- Monath, T.P. (1975) Lassa fever: review of epidemiology and epizootiology. *Bul. WHO* 52, 577–592.
- Monath, T.P., Mertens, P.E., Patton, R., Moser, C.R., Baum, J.J. and Pinneo, L. (1973) A hospital epidemic of Lassa fever in Zorzor, Liberia, March–April 1972. *Am. J. Trop. Med. Hyg.* 22, 773–779.
- Monath, T.P., Newhouse, V.F., Kemp, G.E., Setzer, H.W. and Cacciapuoti, A. (1974a) Lassa virus from *Mastomys natalensis* rodents during an epidemic in Sierra Leone. *Science* 185, 263–265.
- Monath, T.P., Maher, M., Casals, J., Kissling, R.E. and Cacciapuoti, A. (1974b) Lassa fever in the eastern province of Sierra Leone, 1970–1972. II. Clinical observations and virological studies on selected hospital cases. *Am. J. Trop. Med. Hyg.* 23, 1140–1149.
- Monson, M.H., Frame, J.D., Jahrling, P.B. and Alexander, K. (1984) Endemic Lassa fever in Liberia. II. Clinical and epidemiological aspects at Curran Lutheran Hospital, Zorzor, Liberia. *Trans. R. Trop. Med. Hyg.* 78, 427–435.
- Morbidity and Mortality Weekly Report (1980) Recommendation for initial management of suspected or confirmed cases of Lassa fever, Vol. 28, p.52, Supplement. US Department of Health, Education and Welfare.
- Morel-Maroger, L., Sloper, J.C., Vinter, J., Woodrow, D. and Gresser, I. (1978) An ultrastructural study of the development of nephritis in mice treated with interferon in the neonatal period. *Lab. Invest.* 39, 513–522.
- Moskophidis, D. and Lehmann-Grube, F. (1983) The immune response of the mouse to lymphocytic choriomeningitis virus. II. Differences of numbers of cytotoxic T lymphocytes in spleens of mice with different strains. *Cell. Immunol.* 77, 279–289.
- Muller, E.G.W. (1979) Mechanisms of action and pharmacology: chemical agents. In *Antiviral Agents and Viral diseases of man*, Eds. G. Galasso, T.C. Merigan and R.A. Buchanan, pp. 77–149. Raven Press, New York.
- Muller, G., Burns, M., Martinez Peralta, L. and Lehmann-Grube, F. (1983) Lymphocytic choriomeningitis virus. IV. Electron microscopic investigation of the virion. *Arch. Virol.* 75, 229–242.
- Murphy, F.A. and Whitfield, S.G. (1975) Morphology and morphogenesis of arenaviruses. *Bull. WHO* 52, 409–419.
- Murphy, F.A., Webb, P.A., Johnson, K.M. and Whitfield, S.G. (1969) Morphological comparison of Machupo with lymphocytic choriomeningitis virus: basis for a new taxonomic group. *J. Virol.* 4, 535–541.
- Murphy, F.A., Whitfield, S.G., Webb, P.A. and Johnson, K.M. (1973) Ultrastructural studies of Arenaviruses. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 273–285. Springer-Verlag, Vienna.
- Murphy, F.A., Webb, P.A., Johnson, K.M., Whitfield, S.G. and Chappell, W.A. (1970) Arenaviruses in Vero cells: ultrastructural studies. *J. Virol.* 6, 507–518.
- Murphy, F.A., Winn, W., Walker, D.H., Flemister, M.R. and Whitfield, S.G. (1976) Early lymphoreticular viral tropism and antigen persistence. Tamiari virus infection in the cotton rat. *Lab. Invest.* 34, 125–140.
- Murphy, F.A., Buchmeier, M.J. and Rawls, W.E. (1977) The reticuloendothelium as the target in a virus infection: Pichinde virus pathogenesis in two strains of hamsters. *Lab. Invest.* 37, 502–515.
- Nakamura, K. and Compans, R.W. (1979) Biosynthesis of the oligosaccharides of influenza virus glycoproteins. *Virology* 93, 31–47.



- Nejamkis, M.R., Weissenbacher, M.C. and Calello, M.A. (1977) Infeccion experimental con virus Junin en la Rata. *Medicina (Buenos Aires)* 39 (Suppl. 3) 121–127.
- Niessing, J. (1975) Three distinct forms of nuclear poly (A) polymerase. *Eur. J. Biochem.* 59, 127–135.
- Nota, N.R., Frigerio, M.J., Guerrero, L.B. de and Nejamkis, M.R. (1969) Estudio hematologico en cobayos infectados con virus Junin cepa XJ y cepa XJC13. *Medicina (Buenos Aires)* 29, 171–174.
- Objeski, J.F. and Murphy, F.A. (1977) Bunyaviridae: recent biochemical developments. *J. Gen. Virol.* 37, 1–14.
- Oldstone, M.B.A. (1975) Virus neutralization and virus induced immune complex disease: virus-antibody union resulting in immunoprotection or immunologic injury – two different sides of the same coin. *Prog. Med. Virol.* 19, 84–119.
- Oldstone, M.B.A. and Buchmeier, M.J. (1982) Restricted expression of viral glycoprotein in cells of persistently infected mice. *Nature (London)* 300, 360–362.
- Oldstone, M.B.A. and Dixon, F.J. (1967) Lymphocytic choriomeningitis: production of anti-LCM antibody by 'tolerant' LCM-infected mice. *Science* 158, 1193–1194.
- Oldstone, M.B.A. and Dixon, F.J. (1969) Pathogenesis of chronic disease associated with persistent lymphocytic choriomeningitis viral infection. I. Relationship of antibody production to disease in neonatally infected mice. *J. Exp. Med.* 129, 483–499.
- Oldstone, M.B.A. and Dixon, F.J. (1970a) Pathogenesis of chronic disease associated with persistent lymphocytic choriomeningitis viral infection. II. Relationship of the anti-lymphocytic choriomeningitis immune response to tissue injury in chronic lymphocytic choriomeningitis disease. *J. Exp. Med.* 131, 1–19.
- Oldstone, M.B.A. and Dixon, F.J., (1970b) Persistent lymphocytic choriomeningitis viral infection. III. Virus-antiviral antibody complexes and associated disease following transplacental infection. *J. Immunol.* 105, 829–837.
- Oldstone, M.B.A. and Dixon, F.J. (1971) The immune response in lymphocytic choriomeningitis viral infection. In *Sixth International Symposium of Immunopathology*, Ed. P. Miescher, pp. 391–398. Schwabe and Co., Basel.
- Oldstone, M.B.A. and Peters, C.J. (1978) Arenavirus infections of the nervous system. In *Handbook of Clinical Neurology*, Vol. 34, Eds. P.J. Vinken and G.W. Bruyn, pp. 193–207. Elsevier/North-Holland, Amsterdam.
- Oldstone, M.B.A., Tishon, A., Chiller, J., Weigle, W. and Dixon, F.J. (1973) Effect of chronic viral infection on the immune system. I. Comparison of the immune responsiveness of mice chronically infected with LCM virus with that of non-infected mice. *J. Immunol.* 110, 1268.
- Oldstone, M.B.A., Welsh, R.M. and Joseph, B.S. (1975) Pathogenic mechanisms of tissue injury in persistent viral infections. *Ann. NY Acad. Sci.* 256, 65–72.
- Oldstone, M.B.A., Holmstoen, J. and Welsh, R.M. (1977) Alteration of acetylcholine enzymes in neuroblastoma cells persistently infected with lymphocytic choriomeningitis virus. *J. Cell. Physiol.* 91, 459–472.
- Oldstone, M.B.A., Buchmeier, M.J., Doyle, M.V. and Tishon, A. (1980) Virus-induced immune complex disease: specific anti-viral antibody and Clq binding material in the circulation during persistent lymphocytic choriomeningitis virus infection. *J. Immunol.* 124, 831–838.
- Oldstone, M.B.A., Sinha, Y.N., Blount, P., Tishon, A., Rodriguez, M., von Wedel, R. and Lampert, P.W. (1982) Virus-induced alterations in homeostasis: alterations in differentiated functions of infected cells in vivo. *Science* 218, 1125–1127.
- Oldstone, M.B.A., Rodriguez, M., Daughaday, W.H. and Lampert, P.W. (1984) Viral perturbation of endocrine function: disordered cell function leads to disturbed homeostasis and disease. *Nature (London)* 307, 278–281.

- Oubina, J.R. and Carballal, C. (1985) Neurotropism of a high-passage XJ strain of Junin virus. *J. Med. Virol.* 15, 157-161.
- Oubina, J.R., Carballal, G., La Torre, J., Frigerio, M.J. and Vasquez, C. (1980) Estudio sobre la medula osea del cabayo en la fiebre hemorragica Argentina. *Medicina (Buenos Aires)* 40, 657-661.
- Padnos, M., Shimonaski, G. and Came, P.E. (1971) Interferon in mice acutely infected with M-P virus. *J. Gen. Virol.* 13, 163-165.
- Padula, P.J. and Segovia, Z.M. de M. (1984) Replication of Junin virus in the presence of tunicamycin. *Intervirology* 22, 227-231.
- Pala, P. and Askonas, B.A. (1985). Induction of K<sup>b</sup>-restricted anti-influenza cytotoxic T cells in C57 BL mice: importance of stimulator cell type and immunigation route. *Immunology* 55, 601-607.
- Palmer, E.L., Obijeski, J.F., Webb, P.A. and Johnson, K.M. (1977) The circular segmented nucleocapsid of an arenavirus-Tacaribe virus. *J. Gen. Virol.* 36, 541-545.
- Parker, J.C., Igel, H.J., Reynolds, R.K., Lewis, A.M., and Rowe, W.P. (1976) Lymphocytic choriomeningitis virus infection in fetal, newborn and young adult Syrian hamsters (*Mesocricetus auratus*). *Infect. Immun.* 13, 967-981.
- Parker, M.D. and Hewlett, M.J. (1981) The 3'-terminal sequences of Uukuniemi and Inkoo virus RNA genome segments. In *The Replication of Negative Strand Viruses*, Eds. D.H. Bishop and R.W. Compans, pp. 125-133. Elsevier North-Holland, New York.
- Parodi, A.S., Greenway, D.J., Rugiero, H.R., Rivero, E., Frigerio, M.J., Mettler, W.E., Garzon, F., Boxaca, M., Guerrero, L.B. and Nota, N.R. (1958) Sobre la etiologia del bute epidemico de Junin. *Dia Medico* 30, 2300-2302.
- Parodi, A.S., Guerrero, L.B. and Weissenbacher, M. (1965) Fiebre hemorragica Argentina vacunacion con virus Junin inactivado. *Cienc. Invest.* 21, 132-133.
- Parodi, A.S., Nota, N.R., de Guerrero, L.B., Frigerio, M.J., Weissenbacher, M. and Rey, E. (1967) Inhibition of immune response in experimental hemorrhagic fever (Junin virus) *Acta Virol.* 11, 120-125.
- Parodi, A.S., Frigerio, M.J., Nota, M.R., Nejamkis, M.R., Guerrero, L.B. de and Bisso, G. (1970a) Inhibicion de la respuesta inmunologica secundaria en la fiebra hemorragica experimental (Virus Junin). *Medicine (Buenos Aires)* 30, 137.
- Parodi, A.S., Guerrero, L.B. de, Astarloa, L., Cintora, A., Cambaceres, C.G., Maglio, F., Magnoni, C., Milani, H., Ruggiero, H. and Squassi, G. (1970b) Immunizacion contra la fiebre hemorragica Argentina con una cepa atenuada de virus Junin. IV. Valoracion de respuestas clinica e inmunologica. *Medicina (Buenos Aires)* 30 (Suppl. 1) 3-7.
- Parodi, A.S., Schmunis, G.A. and Weissenbacher, M.C. (1970c) Infection with viruses of the Tacaribe group in thymectomised mice. *Experientia* 26, 665.
- Pedersen, I.R. (1966) Methanol precipitation of lymphocytic choriomeningitis virus. *Acta Pathol. Microbiol. Scand.* 67, 514-522.
- Pedersen, I.R. (1970) Density gradient centrifugation studies on lymphocytic choriomeningitis virus and on viral nucleic acid. *J. Virol.* 6, 414-420.
- Pedersen, I.R. (1971) Lymphocytic choriomeningitis virus RNAs. *Nature (London) New Biol.* 234, 112-114.
- Pedersen, I.R. (1973a) Different classes of ribonucleic acid isolated from lymphocytic choriomeningitis virus. *J. Virol.* 11, 416-423.
- Pedersen, I.R. (1973b) LCM virus: its purification and its chemical and physical properties. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 13-23. Springer-Verlag, Berlin.

- Pedersen, I.R. (1979) Structural components and replication of arenaviruses. *Adv. Virus Res.* 24, 277–330.
- Pedersen, I.R. and Koningshofer, E.P. (1976) Characterization of ribonucleoproteins and ribosomes isolated from lymphocytic choriomeningitis virus. *J. Virol.* 20, 14–21.
- Pedersen, I.R. and Volkert, M. (1966) Multiplication of lymphocytic choriomeningitis virus in suspension cultures of Earle's strain L cells. *Acta Pathol. Microbiol. Scand.* 67, 523–536.
- Penman, S., Vesco, C. and Penman, M. (1968) Localization and kinetics of formation of nuclear heterodisperse RNA, cytoplasmic heterodisperse RNA and polyribosome associated mRNA in HeLa cells. *J. Mol. Biol.* 34, 49–69.
- Peters, C.J., Webb, P.A. and Johnson, K.M. (1973) Measurement of antibodies to Machupo virus by the indirect fluorescent technique. *Proc. Soc. Exp. Biol. Med.* 142, 526–531.
- Petkevich, A.S., Sabynin, V.R., Lukashevich, I.S., Galegov, G.A. and Votikov, V.I. (1981) Effect of ribavirin (virazole) on arenavirus reproduction in cell cultures. *Vopr. Virusol. Mar.–Apr.* (2), 244–245.
- Pfau, C.J. (1965a) Biophysical and biochemical characterization of lymphocytic choriomeningitis virus. I. Density gradient studies. *Acta Pathol. Microbiol. Scand.* 63, 188–197.
- Pfau, C.J. (1965b) Biophysical and biochemical characterization of lymphocytic choriomeningitis virus. II. Partial purification by differential centrifugation and fluorocarbon techniques. *Acta Pathol. Microbiol. Scand.* 63, 198–205.
- Pfau, C.J. (1974) Biochemical and biophysical properties of the arenaviruses. *Prog. Med. Virol.* 18, 64–80.
- Pfau, C.J. (1975) Arenavirus chemotherapy: retrospect and prospect. *Bull. WHO* 52, 737–744.
- Pfau, C.J. (1977) Current status on the chemotherapy of experimental arenavirus infections. *Medicina (Buenos Aires)* 37 (Suppl. 3) 219–224.
- Pfau, C.J. and Camyre, K.P. (1967) Biophysical and biochemical characterization of lymphocytic choriomeningitis virus. II. Thermal and ultrasonic sensitivity. *Arch. Gesamte Virusforsch.* 20, 430–437.
- Pfau, C.J. and Camyre, K.P. (1968) Inhibition of lymphocytic choriomeningitis virus multiplication by 2-(alpha-hydroxybenzyl) benzimidazole. *Virology* 35, 375–380.
- Pfau, C.J., Trowbridge, R.S., Welsh, R.M., Stanek, L.D. and O'Connell, C.M. (1972) Arenaviruses: inhibition by amantadine hydrochloride. *J. Gen. Virol.* 14, 209–211.
- Pfau, C.J., Welsh, R.M. and Trowbridge, R.S. (1973) Plaque assays and current concepts of regulation in arenavirus infections. In *Lymphocytic Choriomeningitis and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 101–111. Springer-Verlag, Berlin.
- Pfau, C.J., Bergold, G.H., Casals, J., Johnson, K.M., Murphy, F.A., Pedersen, I.R., Rawls, W.E., Rowe, W.P., Webb, P.A. and Weissenbacher, M.C. (1974) Arenaviruses. *Intervirology* 4, 207–213.
- Pfau, C.J., Valenti, J.K., Jacobsen, S. and Pevear, D.C. (1982) Cytotoxic T cells are induced in mice infected with lymphocytic choriomeningitis virus strains of markedly different pathogenicities. *Infect. Immun.* 36, 598–602.
- Pinheiro, F.P. (1982) Situacao das arboviruses na regio Amazonica. In *Proceedings of an International Symposium on Tropical Arboviruses and Haemorrhagic Fevers*, Ed. F. Pinheiro, pp. 27–48. Brazilian Academy of Sciences.
- Pinheiro, F.P., Shope, R.E., de Andrade, A.H.P., Bensabath, G., Cacios, G.V. and Casals, J. (1966) Amapari, a new virus of the Tacaribe Group from rodents and mites of Amapa Territory, Brasil. *Proc. Soc. Exp. Biol. Med.* 122, 531–535.

- Pinheiro, F.P., Woodall, J.P., Da Rosa, A.P.A.T. and Da Rosa, J.F.T. (1977) Studies of Arenaviruses in Brazil. *Medicina (Buenos Aires)* 37 (Suppl. 3) 175–181.
- Popescu, M. and Lehmann-Grube, F. (1976) Diversity of lymphocytic choriomeningitis virus: variation due to replication of the virus in the mouse. *J. Gen. Virol.* 30, 113–122.
- Popescu, M., Lohler, J. and Lehmann-Grube, F. (1977) Infectious lymphocytes in mice persistently infected with lymphocytic choriomeningitis virus. *Z. Naturforsch.* 32c, 1026–1028.
- Popescu, M., Schaefer, H. and Lehmann-Grube, F. (1976) Homologous interference of lymphocytic choriomeningitis virus: detection and measurement of interference focus-forming units. *J. Virol.* 20, 1–8.
- Popescu, M., Lohler, J. and Lehmann-Grube, F. (1979) Infectious lymphocytes in lymphocytic choriomeningitis virus carrier mice. *J. Gen. Virol.* 42, 481–492.
- Preble, O.T. and Youngner, J.S. (1975) Temperature-sensitive viruses and the etiology of chronic and inapparent infections. *J. Infect. Dis.* 131, 467–473.
- Public Health Laboratory Service. (1982) Lassa fever *Br. Med. J.* 287, 48.
- Pulkinnen, A.J. and Pfau, C.J. (1970) Plaque size heterogeneity: a genetic trait of lymphocytic choriomeningitis virus. *Appl. Microbiol.* 20, 123–128.
- Rabinovich, A., Cossio, P.M., Carballal, G. and Arana, R.M. (1977) A rapid method for detecting Junin virus viraemia in the guinea pig. *Intervirology* 8, 360–363.
- Rabinovich, R.D., Boxaca, M.C. and Lascano, E.F. (1983) Diferentes manifestaciones clinicas del raton lactante inoculado con distintas cepas del virus Junin. *Medicina (Buenos Aires)* 43, 532–540.
- Ramos, B.A., Courtney, R.J. and Rawls, W.E. (1972) Structural proteins of Pichinde virus. *J. Virol.* 10, 661–667.
- Ramsingh, A.I., Dimock, K., Rawls, W.E. and Leung, W.C. (1980) Size estimation of Pichinde virus RNA by gel electrophoresis under denaturing conditions. *Intervirology* 14, 31–36.
- Randrup Thomsen, A., Volkert, M. and Marker, O. (1985) Different isotype profiles of virus-specific antibodies in acute and persistent lymphocytic choriomeningitis virus infection in mice. *Immunology* 55, 213–223.
- Rapp, E. and Buckley, S.M. (1962) Studies with the etiologic agent of Argentinian epidemic hemorrhagic fever (Junin virus). *Am. J. Pathol.* 40, 63–75.
- Rasmussen, A.F. (1947) The laboratory diagnosis of lymphocytic choriomeningitis and mumps. *Proceedings of the Rocky Mountain Conference on Infantile Paralysis, Denver, Colorado.*
- Rawls, W.E. (1977) Biochemical characteristics of Pichinde virus. *Medicina (Buenos Aires)* 37 (Suppl. 3) 10–17.
- Rawls, W.E. and Buchmeier, M.J. (1975) Arenaviruses: purification and physicochemical nature. *Bull. WHO* 52, 393–401.
- Rawls, W.E. and Leung, W.C. (1979) Arenaviruses. In *Comparative Virology*, Vol. 14, Eds. H. Fraenkel-Conrat and R.R. Wagner, pp. 157–192. Plenum Press, New York.
- Rawls, W.E., Ramos, B.A. and Carter, M.F. (1973) Biophysical and biochemical studies of Pichinde virus. In *Lymphocytic Choriomeningitis and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 259–272. Springer-Verlag, Berlin.
- Rawls, W.E., Banerjee, S.N., McMillan, C.A. and Buchmeier, M.J. (1976) Inhibition of Pichinde virus replication by actinomycin D. *J. Gen. Virol.* 33, 421–434.
- Rickwood, D. (1978) (Editor) *Centrifugation: a Practical Approach*. Information Retrieval Ltd., London.
- Rivers, T.M. and Scott, T.F.M. (1935) Meningitis in man caused by a filterable virus. *Science* 81, 439–440.

- Rivers, T.M. and Scott, T.F.M. (1936a) Meningitis in man caused by a filterable virus. II Identification of the etiological agent. *J. Exp. Med.* 63, 415–432.
- Rivers, T.M. and Scott, T.F.M. (1936b) Five cases of lymphocytic choriomeningitis in man. *Trans. Am. Pathol. Soc.* 48, 41–42.
- Riviere, Y. and Bandu, M.T. (1977) Induction d'interferon par le virus de la choriomeningite lymphocytaire chez la souris. *Ann. Microbiol. (Paris)* 128a, 323–329.
- Riviere, Y., Gresser, I., Guillon, J.C. and Tovey, M.G. (1977) Inhibition of anti-interferon serum of lymphocytic choriomeningitis virus disease in suckling mice. *Proc. Natl. Acad. Sci. USA* 74, 2135–2139.
- Riviere, Y., Gresser, I., Guillon, J.C., Bandu, M.T., Ronco, P., Morel-Maroger, L. and Verroust, P. (1980) Severity of lymphocytic choriomeningitis virus disease in different strains of suckling mice correlates with increasing amounts of endogenous interferon. *J. Exp. Med.* 152, 633–640.
- Riviere, Y., Ahmed, R., Southern, P.J., Buchmeier, M.J., Dutko, F.J. and Oldstone, M.B.A. (1985) The S RNA segment of lymphocytic choriomeningitis virus codes for the nucleoprotein and glycoproteins 1 and 2. *J. Virol.* 53, 966–968.
- Robbins, P.W., Hubbard, S.C., Turco, S.J. and Wirth, D.F. (1977) Proposal for a common oligosaccharide intermediate in the synthesis of membrane glycoprotein. *Cell* 12, 893–900.
- Rodriguez, M., Buchmeier, M.J., Oldstone, M.B.A. and Lampert, P.W. (1983) Ultrastructural localization of viral antigens in the CNS of mice persistently infected with lymphocytic choriomeningitis virus (LCMV). *Am. J. Pathol.* 110, 95–100.
- Roeder, R.G. (1976) Eucaryotic nuclear RNA polymerases. In *RNA Polymerase*, Eds. R. Losick and M. Chamberlin, pp. 285–329. Cold Spring Harbor Laboratory, New York.
- Romanowski, V. and Bishop, D.H.L. (1983) The formation of arenaviruses that are genetically diploid. *Virology* 126, 87–95.
- Romanowski, V. and Bishop, D.H.L. (1985) Conserved sequences and coding of two strains of lymphocytic choriomeningitis virus (WE and ARM) and Pichinde arenavirus. *Virus Res.* 35–51.
- Ronco, P., Woodrow, D., Riviere, Y., Moss, J., Verroust, P., Guillon, J.C., Gresser, I., Scoper, J.C. and Morel-Maroger, L. (1980) Further studies on the inhibition of lymphocytic choriomeningitis-induced glomerulonephritis by anti-interferon globulin. Circulating immune complexes and ultrastructural studies. *Lab. Invest.* 43, 37–46.
- Ronco, P., Riviere, Y., Thoua, Y., Bandu, M.T., Guillon, J.C., Verroust, P. and Morel-Maroger, L. (1981) Lymphocytic choriomeningitis infection in the nude mouse. An immunopathological study. *Immunology* 43, 763–770.
- Rosato, R.R., Elwell, M.R. and Eddy, G.A. (1978) Virulence alterations of Tacaribe virus infection in adult mice: lethal model for encephalitis. *Arch. Virol.* 58, 137–147.
- Rose, J.R. (1956) A new clinical entity? *Lancet* 2, 197.
- Rosevear, D.R. (1969) *The Rodents of West Africa*. Trustees of the British Museum (Natural History), London.
- Rowe, W.P. (1954) Studies on pathogenesis and immunity in lymphocytic choriomeningitis virus infection of the mouse. U.S. Naval Medical Research Institute, Research Report NM 005.048.14.01.
- Rowe, W.P. (1956) Protective effect of pre-irradiation on lymphocytic choriomeningitis infection in mice. *Proc. Soc. Exp. Biol. Med.* 92, 194–198.
- Rowe, W.P., Black, P.H. and Levey, R.H. (1963) Protective effect of neonatal thymectomy on mouse LCM infection. *Proc. Soc. Exp. Biol. Med.* 114, 248–251.
- Rowe, W.P., Pugh, W.E., Webb, P.A. and Peters, C.J. (1970a) Serological relationship

- of the Tacaribe complex of viruses to lymphocytic choriomeningitis virus. *J. Virol.* 5, 289–292.
- Rowe, W.P., Murphy, F.A., Bergold, G.H., Casals, J., Hotchin, J., Johnson, K.M., Lehmann-Grube, F., Mims, C.A., Traub, E. and Webb, P.A. (1970b) Arenoviruses: proposed name for a newly-defined virus group. *J. Virol.* 5, 651–652.
- Rugiero, H.R., Astarloa, L., Cambaceres, C.G., Maglio, F. and Squassi, G. (1968) Inmunización contra la fiebre hemorrágica Argentina con una cepa atenuada de virus Junin. II. Inmunización de voluntarios, análisis clínico y de laboratorio. *Medicina (Buenos Aires)* 29, 81–87.
- Rutter, G. and Gschwender, H.H. (1973) Antigenic alteration of cells in vitro infected with LCM virus. In *Lymphocytic Choriomeningitis and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 51–59. Springer-Verlag, Berlin.
- Sabattini, M.S., Barrera Oro, J.G., Maiztegui, J.I. and Ferradas, B.R. de (1974) Actividad del virus de la coriomeningitis linfocítica en el área endémica de fiebre hemorrágica Argentina. II. Aislamiento a partir de un *Mus musculus* campestre capturado en el sudeste de Córdoba. *Medicina (Buenos Aires)* 34, 313.
- Sabattini, S., de Rios, L.E.G., Diaz, G. and Vega, V.R. (1977) Natural and experimental infection of rodents with Junin virus. *Medicina (Buenos Aires)* 37, (Suppl. 3) 149–161.
- Saleh, F., Gard, G.P. and Compans, R.W. (1979) Synthesis of Tacaribe Viral proteins. *Virology* 93, 369–376.
- Salum, S.B. de, Larripa, I., Damonte, E.B. and Coto, C.E. (1978) Análisis citogenético de líneas celulares Vero. *Medicina (Buenos Aires)* 38, 513–518.
- Samoilovich, S.R., Carballal, G. and Weissenbacher, M.C. (1983) Protection against a pathogenic strain of Junin virus by mucosal infection with an attenuated strain. *Am.J. Trop. Med. Hyg.* 32, 825–828.
- Samoilovich, S.R., Pecci Saavedra, J., Frigerio, M.J. and Weissenbacher, M.C. (1984) *Acta Virol.* 28, 277–281.
- Sangiorgio, P. and Weissenbacher, M.C. (1983) Congenital and perinatal infection with Junin virus. *J. Med. Virol.* 11, 161–165.
- Sarrat, P.H., Camain, R., Baum, J. and Robin, Y. (1972) Diagnostic histopathologie des hépatites dues au virus Lassa. *Bul. Soc. Pathol. Exot.* 5, 642–650.
- Scheid, W., Ackermann, R. and Felgenhauer, K. (1959) Lymphozytare Choriomeningitis unter dem Bild der Encephalitis Lethargica. *Dtsch. Med. Wochenschr.* 93, 940–943.
- Scheid, W., Ackermann, R. and Jocheim, K.A. (1960) Die Bedeutung der komplementbindenden und der neutralisierenden Antikörper für die Diagnose der Infektionen mit dem Virus der lymphozytären choriomeningitis und das Verhalten von Normalseren in Neutralisationsversuch. *Arch. Gesamte Virusforsch.* 9, 295–309.
- Schmidt, N.J. and Harding, H.B. (1956) The demonstration of substances in human sera which inhibit complement fixation in antigen-antibody systems of lymphogranuloma venereum, psittacosis, mumps, Q fever and lymphocytic choriomeningitis virus. *J. Bacteriol.* 71, 217–222.
- Schmunis, G., Weissenbacher, M. and Parodi, A.S. (1967) Tolerance to Junin virus in thymectomized mice. *Arch. Gesamte Virusforsch.* 21, 201–204.
- Schrader, J.W. and Edelman, G.M. (1977) Joint recognition by cytotoxic T cells of inactivated Sendai virus and products of the major histocompatibility complex. *J. Exp. Med.* 145, 523–529.
- Schwarz, E.R. (1972) Alteraciones de la coagulación en la fiebre hemorrágica Argentina. *Medicina (Buenos Aires)* 32, 247–259.

- Schwartz, R., Lohler, J. and Lehmann-Grube, F. (1978) Infection of cultivated mouse peritoneal macrophages with lymphocytic choriomeningitis virus. *J. Gen. Virol.* 39, 565–570.
- Schwartzman, G. (1946) Alterations in pathogenesis of experimental lymphocytic choriomeningitis caused by pre-passage of the virus through heterologous host. *J. Immunol.* 54, 293–304.
- Schwenk, H.U., Sclenicza, W. and Lehmann-Grube, F. (1971) Phytohaemagglutinin-induced DNA synthesis in blood lymphocytes from mice persistently infected with the virus of lymphocytic choriomeningitis virus. *Arch. Gesamte Virusforsch.* 33, 197–199.
- Scolnick, E.M., Aaronson, S.A. and Todaro, G.J. (1970) DNA synthesis by RNA-containing tumour viruses. *Proc. Natl. Acad. Sci. USA* 67, 1034–1041.
- Scott, T.F.M. and Rivers, T.M. (1936) Meningitis in man caused by a filterable virus. I. Two cases and the method of obtaining a virus from their spinal fluids. *J. Exp. Med.* 63, 397–414.
- Sedwick, W.D. and Wiktor, T.J. (1967) Reproducible plaquing system for Rabies, lymphocytic choriomeningitis and other ribonucleic acid viruses in BHK-21/13S agarose suspensions. *J. Virol.* 1, 1224–1226.
- Sengupta, S. and Rawls, W.E. (1979) Pseudotypes of vesicular stomatitis virus and Pichinde virus. *J. Gen. Virol.* 42, 141–148.
- Sharp, P.C. (1982) Lassa fever in children. *J. Infect.* 4, 73–77.
- Shaughnessy, H.J. and Zichis, J. (1940) Infection of guinea pigs by application of virus of lymphocytic choriomeningitis to their normal skins. *J. Exp. Med.* 72, 331–343.
- Shekalov, A. (1965) Hemorrhagic fevers in the Americas: A perspective. *Am. J. Trop. Med. Hyg.* 14, 790–792.
- Sidwell, R.W., Hofman, J.W., Khare, G.P., Allen, L., Witkowski, J.T. and Robbins R.K. (1972) Broad-spectrum antiviral activity of virazole: 1-beta-D-ribofuranosyl-1, 2, 4-triazole-3-carboxamide. *Science* 177, 705–706.
- Silberman, S.L., Jacobs, R.P. and Cole, C.A. (1978) Mechanisms of hemopoietic and immunological dysfunction induced by lymphocytic choriomeningitis virus. *Infect. Immun.* 19, 533–539.
- Simizu, B., Rhim, J.S. and Wiebenga, N.H. (1965) Machupo, Junin and Tacaribe virus infections in stable African green monkey kidney cell line (Vero). *Bacteriol. Proc.* p. 112.
- Simon, M. (1970) Multiplication of lymphocytic choriomeningitis virus in various systems. *Acta Virol.* 14, 369–376.
- Sinkovics, J. and Molnar, E. (1955) Quoted in Lehmann-Grube (1971).
- Skinner, H.H. and Knight, E.H. (1969) Studies on murine lymphocytic choriomeningitis within a partially-infected colony. *Lab. Anim.* 3, 175–184.
- Skinner, H.H., Knight, E.H. and Buckley, L.S. (1976) The hamster as a secondary reservoir host of lymphocytic choriomeningitis virus. *J. Hyg. (Cambridge)* 76, 299–306.
- Smadel, J.E. and Wall, M.J. (1940) A soluble antigen of lymphocytic choriomeningitis. III. Independence of antisoluble substance antibodies and neutralizing antibodies and the role of soluble antigen and inactive virus in immunity to infection. *J. Exp. Med.* 72, 389–405.
- Smadel, J.E. and Wall, M.J. (1942) Lymphocytic choriomeningitis in the Syrian hamster. *J. Exp. Med.* 75, 581–591.
- Smadel, J.E., Baird, R.D. and Wall, M.J. (1939) A soluble antigen of lymphocytic choriomeningitis. I. Separation of soluble antigen from virus. *J. Exp. Med.* 70, 53–66.

- Smadel, J.E., Wall, M.J. and Baird, R.D. (1940) A soluble antigen of lymphocytic choriomeningitis. II. Characteristics of the antigen and its use in precipitin reactions. *J. Exp. Med.* 71, 43–53.
- Smadel, J.E., Green, R.H., Paltauf, R.M. and Gonzales, T.S. (1942) Lymphocytic choriomeningitis: two human fatalities following an unusual febrile illness. *Proc. Soc. Exp. Biol. Med.* 49, 683–686.
- Smith, J.F. and Brown, D.T. (1977) Envelopment of Sindbis virus infected with wild type and maturation-defective mutants. *J. Gen. Virol.* 22, 662–678.
- Southern, P.J., Blount, P. and Oldstone, M.B.A. (1984) Analysis of persistent virus infections by in situ hybridization to whole mouse sections. *Nature (London)* 312, 555–558.
- Speir, R.W., Wood, D., Liebhaber, H. and Buckley, S.M. (1970) Lassa fever. A new virus disease of man from West Africa. IV. Electron microscopy of Vero cell cultures infected with Lassa virus. *Am. J. Trop. Med. Hyg.* 19, 692–694.
- Staneck, L.D., Trowbridge, R.S., Welsh, R.M., Wright, E.A. and Pfau, C.J. (1972) Arenaviruses: cellular response to long-term in vitro infection with Parana and lymphocytic choriomeningitis viruses. *Infect. Immun.* 6, 444–450.
- Stanwick, T.L. and Kirk, B.E. (1971) Effect of actinomycin D on the yield of lymphocytic choriomeningitis virus in baby hamster kidney cells. *Infect. Immun.* 4, 511–512.
- Stanwick, T.L. and Kirk, B.E. (1976) Analysis of baby hamster kidney cells persistently infected with lymphocytic choriomeningitis virus. *J. Gen. Virol.* 32, 361–367.
- Stella, J.P., Yankaskas, K.D., Morgan, J.H., Fox, M.P. and Pfau, C.J. (1974a) Characteristics of the in vitro inhibition of arenavirus synthesis by bis-benzimidazoles. *Antimicrob. Agents Chemother.* 6, 747–753.
- Stella, J.P., Michaelson, J., Dorfman, S.L., Morgan, J.H. and Pfau, C.J. (1974b) Evaluation of bis-benzimidazoles in the treatment of murine lymphocytic choriomeningitis virus infections. *Antimicrob. Agents Chemother.* 6, 754–756.
- Stephen, E.L. and Jahrling, P.B. (1979) Experimental Lassa fever virus infection successfully treated with Ribavirin. *Lancet* 1, 268–269.
- Stephenson, E.H., Larson, E.W. and Dominik, J.W. (1984) Effect of environmental factors on aerosol-induced Lassa virus infection. *J. Med. Virol.* 14, 295–303.
- Stim, T.B. (1969) Arbovirus plaquing in two Simian kidney cell lines. *J. Gen. Virol.* 5, 329–338.
- Stinebaugh, B.J., Schloeder, F.X., Johnson, K.M., Mackenzie, R.B., Entwistle, G. and de Alba, E. (1965) Bolivian hemorrhagic fever: a report of four cases. *Am. J. Med.* 40, 217–230.
- Stitz, L., Althage, A., Hengartner, H. and Zinkernagel, R. (1985) Natural killer cells vs cytotoxic T cells in the peripheral blood of virus-infected mice. *J. Immunol.* 134, 598–602.
- Szmunn, W. (1978) Hepatocellular carcinoma and the hepatitis B virus: evidence for a causal association. *Prog. Med. Virol.* 24, 40–69.
- Tabas, I., Schlesinger, S. and Kornfield, S. (1978) Processing of high mannose oligosaccharides to form complex type oligosaccharides on the newly synthesized polypeptides of the vesicular stomatitis virus G protein and the IgG heavy chain. *J. Biol. Chem.* 253, 716–722.
- Tauraso, N.M. and Shelokov, A. (1965) Protection against Junin virus by immunization with live Tacaribe virus. *Proc. Soc. Exp. Biol. Med.* 119, 608–611.
- Tauraso, N.M., Wiebenga, N.H. and Shelokov, A. (1964) Plaque neutralization studies of Bolivian hemorrhagic fever virus. *Bacteriol. Proc.* pp. 122–123.
- Terrell, T.G., Stookey, J.L., Eddy, G.A. and Kastello, M.D. (1973) Pathology of Bolivian hemorrhagic fever in the rhesus monkey. *Am. J. Pathol.* 73, 477–494.



- Teyssie, A.R., Gutman Frugone, L.F., Ayerra de Holstein, B. and Barrera Oro, J.G. (1971) Nivel de anticuerpos contra virus Junin en un grupo de personal de laboratorio. *Medicina (Buenos Aires)* 31, 113–116E.
- Teyssie, A.R., Knecher, L.M. and Ayerra de Holstein, B. (1981) Interferon en la infección experimental con virus Junin. *Medicina (Buenos Aires)* 41, 573–578.
- Thoma, F., Koller, T.H. and Klug, A. (1979) Involvement of histone H1 in the organization of the nucleosome and of the salt-dependent superstructures of chromatin. *J. Cell Biol.* 83, 403–427.
- Tijerina, R., Lohler, J., Chaturvedi, U.C. and Lehmann-Grube, F. (1980) Infection of murine T lymphocytes with lymphocytic choriomeningitis virus: effect of age of mice on susceptibility. *Z. Naturforsch.* 35c, 1062–1065.
- Togo, Y. and McCracken, E.A. (1976) Double-blind clinical assessment of ribavirin (virazole) in the prevention of induced infection with type B influenza virus. *J. Infect. Dis.* 133, (Suppl. A) 109–113.
- Tomori, O. (1980) Effect of storage temperature on the stability of Lassa virus complement-fixing antigen. *Bull. WHO* 58, 293–296.
- Tosolini, F.A. (1970) The response of mice to the intravenous injection of lymphocytic choriomeningitis virus. *Aust. J. Exp. Biol. Med. Sci.* 48, 445–460.
- Tosolini, F.A. and Mims, C.A. (1971) Effect of murine strain and viral strain on the pathogenesis of lymphocytic choriomeningitis infection and a study of footpad responses. *J. Infect. Dis.* 123, 134–144.
- Townsend, A.R.M. and Skehel, J.J. (1982) Influenza A specific cytotoxic T-cell clones that do not recognize viral glycoproteins. *Nature (London)* 300, 655–657.
- Tranier, M. (1974) Parente des *Mastomys* du Maroc et du Senegal (Rongeurs, Murides). *Mammalia* 38, 558–560.
- Trapido, H. and Sanmartin, C. (1971) Pichinde virus. A new virus of the Tacaribe group from Columbia. *Am. J. Trop. Med. Hyg.* 20, 631–641.
- Traub, E. (1935) A filterable virus recovered from white mice. *Science* 81, 298–299.
- Traub, E. (1936a) Persistence of lymphocytic choriomeningitis virus in immune animals and its relation to immunity. *J. Exp. Med.* 63, 847–861.
- Traub, E. (1936b) An epidemic in a mouse colony due to the virus of acute lymphocytic choriomeningitis virus. *J. Exp. Med.* 63, 533–546.
- Traub, E. (1937) Immunization of guinea pigs with a modified strain of lymphocytic choriomeningitis virus. *J. Exp. Med.* 66, 317–324.
- Traub, E. (1938) Immunization of guinea pigs against lymphocytic choriomeningitis virus with formalized tissue vaccines. *J. Exp. Med.* 68, 95–110.
- Traub, E. (1939) Epidemiology of lymphocytic choriomeningitis in a mouse stock observed for four years. *J. Exp. Med.* 69, 801–817.
- Trexler, P.C., Emond, R.T.D. and Evans, B. (1977) Negative-pressure plastic isolator for patients with dangerous infections. *Br. Med. J.* 2, 5759–5761.
- Trofimov, N.N., Klimashevskaja, L.M., Erofeeva, N.I., Petkevich, A.S. and Votiakov, V.I. (1981) Effect of certain physico-chemical factors on arenaviruses, *Vopr. Virosol.* Mar–Apr. (2), 240–242.
- Troup, J.M., White, H.A., Fom, A.L.M.D. and Carey, D.E. (1970) An outbreak of Lassa fever on the Jos plateau, Nigeria, in January–February 1970. A preliminary report. *Am. J. Trop. Med. Hyg.* 19, 695–696.
- Van der Groen, G., Webb, P., Johnson, K., Lindsay, H., and Elliot, L. (1978) Growth of Lassa and Ebola viruses in different cell lines. In *Ebola Virus Haemorrhagic Fever*, Ed. S.R. Pattyn, pp. 255–260. Elsevier/North-Holland, Amsterdam.
- Van der Groen, G., Kurata, T. and Mets, C. (1983) Modifications to indirect immunofluorescence tests on Lassa, Marburg and Ebola material. *Lancet* 1, 654–655.

- Van der Zeijst, B.A.M., Noyes, B.E., Mirault, M.E., Parker, B., Osterhaus, A.D.M.E., Swyryd, E.A., Bleumink, N., Horzinek, M.C. and Stark, G.R. (1983a) Persistent infection of some standard cell lines by lymphocyte choriomeningitis virus: transmission of infection by an intracellular agent. *J. Virol.* 48, 249–261.
- Van der Zeijst, B.A.M., Bleumink, N., Swyryd, E.A. and Stark, G.R. (1983b) Viral proteins and RNAs in BHK cells persistently infected by lymphocytic choriomeningitis virus. *J. Virol.* 48, 262–270.
- Van der Groen, J., Trexler, P.C. and Pattyn, S.R. (1980) Negative-pressure flexible film isolator for work with class IV viruses in a maximum security laboratory. *J. Infect.* 2, 165–170.
- Vanzee, B.E., Douglas, R.G., Betts, R.F., Bauman, A.W., Fraser, D.W. and Hinman, A.R. (1975) Lymphocytic choriomeningitis in University Hospital Personnel. Clinical features. *Am. J. Med.* 58, 803–809.
- Varho, M., Lehmann-Grube, F. and Simon, M.M. (1981) Effector T lymphocytes in lymphocytic choriomeningitis virus infected mice. *J. Exp. Med.* 153, 992–997.
- Veza, A.C. and Bishop, D.H.L. (1977) Recombination between temperature-sensitive mutants of the arenavirus Pichinde. *J. Virol.* 24, 712–715.
- Veza, A.C., Gard, G.P., Compans, R.W. and Bishop, D.H.L. (1977) Structural components of the arenavirus Pichinde. *J. Virol.* 23, 776–786.
- Veza, A.C., Clewley, J.P., Gard, G.P., Abraham, N.Z., Compans, R.W. and Bishop, D.H.L. (1978a) Virion RNA species of the arenaviruses Pichinde, Tacaribe and Tamiami. *J. Virol.* 26, 485–497.
- Veza, A.C., Gard, G.P., Compans, R.W. and Bishop, D.H.L. (1978b) Genetic and molecular studies of arenaviruses. In *Negative Strand Viruses and the Host Cell*, Eds. B.W.J. Mahy and R.D. Barry, pp. 73–90. Academic Press, London.
- Veza, A.C., Cash, P., Jahrling, P., Eddy, G. and Bishop, D.H.L. (1980) Arenavirus recombination: the formation of recombinants between prototype Pichinde and Pichinde-Munchique viruses and the evidence that arenavirus S RNA codes for the N polypeptide. *Virology* 106, 250–260.
- Vidal, M. de C. and Coto, C.E. (1980) Infeccion persistente de celulas de raton con virus Junin: participacion del Interferon. *Medicina (Buenos Aires)* 40, 537–542.
- Villafane, G., Kravetz, F.O., Donadio, O., Percich, R., Knecher, L., Torres, M.P. and Fernandez, N. (1977) Ecology of rodent carriers of Argentine haemorrhagic fever. *Medicina (Buenos Aires)* 37, (Suppl. 3), 128–138.
- Volk, W.A., Snyder, R.M., Benjamin, D.C. and Wagner, R.R. (1980) Monoclonal antibodies to the glycoprotein of vesicular stomatitis virus: comparative neutralizing activity. *J. Virol.* 42, 220–227.
- Volkert, M. (1962) Studies on immunological tolerance to LCM virus: a preliminary report on adoptive immunization of virus carrier mice. *Acta Pathol. Microbiol. Scand.* 56, 305–310.
- Volkert, M. and Larsen, J.H. (1965a) Studies on immunological tolerance to LCM virus. 5. The induction of tolerance to the virus. *Acta Pathol. Microbiol. Scand.* 63, 161–171.
- Volkert, M. and Larsen, J.H. (1965b) Immunological tolerance to viruses. *Prog. Med. Virol.* 7, 160–207.
- Volkert, M., Larsen, J.H. and Pfau, C.J. (1964) Studies on immunological tolerance to LCM virus. 4. The question of immunity in adoptively immunized virus carriers. *Acta Pathol. Microbiol. Scand.* 61, 268–282.
- Von Magnus, P. (1954) Incomplete forms of influenza virus. *Adv. Virus Res.* 2, 59–79.

- Wagner, F.S., Eddy, G.A. and Brand, O.M. (1977) The African green monkey as an alternative primate host for studying Machupo virus infection. *Am. J. Trop. Med. Hyg.* 26, 159–162.
- Walker, C.M., Rawls, W.E. and Rosenthal, K.L. (1984) Generation of memory cell-mediated immune responses after secondary infection of mice with Pichinde virus. *J. Immunol.* 132, 469–474.
- Walker, D.H. and Murphy, F.A. (1975) Experimental Lassa virus infection in the squirrel monkey. *Am. J. Pathol.* 80, 261–278.
- Walker, D.H., Wulff, H., Lange, J.V. and Murphy, F.A. (1975) Comparative pathology of Lassa virus infection in monkeys, guinea-pigs and *Mastomys natalensis*. *Bull. WHO* 52, 523–534.
- Walker, D.H., McCormick, J.B., Johnson, K.M., Webb, P.A., Komba-Kono, G., Elliott, L.H. and Gardner, J.J. (1982a) Pathologic and Virologic study of fatal Lassa fever in man. *Am. J. Pathol.* 107, 349–356.
- Walker, D.H., Johnson, K.M., Lange, J.V., Gardner, J.J., Kiley, M.P. and McCormick, J.B. (1982b) Experimental infection of rhesus monkeys with Lassa virus and a closely related arenavirus. Mozambique virus. *J. Infect. Dis.* 146, 360–368.
- Wallgren, A. (1925) Une nouvelle maladie infectieuse du système nerveux central? *Acta Paediatr. (Uppsala)* 4, 158–182.
- Wallis, C. and Melnick, J.L. (1962) Cationic stabilization – a new property of enteroviruses. *Virology* 16, 504–506.
- Wallis, C., Yang, C. and Melnick, J.L. (1962) Effect of cations on thermal inactivation of vaccinia, herpes simplex and adenoviruses. *J. Immunol.* 89, 41–46.
- Wannarka, G.L., Stephen, E.L. and Canonico, P.G. (1982) Preclinical evaluation in monkeys of a Ribavirin regimen proposed for use in Lassa fever patients. *Toxicol. Appl. Pharmacol.* 64, 155–159.
- Webb, P.A. (1965) Properties of Machupo virus. *Am. J. Trop. Med. Hyg.* 14, 799–802.
- Webb, P.A., Johnson, K.M., Mackenzie, R.B. and Kuns, M.L. (1967) Some characteristics of Machupo virus, causative agent of Bolivian hemorrhagic fever. *Am. J. Trop. Med. Hyg.* 16, 531–538.
- Webb, P.A., Johnson, K.M. and Mackenzie, R.B. (1969) The measurement of specific antibodies in Bolivian haemorrhagic fever by neutralization of virus plaques. *Proc. Soc. Exp. Biol. Med.* 130, 1013–1019.
- Webb, P.A., Johnson, K.M., Hibbs, J.B. and Kuns, M.L. (1970) Parana, a new Tacaribe complex virus from Paraguay. *Arch. Gesamte Virusforsch.* 32, 379–388.
- Webb, P.A., Johnson, K.M., Peters, C.J. and Justines, G. (1973) Behaviour of Machupo and Latino viruses in *Calomys callosus* from two geographic areas of Bolivia. In *Lymphocytic Choriomeningitis Virus and Other Arenaviruses*, Ed. F. Lehmann-Grube, pp. 313–321. Springer-Verlag, Berlin.
- Webb, P.A., Justines, G. and Johnson, K.M. (1975) Infection of wild and laboratory animals with Machupo and Latino Viruses. *Bull. WHO* 52, 493–499.
- Weber, C., Martinez Peralta, L. and Lehmann-Grube, F. (1983) Persistent infection of cultivated cells with lymphocytic choriomeningitis virus: regulation of virus replication. *Arch. Virol.* 77, 271–276.
- Weber, E.L., Guerrero, L.B. de and Boxaca, M.C. (1983) Persistencia del virus Junin en células diploides humana. *Medicina (Buenos Aires)* 43, 233–234.
- Weigand, H. and Hotchin, J. (1961) Studies of Lymphocytic choriomeningitis in mice. II. A comparison of the immune status of newborn and adult mice surviving inoculation. *J. Immunol.* 86, 401–406.

- Weinmann, R. and Roeder, R.G. (1975) Role of DNA-dependent RNA polymerase III in the transcription of the tRNA and 5S RNA genes. *Proc. Natl. Acad. Sci. USA* 71, 1790–1794.
- Weinmann, R., Brendler, T.G., Raskas, H.J. and Roeder, R.G. (1976) Low molecular weight viral RNAs transcribed by RNA polymerase III during adenovirus 2 infection. *Cell* 7, 557–566.
- Weiss, E.H., Golden, L., Fahrner, K., Mellor, A.L., Devlin, J.J., Bullman, H., Tiddens, H., Bud, H. and Flavell, R. (1984) Organization and evolution of the class I gene family in the major histocompatibility complex of the C57BL/10 mouse. *Nature (London)* 310, 650–655.
- Weissenbacher, M.C. and Damonte, E.B. (1983) Fiebre hemorrágica Argentina. *Adelantos Microbiol. Enfermed. Infecc.* 2, 119–171.
- Weissenbacher, M.C., Guerrero, L.B. de and Parodi, A.S. (1969a) Immunization contra la fiebre hemorrágica Argentina con una cepa atenuada de virus Junin. III. Reacciones serológicas en voluntarios. *Medicina (Buenos Aires)* 29, 88–92.
- Weissenbacher, M.C., Schmunis, G.A. and Parodi, A.S. (1969b) Junin virus multiplication in thymectomised mice effect of thymus and immunocompetent cells grafting. *Arch. Gesamte Virusforsch.* 26, 63–73.
- Weissenbacher, M.C., Schmunis, G.A., Besuchio, S.C. and Calello, M.A. (1972) Interrelacion virus – Huesped en la infeccion experimental del raton con virus Junin y otros virus relacionados. *Medicina (Buenos Aires)* 33, 491–504.
- Weissenbacher, M.C., de Guerrero, L.B. and Boxaca, M.C. (1975) Experimental biology and pathogenesis of Junin virus infection in animals and man. *Bull. WHO* 52, 507–515.
- Weissenbacher, M.C., Coto, C.E. and Calello, M.A. (1975/76) Cross-protection between Tacaribe complex viruses. Protection of neutralizing antibodies against Junin virus (Argentine haemorrhagic fever) in guinea pigs infected with Tacaribe virus. *Intervirology* 6, 42–49.
- Weissenbacher, M.C., de Guerrero, L.B. and Frigerio, M.J. (1976a) Infeccion subclinica, infeccion clinica y vacunacion con virus Junin. *Medicina (Buenos Aires)* 36, 1–8.
- Weissenbacher, M.C., Calello, M.A. and Boxaca, M.C. (1976b) Induccion de interferon y tratamiento con acido poliinosinico-policitidilico (PIC) en la infeccion 'In vivo' con virus Junin. *Rev. Asoc. Argent. Microbiologia* 8, 26–33.
- Weissenbacher, M.C., Coto, C.E., Calello, M.A., Frigerio, M.J. and Damonte, E. (1977) Proteccion experimental contra virus Junin por inoculacion de virus Tacaribe. *Medicina (Buenos Aires)* 37, (Suppl.3) 237–243.
- Weissenbacher, M.C., Calello, M.A., Collilas, O.J., Golferá, H., Rondinone, S.N. and Frigerio, M.J. (1978a) Infeccion de primates del nuevo mundo con virus Junin. *Alouatta curaya. Medicina (Buenos Aires)* 38, 529–536.
- Weissenbacher, M.C., Grela, M.E., Sabattini, M.S., Maiztegui, J.I., Coto, C.E., Frigerio, M.J., Cossio, P.M., Rabinovich, A.S. and Barrera Oro, J.G. (1978b) Inapparent infections with Junin virus among laboratory workers. *J. Infect. Dis.* 137, 309–313.
- Weissenbacher, M.C., Calello, M.A., Rondinone, S.N. and Frigerio, M.J. (1979) Argentine hemorrhagic fever: A primate model. *Intervirology* 11, 363–365.
- Weissenbacher, M.C., Calello, M.A., Rondinone, S.N., Travi, B. and Frigerio, M.J. (1980a) Infeccion de primates del nuevo mundo con virus Junin. *Medicina (Buenos Aires)* 40, 21–30.
- Weissenbacher, M.C., Edelmut, E., Frigerio, M.J., Coto, C.E. and de Guerrero, L.B. (1980b) Serological survey to detect subclinical Junin virus infection in laboratory personnel. *J. Med. Virol.* 6, 223–226.

- Weissenbacher, M.C., Coto, C.E., Calello, M.A., Rondinone, S.N., Damonte, E.B. and Frigerio, M.J. (1982) Cross protection in non-human primates against Argentine hemorrhagic fever. *Infection and Immunity* 35, 425–430.
- Weissenbacher, M.C., Calello, M.A., Quintans, C.J., Panisse, H., Woyskowsky, N.M. and Zanelli, V.H. (1983) Junin virus infection in genetically athymic mice. *Intervirology* 19, 1–5.
- Welsh, R.M. (1978) Cytotoxic cells induced during lymphocytic choriomeningitis virus infection of mice. I. Characterization of natural killer cell induction. *J. Exp. Med.* 148, 163–181.
- Welsh, R.M. (1981) Do natural killer cells play a role in virus infections? *Antiviral Res.* 1, 5–12.
- Welsh, R.M. and Buchmeier, M.J. (1979) Protein analysis of defective interfering lymphocytic choriomeningitis virus and other persistently infected cells. *Virology* 96, 503–515.
- Welsh, R.M. and Kiessling, R. (1980a) In *Natural Cell Mediated Immunity Against Tumors*, Ed. R.B. Herberman, pp. 671–685. Academic Press, New York.
- Welsh, R.M. and Kiessling, R. (1980b) Natural killer cell response to lymphocytic choriomeningitis virus in beige mice. *Scand. J. Immunol.* 11, 363–367.
- Welsh, R.M. and Oldstone, M.B.A. (1977) Inhibition of immunologic injury of cultured cells infected with lymphocytic choriomeningitis virus: role of defective interfering virus in regulating viral antigenic expression. *J. Exp. Med.* 145, 1449–1468.
- Welsh, R.M. and Pfau, C.J. (1972) Determinants of lymphocytic choriomeningitis interference. *J. Gen. Virol.* 14, 177–187.
- Welsh, R.M. and Zinkernagel, R.M. (1977) Heterospecific cytotoxic activity induced during the first three days of acute lymphocytic choriomeningitis virus infection in mice. *Nature (London)* 268, 646–648.
- Welsh, R.M., Trowbridge, R.S., Kowalski, J.B., O'Connell, C.M. and Pfau, C.J. (1971) Amantadine hydrochloride inhibition of early and late stages of lymphocytic choriomeningitis virus-cell interactions. *Virology* 45, 679–686.
- Welsh, R.M., O'Connell, C.M. and Pfau, C.J. (1972) Properties of defective lymphocytic choriomeningitis virus. *J. Gen. Virol.* 17, 355–359.
- Welsh, R.M., Burner, P.A., Holland, J.J., Oldstone, M.B.A., Thompson, H.A. and Villarreal, L.P. (1975) A comparison of biochemical and biological properties of standard and defective lymphocytic choriomeningitis virus. *Bull. WHO* 52, 403–408.
- Welsh, R.M., Lampert, P.W., Burner, P.A. and Oldstone, M.B.A. (1976) Antibody-complement interactions with purified lymphocytic choriomeningitis virus. *Virology* 73, 59–71.
- Westaway, E.G., (1977) Strategy of the flavivirus genome: evidence for multiple internal initiation of translation of proteins specified by Kunjin virus in mammalian cells. *Virology* 80, 320–335.
- White, H.A. (1972) Lassa fever, a study of 23 hospital cases. *Trans. R. Soc. Trop. Med. Hyg.* 66, 390–398.
- Wiebenga, N.H. (1965) Immunologic studies of Tacaribe, Junin and Machupo viruses. *Am. J. Trop. Med. Hyg.* 14, 802–808.
- Wilsnack, R.E. and Rowe, W.P. (1964) Immunofluorescent studies of the histopathogenesis of lymphocytic choriomeningitis virus infection. *J. Exp. Med.* 120, 829–841.
- Winn, W.C. and Walker, D.H. (1975) The pathology of human Lassa fever. *Bull. WHO* 52, 535–545.
- Winn, W.C., Monath, T.P., Murphy, F.A. and Whitfield, S.G. (1975) Lassa virus hepatitis. Observations on a fatal case from the 1972 Sierra Leone epidemic. *Arch. Pathol.* 99, 599–604.

- Witt, D. and Summers, D. (1980) Relationship between virion-associated kinase-effected phosphorylation and transcription activity of vesicular stomatitis virus. *Virology* 107, 34–49.
- Wright, A.E., Harper, G.J. and Simpson, D.I.H. (1982) The problems of virus containment. In *New Developments in Practical Virology*, Ed. C.R. Howard, pp. 305–339. Alan R. Liss, New York.
- Wulff, H. and Johnson, K.M. (1979) Immunoglobulin M and G responses measured by immunofluorescence in patients with Lassa or Marburg virus infections. *Bull. WHO* 57, 631–635.
- Wulff, H. and Lange, J.V. (1975) Indirect immunofluorescence for the diagnosis of Lassa fever infections. *Bull. WHO* 52, 429–436.
- Wulff, H., Fabiyi, A. and Monath, T.P. (1975) Recent isolations of Lassa virus from Nigerian rodents. *Bull. WHO* 52, 609–613.
- Wulff, H., McIntosh, B.M., Hamner, D.B. and Johnson, K.M. (1977) Isolation of an arenavirus closely related to Lassa virus from *Mastomys natalensis* in south-east Africa. *Bull. WHO* 55, 441–444.
- Wulff, H., Lange, J.V. and Webb, P.A. (1978) Interrelationships among arenaviruses measured by indirect immunofluorescence. *Intervirology* 9, 344–350.
- Yalley-Ogunro, J.E., Frame, J.D. and Hanson, A.P. (1984) Endemic Lassa fever in Liberia. VI. Village serological surveys for evidence of Lassa virus activity in Lofa country, Liberia. *Trans. R. Soc. Trop. Med. Hyg.* 78, 764–770.
- Young, P.R. (1985) Biochemical and ultrastructural studies of Pichinde virus. PhD Thesis, University of London.
- Young, P.R. and Howard, C.R. (1983) Fine structure analysis of Pichinde virus nucleocapsids. *J. Gen. Virol.* 64, 833–842.
- Young, P.R., Chanas, A.C. and Howard, C.R. (1981) Analysis of the structure and function of Pichinde virus polypeptides. In *The Replication of Negative Strand Viruses*, Eds. D.H.L. Bishop and R.W. Compans, pp. 15–22. Elsevier North-Holland, New York.
- Zannoli, U.H., Grela, M.E., Garcia, C.A. and Barrera Oro, J.G. (1975) Serologia de la fiebre hemorrágica Argentina. I. Prueba indirecta de anticuerpos fluorescentes. *Acta Bioim. Clin. Latinoam.* 9, 133–140.
- Ziemiecki, A., Garoff, H. and Simons, K. (1980) Formation of the Semliki forest virus membrane glycoprotein complexes in the infected cell. *J. Gen. Virol.* 50, 111–123.
- Zinkernagel, R.M. and Doherty, P.C. (1974) Restriction of in vitro T cell-mediated cytotoxicity in lymphocytic choriomeningitis virus. *Nature (London)* 251, 547–548.
- Zinkernagel, R.M. and Doherty, P.C. (1979) MHC-restricted cytotoxic T cells: studies on the biological role of polymorphic major transplantation antigens determining T cell restriction, specificity, function and responsiveness. *Adv. Immunol.* 27, 151–177.
- Zinkernagel, R.M. and Welsh, R.M. (1976) H-2 compatibility requirement for virus-specific T cell-mediated effector functions in vivo. I. Specificity of T cells conferring antiviral protection against lymphocytic choriomeningitis virus is associated with H-2k and H-2d. *J. Immunol.* 117, 1495–1502.
- Zinkernagel, R.M., Althage, A. and Holland, J.J. (1978) Target antigens for H-2 restricted vesicular stomatitis virus-specific cytotoxic T cells. *J. Immunol.* 121, 744–748.