

Scientific Program

Monday, April 26

Oral Session I: Retrovirus Infections I

Chairpersons: J.C. Martin and G.J. Galasso

8:15am Welcome – George J. Galasso
Giorgio Palù

8:30 Plenary Speaker – William A. Haseltine
“Application of Gene Therapy for HIV Disease”
Dana-Farber Cancer Institute, Boston, MA, USA

9:00 1. Synthesis, Mode of Interaction with the Enzyme and Biological Activities of a Series of Novel Inhibitors of HIV- Proteinase Derived from Penicillins – D.C. Humber *Glaxo Group Research Limited, Greenford, Middlesex, UK*

9:15 2. Synthesis of Carbocyclic Nucleosides, Nucleotides, and Analogues Possessing anti-HIV Activity – S.M. Roberts *Exeter University, Exeter, Devon, UK*

9:30 3. Highly Selective and Potent Inhibition of Human Immunodeficiency Virus (HIV) by the Novel Bicyclam Derivative JM3100 – E. De Clercq, N. Yamamoto, R. Pauwels, M. Witvrouw, K. De Vreese, Z. Debyser, R. Skerlj, D. Thornton, G. Bridger, G. Henson, and M. Abrams *Katholieke Universiteit Leuven, Leuven, Belgium; Johnson Matthey Technology Centre, Sonning Common, Reading, UK; and Johnson Matthey Pharmaceutical Research, West Chester, PA, USA*

9:45 4. New Strategies for Gene Therapy of A.I.D.S – C. Parolin, M. Poznansky, and J. Sodroski *Harvard Medical School, Boston, MA, USA; University of Padova, Padova, Italy; and St. Mary's Hospital, Praed Street, London, UK*

10:00 Break

10:30 5. Gene Therapy of Viral Infections: The Use of Retroviral Vectors Expressing Catalytic and Anti-Sense RNA_s – M.A. Biasolo, S.K.M. Lo, A. Alberti, W.A. Haseltine, and G. Palù *Padova University, Padova, Italy; and Dana Farber Cancer Institute, Boston, MA, USA*

10:45 6. Effects of U-75875, A Peptidomimetic Inhibitor of Retroviral Protease, on Simian immunodeficiency Virus (SIV) Infection in Rhesus Monkeys (*Macaca mulatta*) – L.N. Martin, K.F. Soike, M. Murphey-Corb, R.P. Bohm, W.G. Tarpley, S. Thaisrivongs, T. Kakuk, T.J. Vidmar, and M.J.

Ruwart *Tulane Regional Primate Research Center, Tulane University, Covington, LA; and Upjohn Laboratories, Kalamazoo, MI, USA*

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| 11:00 | 7. Metabolism and In Vitro Anti-retroviral Activities of the bis(pivaloyloxymethyl) Prodrug of Acyclic 9-(2-Phosphonyl- methoxy-ethyl) Adenine – R.V. Srinivas, Y.-F. Gong, B.L. Robbins, M.C. Connelly, N. Bischofberger, and A. Fridland <i>St. Jude Children's Research Hospital, Memphis, TN; and Gilead Sciences, Foster City, CA, USA</i> |
| 11:15 | 8. Two New (Newborn) Mouse Models – Harvey Murine Sarcoma Virus (MSV-Har) and Rauscher Murine Leukaemia Virus (RLV), for Anti Retroviral Drug Testing – J.J. Harvey and M. Botcherby <i>MRC Clinical Research Centre, Northwick Park, Harrow, UK</i> |
| 11:30 | 9. Zidovudine (AZT)-Induced Down Regulation of Erythropoietin-Receptors (Epo-R) and Inhibition of Protein Kinase C (PKC) in the Primate Bone Marrow Cells (BMC) – K.C. Agrawal, S.R. Gogu, C.A. Leissinger, C. Nosbisch, and J.D. Unadkat <i>Tulane University School of Medicine, New Orleans, LA; and School of Pharmacy, University of Washington, Seattle, WA, USA</i> |
| 11:45 | 10. Accurate Monitoring by QC-PCR of Changes in Circulating HIV-1 Levels in Patients in Response to Antiviral Therapy – M. Piatak, Jr., L.-M. Yang, S.J. Clark, J.C. Kappes, K.-C. Luk, B.H. Hahn, G.M. Shaw, E.A. Emini, J.D. Lifson, and M.S. Saag <i>Genelabs, Inc., Redwood City, CA; The University of Alabama at Birmingham, Birmingham, AL; and Merck Sharpe, and Dohme Research Laboratories, West Point, PA, USA</i> |
| 12:00 | 11. Comparison of ddI and ZDV for the Treatment of Patients with AIDS or ARC, 6 Months Prior Treatment with ZDV and Increasing Symptoms – S. Spruance, A. Pavia, D. Peterson, A. Berry, R. Pollard, T. Patterson, I. Frank, R. MacArthur, M. Messina, L. Dunkle, A. Nicolaou, R. Gugliotti, A. Schindzielorz, L. Smaldone, and the Bristol AI545-010 Group <i>University of Utah AIDS Center, Salt Lake City, UT; and Bristol-Myers Squibb, Wallingford, CT, USA</i> |
| 12:15 | 12. Prospective Use of AZT Resistance as a Clinical Decision- making Tool in Patients Treated with AZT or ddI – B. Conway, D.S. Ko, N. Foss, D.W. Cameron, L.G. Filion, and F.J. Diaz-Mitoma <i>University of Ottawa, Ottawa, Canada</i> |
| 12:30 | Lunch |

Monday, April 26

Oral Session II: Herpesvirus Infections I

Chairpersons: H.J. Field and R.J. Whitley

- 2:00pm Plenary Speaker – Michihito Niimura
“Therapeutic Approaches to VZV Infections in Japan”
The Jikei University, Tokyo, Japan
- 2:30 13. 1,5-Anhydrohexitol Nucleoside Analogues as New Antiviral Entities – A. Van Aerschot, I. Verheggen, N. Pillet, R. Snoeck, G. Andrei, E. De Clercq, and P. Herdewijn *Katholieke Universiteit Leuven, Leuven, Belgium*
- 2:45 14. Comparative Anti-viral Effects of Acyclovir and Penciclovir (Famciclovir) – E. Littler, P. Ertl, A. Emmerson, C. Roberts, D. Gower, M. Trowbridge, and P. Collins *Wellcome Research Laboratories, Beckenham, Kent, UK*
- 3:00 15. Sequence-specific Antiviral Activity of a Phosphorothioate Oligonucleotide Complementary to Immediate Early mRNA of Human Cytomegalovirus. – K.P. Anderson, R.F. Azad, and K. Tanaka *ISIS Pharmaceuticals, Carlsbad, CA, USA; and Eisai Co., Ltd., Tsukuba Research Laboratories, Tsukuba-shi, Japan*
- 3:15 16. Evaluation of Ganciclovir Against Human Adenovirus Type-5 Infection in Cell Culture and Cotton Rat Eyes – M.D. Trousdale, P.L. Goldschmidt, and R. Nóbrega *Doheny Eye Institute, Los Angeles, CA; and Laboratoire de Virologie, Hôpital Broussais, Paris, France*
- 3:30 17. A Single Large Dose of HPMPC is Highly Effective at Inhibiting HCMV when Administered in an In Vitro Drug Delivery System – M.R. Moore, F.M. Hamzeh, F.E.-H. Lee, and P.S. Lietman *The Johns Hopkins University School of Medicine, Baltimore, MD, USA*
- 3:45 18. The Safety, Pharmacokinetics, and Anti-CMV Activity of Weekly HPMPC in HIV Positive Patients Excreting CMV – W.L. Drew, J.P. Lalezari, E. Glutzer, J. Flaherty, J.C. Martin, P.E. Fisher, and H.S. Jaffe *Mount Zion Medical Center of UCSF, San Francisco, CA; and Gilead Sciences, Inc., Foster City, CA, USA*
- 4:00 19. Efficacy of Foscarnet (PFA) Induction Treatment of Human Cytomegalovirus (HCMV) Retinitis in AIDS Patients: Quantitative Virologic Evaluation in Blood and Aqueous Humor – G. Gerna, F. Baldanti, A. Sarasini, M. Furione, E. Percivalle, M.G. Revello, and the Italian Foscarnet Study Group *University of Pavia, IRCCS Policlinico S. Matteo, Pavia, Italy*

- 4:15 20. Foscarnet-Resistant Herpes Simplex Virus (HSV) Infections in Patients with AIDS – S. Safrin, S. Kemmerly, B. Plotkin, T. Smith, N. Weissbach, D. De Veranez, L. Phan, and D. Cohn *University of California, San Francisco, CA; Ochsner Medical Institution, New Orleans, LA; Minor and James Medical Center, Seattle, WA; University of Washington, Seattle, WA; St. Vincent's Health Center, Erie, PA; Sutphin Medical Associates, NY; and University of Colorado Health Sciences Center, Boulder, CO, USA*

Poster Session I: Retroviruses

4:30-6:30pm

21. New Highly Potent HIV-1 Protease Inhibitors – D. Scholz, H. Retscher, B. Charpiot, H. Gstach, P. Lehr, B. Rosenwirth, and A. Billich *Sandoz Forschungsinstitut, Vienna, Austria*
22. 7-Deaza Analogues of Carbovir. Synthesis and Antiviral Evaluation – M. Legraverend and E. Bisagni *CNRS, Centre Universitaire, Institut Curie, Biologie, Orsay, France*
23. Synthesis and Anti-Viral Activity of 3'-Azido-2',3'-Dideoxy-2', 2-Difluoro- β -D-Ribofuranosyl Nucleosides – C.J. Paget, M.T. Reamer, M.A. Winter, C.D. Jones, R.E. Holmes, T.S. Chou, J. Tang, J. Colacino, and L.W. Hertel *Eli Lilly and Company, Indianapolis, IN, USA*
24. Nucleoside 5'-Phosphonates: Synthesis, Anti-HIV Activities and Reactions with DNA Polymerases – N. Dyatkina, A. Arzumano, M. Jasko, L. Victorova, and A. Krayevsky *Engelhardt Institute of Molecular Biology, Russian Academy of Sciences, Vavilov, Moscow, Russia*
25. Synthesis of Sangivamycin Derivatives as Potential Inhibitors of Protein Kinase. – M. Bobek, M. Sharma, H. Wikiel, and A. Bloch *Roswell Park Cancer Institute, Buffalo, NY, USA*
26. 1-Deazapurine Derivatives: A New Class of Antiviral Compounds – S. Vittori, E. Camaioni, A. Eleuteri, R. Volpini, G. Palù, and G. Cristalli *Università di Camerino, Camerino; and Università di Padova, Padova, Italy*
27. Synthesis and In Vitro Antiviral Activity of 8-Aza-Analogues of the Potent Antiviral Agents 9-[2-(Phosphonomethoxy)ethyl] adenine (PMEA) and 9-[2-(Phosphonomethoxy)ethyl]guanine (PMEG) – P. Franchetti, G. Abu Sheikha, L. Cappellacci, L. Messina, M. Grifantini, M.E. Marongiu, P. Guarracino, and P. La Colla *Università di Camerino, Camerino; and Università di Cagliari, Cagliari, Italy*

28. Kinase Bypass: A New Strategy for Anti-HIV Drug Design – C. McGuigan, D. Kinchington, M.F. Wang, S.R. Nicholls, C. Nickson, S. Galpin, D.J. Jeffries, and T.J. O'Connor *University of Southampton, Highfield Southampton; and Medical College of St. Bartholomew's Hospital Medical School, West Smithfield, London, UK*
29. Intracellular Delivery of Anti-HIV Nucleotides – F. Puech, G. Gosselin, C. Perigaud, A. Pompon, I. Lefebvre, and J.L. Imbach *Université de Montpellier II, Montpellier, France*
30. Synthesis and Antiretroviral Activity of Fluorinated Benzodiazepones: Analogues of Nevirapine – R. Guedj, P.B. Boyode, A. Farese, M.-A. Forestier, A.I. Ayi, R. Condom, M. Sinet, J.N. Colin, and R. Challand *Université de Nice, Nice, France; Inserm U13 Ancien Hôpital Claude Bernard, Paris France; and The Wellcome Research Laboratories, Beckenham, Kent, UK*
31. gp120 of HIV-1 Induces Apoptosis in Rat Cortical Cell Cultures: Prevention by Memantine – W.E.G. Müller, H.C. Schröder, and H. Ushijima *Institut für Physiologische Chemie, Abteilung "Angewandte Molekularbiologie", Universität, Duesbergweg, Mainz, Germany; and AIDS Research Center, National Institute of Health, Gakuen, Tokyo, Japan*
32. Amantadine Analogues Block Early Steps of HIV Infection – A.G. Bukrinskaya, A.V. Serbin, O.P. Bogdan, L.L. Stotskaya, I.V. Alimova, and Yu.N. Klimochkin *Russian Ministry of Health, A.V. Topchiev Institute of Petrochemical Synthesis, Russian Academy of Science, Moscow, Russia*
33. Inhibition of HIV-1 Replication by Cyclosporin Derivatives: Mode of Action Studies – R. Harrison, G. Werner, A. Billich, F. Hammerschmid, G. Palfi, P. Peichl, and B. Rosenwirth *Sandoz Forschungsinstitut, Vienna, Austria*
34. Anti-HIV Efficacy of SDZ 811, a Non-immunosuppressive Cyclosporin Derivative – P. Peichl, R. Harrison, R. Traber, and B. Rosenwirth *Sandoz Forschungsinstitut, Vienna, Austria*
35. The Effect of Immunocorrectors on HIV-1 Production In Vitro – I.F. Barinsky and S.I. Nesterchuk *D.I. Ivanovsky's Institute of Virology, RAMS, Russia*
36. Liposome Encapsulated Anti-HIV Agents: A New Approach in AIDS Therapy (In Vitro Studies) – D. Beshkov, E.E. Gabev, E.B. Gabev, and R.M. Argirova *National Center of Infectious and Parasitic Diseases, Sofia, Bulgaria; and Bulgarian Academy of Sciences, Sofia, Bulgaria*
37. Antibody-targeted Immunoliposomes Containing Antisense Oligonu-

- cleotide Mediate a Specific Antiviral Effect on H9 Cells Infected with HIV-1 – M.P. Selvam, S.M. Buck, R.A. Blay, R.E. Mayner, and J.S. Epstein *CBER/FDA, Bethesda, MD, USA*
38. In Vitro Antiviral Activity Studies of Drug-Polyanionic Polymer Combinations – C.-C. Tsai and R.D. Rotondo *Kent State University, Kent, OH; and BioLogic, Inc., Minneapolis, MN, USA*
 39. In Vitro Activity of Alkaline Autooxidized Catechinic Acid (AOCA) Against HIV-1 – G. Ferrea, E. Ranieri, F. Fioredda, P. Corradino, F. Sampietro, G. Astegiano, M. Cruciani, G. Romussi, and D. Bassetti *Universita' di Genova, Genova, Italy*
 40. Synthesis and Anti-HIV Activity of New DABO Derivatives – E. Tramontano, M.E. Marongiu, M. Artico, A. Mai, S. Massa, and P. La Colla *Università di Cagliari, Cagliari; and Università di Roma, Roma, Italy*
 41. Anti-HIV-1 Activity of Phosphorothioate Oligonucleotides in Chronically and Acutely Infected Cells – M.E. Marongiu, S. Corrias, A. Cascino, S. De Blase, M. Santoro, and P. La Colla *Università di Cagliari, Cagliari; and Università di Napoli, Napoli, Italy*
 42. An Assay for HIV RNA in Crude Infected Cell Lysates, and its Use for the Rapid Evaluation of Antiviral Efficacy – L. Bacheler, M. Paul, M.J. Otto, P.K. Jadhav, B.A. Stone, and J.A. Miller *DuPont Merck, Experimental Station, Wilmington, DE, USA*
 43. The Discovery and General SAR Studies of a Novel Class of Potent Non- Nucleoside Reverse Transcriptase Inhibitors – R.J. Ternansky, J.M. Morin, Jr., C.Lopez, C.J. Paget, Jr., F.W. Bell, A.S. Cantrell, S.R. Jaskunas, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, S.J. West, M. Hogberg, P. Lind, R. Noreen, C. Sahlberg, X.-X. Zhou, L. Vrang, C. Rydergard, C. Ahgren, B. Öberg, and N.G. Johansson *Eli Lilly and Company, Indianapolis, IN, USA; and Medivir AB, Huddinge, Sweden*
 44. Combination of LY300082 with AZT and DDI Give Synergistic Effects on HIV Replication in Cells and on HIV Reverse Transcriptase – H. Zhang, L. Vrang, K. Backro, T. Unge, P. Engelhardt, M. Hogberg, J. Kangasmetsa, P. Lind, R. Noreen, C. Sahlberg, X.-X. Zhou, N.G. Johansson, J.M. Morin, Jr., R.J. Ternansky, F.W. Bell, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, S.J. West, and B. Öberg *Medivir AB, Huddinge, Sweden; BMC, Uppsala, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
 45. Comparative Efficacy of HIV Inhibitors on Cells Infected with Cell Free HIV or Cocultivated with HIV-Infected Cells – L. Vrang, C. Rydergard, C. Ahgren, P. Engelhardt, M. Hogberg, J. Kangasmetsa, P. Lind, R.

- Noreen, C. Sahlberg, X.-X. Zhou, N.G. Johansson, C. Lopez, J.M. Morin, Jr., R.J. Ternansky, F.W. Bell, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, S.J. West, and B. Öberg *Medivir AB, Huddinge, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
46. Lack of Inhibition of HIV Replication in Chronically Infected Macrophages by Antiretroviral Compounds – S. Crowe, H. Siregar, and S. Sonza *Macfarlane Burnet Centre for Medical Research, Fairfield Hospital, Melbourne, Australia*
 47. Virucidal Activity of Available Chlorine Against the Human Immunodeficiency Virus Type 1 and the Effects of Protein Concentration on this Activity – C.A. Stein, E. Race, J.M. Cameron, and J.S. Oxford *The London Hospital Medical College, Academic Virology and Retroscreen Ltd., and Department of Forensic Medicine, London, UK*
 48. Affinity Purification of HIV and Visna Virus Reverse Transcriptases Using a Novel Inhibitor – C. Flexner, P.R. Hubbs, Y.-J. Chan, and H. Prochaska *Johns Hopkins University, Baltimore, MD, USA*
 49. 5'-Hydrogenphosphonates of Anti-HIV Nucleoside Analogues: Controversial Mode of Action – J.-L. Imbach, G. Gosselin, A. Pompon, I. Lefebvre, C. Périgaud, A.M. Aubertin, and A. Kirn *USTL, Laboratoire de Chimie BioOrganique, Montpellier, France; and Université Louis Pasteur, Strasbourg, France*
 50. Effect of Drug Resistance on Combination Chemotherapy for HIV – S. Cox, E. Ljungdahl-Ståhle, K. Aperia, J. Albert, and B. Wahren *SBL; and Karolinska Institute, Stockholm, Sweden*
 51. Inhibition of HIV-1 RNase H by the Non-nucleoside RT Inhibitors 9-CL TIBO and L-697,661 – L. Goobar-Larsson, K. Bäckbro, T. Unge, R. Bhikhabhai, B. Strandberg, and B. Öberg *Karolinska Institute, Stockholm, Sweden; BMC, Uppsala, Sweden; and Medivir AB, Huddinge, Sweden*
 52. An In Vitro Model for Determination of the Rate of Resistance Development in HIV – L. Vrang, C. Rydergård, C. Åhgren, J. Wahlberg, M. Uhlén, A. Karlsson, J. Albert, and B. Öberg *Medivir AB, Huddinge, Sweden; KTH, Stockholm, Sweden; and Karolinska Institute, Stockholm, Sweden*
 53. HIV Reverse Transcriptases with Point Mutations as Tools for Drug Development – H. Zhang, L. Vrang, K. Bäckbro, T. Unge, and B. Öberg *Medivir AB, Huddinge, Sweden; BMC, Uppsala, Sweden; and Karolinska Institute, Stockholm, Sweden*
 54. (-)-5-Fluoro-2',3'-dideoxy-3'-thiacytidine, FTC, is Efficiently Anabolised

- to Nucleotides in Human Hepatocytes and CEM Lymphoblastoid Cells – D.J. Nelson, D.R. Averett, M.T. Paff, K.L. Prus, and L.W. Frick *Wellcome Research Laboratories, Research Triangle Park, NC, USA*
55. Selection of Human Immunodeficiency Virus Type 1 (HIV-1) Resistant to the Nucleoside Inhibitor 2',3'-Dideoxy-5-Fluoro-3'-Thiacytidine (FTC) in Cell Culture due to a Single Mutation in the Reverse Transcriptase – M. Tisdale, N.R. Parry, S.D. Kemp, and B.A. Larder *The Wellcome Research Laboratories, Beckenham, Kent, UK*
 56. FTC Inhibition of HIV-1 RT and HBV DNA Polymerase: Differential Activity of Stereoisomers – J.E. Wilson, J.L. Martin, K. Borrota-Esoda, M.G. Davis, S.E. Hopkins, G. Painter, D. Liotta, and P.A. Furman *Burroughs Wellcome Co., Research Triangle Park, NC, USA*
 57. Semisynthetic Antitumor Alkaloids Derivatives as a Antiviral and a Potential Anti-HIV Preparations – A.I. Potopalsky and J.W. Nowicky *Institute of Molecular Biology and Genetics of Academy of Sciences of Ukraine, Kiev, Ukraine; and Ukrainian Anti-Cancer Institute, Vienna, Austria*
 58. Inhibition of De Novo Pyrimidine Pathway by 3'-Azido-3'-Deoxythymidine in Human Bone Marrow Cells: Rationale for Uridine Rescue – J.P. Sommadossi, A. Faraj, and F. Naguib *The University of Alabama at Birmingham, Birmingham, AL, USA*
 59. Phosphorylation of HIV-1 Reverse Transcriptase Modulates its Enzymatic Activity – N. Cheng, C.A. Ohmsted, M. St. Clair, and P.A. Furman *Wellcome Research Laboratories, Research Triangle Park, NC, USA*
 60. Inhibition of Wild Type and Mutant HIV Reverse Transcriptases by a New Class of Non-Nucleoside Reverse Transcriptase Inhibitors – H. Zhang, L. Vrang, K. Backro, T. Unge, P. Engelhardt, M. Hogberg, J. Kangasmetsa, P. Lind, R. Noreen, C. Sahlberg, X.-X. Zhou, N.G. Johansson, A.S. Cantrell, S.R. Jaskunas, J.M. Morin, Jr., R.J. Ternansky, F.W. Bell, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, S.J. West, and B. Öberg *Medivir AB, Huddinge, Sweden; BMC, Uppsala, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
 61. Comparative Rates of In Vitro Resistance Development of HIV-1 to New Non-Nucleoside Analog RT Inhibitors – L. Vrang, C. Rydergard, C. Ahgren, P. Engelhardt, M. Hogberg, N.G. Johansson, J. Kangasmetsa, P. Lind, R. Noreen, C. Sahlberg, X.-X. Zhou, A. Karlsson, C. Lopez, J.M. Morin, Jr., R.J. Ternansky, F.W. Bell, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, S.J. West, and B. Öberg *Medivir AB, Huddinge, Sweden; Stockholm, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*

62. Analysis of Reverse Transcriptase (RT) Nucleotide Sequences from AZT Resistant Strains of HIV-1 Suggest Further Possible Sites of Mutation May be Involved in the Development of Drug Resistance – P. Levantis, C.A. Stein, H. Ekstrand, S. Gronowitz, and J.S. Oxford *London Hospital Medical College, London, UK; University of Uppsala, Uppsala, Sweden*
63. Development of AZT and ddI Resistance in Individuals Infected with HIV – C. Birch, S. Stamatakis, D. Tyssen, D. Magliano, C. McGavin, S. Land, G. Tachedjian, D. Hooker, A. Gurusinghe, and N. Deacon *Macfarlane Burnet Centre, Fairfield Hospital, Fairfield, Victoria, Australia*
64. Effect of Suramin on In Vitro HIV DNA Integration Reaction – C. Auclair, S. Carteau, J.F. Mouscadet, H. Goulaouic, and F. Subra *CNRS URA 147, INSERM U 140, Institut Gustave Roussy, Villejuif, France*
65. Quantitative PCR Analysis as an Important Tool for the Evaluation of the Activity of Antiviral Drugs in HIV-Infected Monocytes/Macrophages – C.D. Pesce, C.F. Perno, A. Bergamini, M. Capozzi, G. Milanese, and R. Calio' *University of Rome Tor Vergata, Rome, Italy*
66. Specific Inhibition of Retroviruses and Retrovirus Activated Oncoproteins by Antisense Oligonucleotides – C. Malvy, C. Ropert, M. Lavignon, P. Couvreur, J.L. Imbach, and J.R. Bertrand *Institut G. Roussy, Villejuif, France*
67. Effects of Anti-FMLV Triple Helix Forming Oligonucleotides on FMLV Production in Culture – R.F. Rando, R.H. Durland, L. DePaolis, D. Kessler, and M.E. Hogan *Triplex Pharmaceutical Corporation, The Woodlands, TX; and Baylor College of Medicine, The Woodlands, TX, USA*
68. Structural and Conformational Studies on a New Class of Non-Nucleoside Reverse Transcriptase Inhibitors – R.F. Abdulla, J.M. Morin, Jr., R.J. Ternansky, M.D. Kinnick, and J.B. Deeter *Eli Lilly and Company, Indianapolis, IN, USA*
69. Conformationally Restricted Analogs of a New Class of Potent Non-Nucleoside Reverse Transcriptase Inhibitors – R. Noreen, P. Engelhardt, J. Kangametsa, C. Sahlberg, L. Vrang, J.M. Morin, Jr., R.J. Ternansky, and H. Zhang *Medivir AB, Huddinge, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
70. Conformational Studies on a New Class of Potent Non-Nucleoside Reverse Transcriptase Inhibitors – P. Lind, R. Noreen, and J.B. Deeter *Medivir AB, Huddinge, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
71. SAR Studies Optimizing HIV-1 Inhibiting Activities of LY73497, a New

Series of Non-Nucleoside Inhibitors of Reverse Transcriptase – P. Engelhardt, M. Hoberg, J. Kangametsa, P. Lind, R. Noreen, C. Sahlberg, X.-X. Zhou, L. Vrang, H. Zhang, B. Öberg, N.G. Johansson, F.W. Bell, A.S. Cantrell, J.A. Palkowitz, S.R. Jaskunas, C.L. Jordan, M.D. Kinnick, J.M. Morin, Jr., C.A. Parrish, P. Pranc, R.J. Ternansky, R.T. Vasileff, and S.J. West *Medivir AB, Huddinge, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*

72. Cation Influence on Survival and Lymphoma in Murine Immunodeficiency Disease (MAIDS): Effects of Lithium and Magnesium In Vivo – V.S. Gallicchio, M.L. Cibull, N.K. Hughes, K.F. Tse, and H. Gaines *University of Kentucky Medical Center, Lexington, KY, USA*
73. Lack of Involvement of Transactivating Herpesviruses in Acute SIV Infection in Monkeys – D. Böttiger and B. Öberg *Karolinska Institute, Stockholm; and Medivir AB, Huddinge, Sweden*
74. (R)-9-(2-Phosphonylmethoxypropyl)-2,6-diaminopurine [(R)-PMPDAP]: A Potent Anti-retrovirus Agent In Vitro and In Vivo – J. Balzarini, A. Holy, L. Naesens, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; and Czechoslovak Academy of Sciences, Praha, Czechoslovakia*
75. Activity of BRL47923 and its Oral Prodrug, SB203657A Against a Rauscher Murine Leukaemia Virus Infection in Mice – R.M. Perkins, S. Barney, R. Wittrock, P.H. Clark, R. Levin, D.M. Lambert, S.R. Petteway, H. Serafinowska, S. Bailey, S.M. Jackson, M.R. Harnden, R.J. Ashton, D. Sutton, J.J. Harvey, and A.G. Brown *SmithKline Beecham Pharmaceuticals, King of Prussia, USA and Epsom, UK; and Clinical Research Centre, Harrow, UK*
76. The Nude Mouse Transplanted with HIV Infected Cells as a Model for the Evaluation of Antivirals – N.T. Wetherall, X.Q. Li, and M.A. Ussery *ViroMed Laboratories, Inc., Minnetonka, MN; and the U.S. FDA, Rockville, MD, USA*
77. Rabbit and Mouse: Reliable Animal Models for HIV-1 Infection and for Studies of Anti-HIV-1 Activity of CD4 Synthetic Oligopeptides and AZT – P.M. Cereda, G. Filice, M. Debiaggi, and E. Romero *University of Pavia, Pavia, Italy*
78. Effect of Human Serum on the In Vitro Anti-HIV-1 Activity of HEPT Derivatives as Related to their Lipophilicity and Serum Protein Binding Capacity – M. Baba, S. Yuasa, T. Niwa, H. Takashima, M. Ubasawa, H. Tanaka, T. Miyasaka, R.T. Walker, J. Balzarini, E. De Clercq, and S. Shigeta *Fukushima Medical College, Fukushima; Mitsubishi Kasei Corporation Research Center, Yokohama; Showa University, Tokyo, Japan; University of Birmingham, Birmingham, UK; and Katholieke Universiteit Leuven, Leuven, Belgium*

79. Preclinical Pharmacokinetic Evaluation of Selected Members of a New Class of Potent HIV-1 Reverse Transcriptase Inhibitors – C. Sahlberg, B.-L. Sahlberg, K. Frykman, M. Clemens, J.S. Kasher, J.M. Morin, Jr., R.J. Ternansky, F.W. Bell, C.L. Jordan, M.D. Kinnick, J.A. Palkowitz, C.A. Parrish, P. Pranc, R.T. Vasileff, and S.J. West *Medivir AB, Huddinge, Sweden; Apoteksbolaget Central Laboratory, Stockholm, Sweden; and Eli Lilly and Company, Indianapolis, IN, USA*
80. AZT Serum Levels in Long-Term Patients From Whom Sensitive or Resistant Viruses have been Isolated – C.A. Stein, C. Aitken, J.S. Oxford, G. Forster, B. Goh, J. Marsden, and R. Sherwood *The London Hospital Medical College; and Kings College Hospital, London, UK*
81. Ribavirin Versus Zidovudine in Children with Advanced Human Immunodeficiency Virus Disease: Mexican Experience in 18 Months of Follow-Up – M. Gorbea, G. Perez, J. Paquentin, F. Torres, M. Garibay, and V. Fortuno *Infectology Hospital, La Raza Medical Center, IMSS, Mexico City, Mexico*
82. Evaluation of Ribavirin in Patients with Generalized Lymphadenopathy Syndrome. 76 Weeks of Follow-Up – V. Vazquez, R.M. Illescas, P. Campos, B. Torres, and M. Garibay *Unidad Investigaciones Biomedicas de Occidente, IMSS, Guadalajara, Jal., Mexico; Hospital 20 de Noviembre , ISSSTE, Mexico City, Mexico*
83. Improvement of Health Status of HIV Infected Individuals Treated with SoluteinTM – D.F. Smee, J.K. Yamamoto, D.R. Warden, J.C. Diaz, and A. Glanville *Utah State University, Logan, UT; University of California, Davis, CA; and Zenith Corp., Ogden, UT, USA*
84. High Levels of Plasma Virus Detected During Asymptomatic, as well as During Acute and Late Stages of HIV-1 Infection by Quantitative Competitive PCR (QC-PCR) – M. Piatak, Jr., M.S. Saag, L.-M. Yang, S.J. Clark, J.C. Kappes, K.-C. Luk, B.H. Hahn, G.M. Shaw, and J.D. Lifson *Genelabs, Inc., Redwood City, CA; and The University of Alabama at Birmingham, Birmingham, AL, USA*
85. Direct Evidence using QC-PCR Methods for Persistent, High Levels of Circulating Virus in Acute and Early-Chronic HIV-1 Infection – M. Piatak, Jr., L.-M. Yang, S.J. Clark, J.C. Kappes, K.-C Luk, B.H. Hahn, M.S. Saag, J.D. Lifson, and G. Shaw *Genelabs, Inc., Redwood City, CA; and The University of Alabama at Birmingham, Birmingham, AL USA*
86. L-carnitine in the Treatment of HIV Infection – C. De Simone, G. Famularo, S. Tzantzoglou, S. Moretti, F. Paoletti, V. Vullo, and S. Delia *Infectious Diseases and Internal Medicine, L'Aquila; and Infectious Diseases, Rome, Italy*
87. Synthesis of New Carbocyclic Analogues of 3'-Deoxy-Purine- Ribonu-

cleosides with Potential Antiviral Activity – R. Guedj, L. Agrofoglio, R. Condom, S.R. Challand, and J.-N. Colin *UNSA, Faculté des Sciences Nice, France; and Wellcome Research Laboratories, Beckenham, Kent U.K.*

Tuesday, April 27

Oral Session III: Retrovirus Infections II

Chairpersons: E. De Clercq and W.A. Haseltine

- 8:30am Plenary Speaker – Charles Boucher
“Clinical Implications of Drug Resistant HIV”
University of Amsterdam, The Netherlands
- 9:00 88. Synthesis, Enzymology and Anti-HIV Activity of Chiral Isomeric Nucleosides – V. Nair, T.B. Sells, Z.M. Nuesca, P.J. Bolon, L.B. Zintek, and R.B. Hamilton *The University of Iowa, Iowa City, IA, USA*
- 9:15 89. New Approaches for Synthesizing Antiviral Nucleosides – D.C. Liotta
Emory University, Atlanta, GA, USA
- 9:30 90. Inhibition of HIV Replication by Cyclosporin Derivatives: Lack of Correlation with Immunosuppression – B. Rosenwirth, P. Peichl, R. Harrison, W. Schnitzel, and J. Besemer *#Sandoz Forschungsinstitut, Vienna, Austria*
- 9:45 91. Replication and Infectivity of HIV in Chronically-Infected Macrophages and Lymphocytes is Selectively Blocked by Protease Inhibitors – C.F. Perno, A. Bergamini, C.D. Pesce, M. Capozzi, S. Thaisrivongs, G. Tarpley, G. Zon, G. Rocchi, E. Garaci, and R. Calio’ *University Rome Tor Vergata, Rome, Italy; Upjohn Co., Kalamazoo, MI; and Linx Therapeutics, Foster City, CA, USA*
- 10:00 92. In Vitro Isolation of Bicyclam-Resistant Variants of Human Immunodeficiency Virus Type 1 – M. Baba, N. Yamamoto, R. Pauwels, Z. Debyser, S. Shigeta, E. De Clercq, G. Bridger, G. Henson, and M. Abrams *Fukushima Medical College, Fukushima, Japan; Katholieke Universiteit Leuven, Leuven, Belgium; and Johnson Matthey Pharmaceutical Research, West Chester, PA, USA*
- 10:15 Break
- 10:45 93. Human Immunodeficiency Virus Type 1 (HIV-1) Mutant Strains Emerging After Combination of HIV-1-Specific Inhibitors in Cell Culture – J. Balzarini, A. Karlsson, M.-J. Pérez-Pérez, M.-J. Camarasa, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; Karolinska Institute, Stockholm, Sweden; and Instituto de Quimica Medica, Madrid, Spain*
- 11:00 94. Combination Therapy with AZT Prevents Selection of HIV-1 Variants that are Highly Resistant to the Nonnucleoside Reverse Transcriptase Inhibitor L-697,661 – E.A. Emini, S. Staszewski, C.L. Schneider, J.A. Waterbury, W.A. Schleif, R. Goehler, A. Deussen, S. Duerr, F.E.

Massari, G.B. Calandra, B. Hoffstedt, and V.W. Byrnes *Merck Research Laboratories, West Point, PA, USA; and Klinikum der Johann Wolfgang Goethe-Universität, Frankfurt, Germany*

- 11:15 95. Real-time Characterization of the Interaction of HIV-1- Specific Inhibitors with their Binding Site at the HIV-1 Reverse Transcriptase (RT) Using Surface Plasmon Resonance and Biosensor Technology – R. Pauwels, B. Persson, L.G. Fägerstam, L. Öfås, K. Andries, K. De Vreese, P. Van Daele, Z. Debyser, R. Bhikhabhai, B. Strandberg, J. Desmyter, P.A.J. Janssen, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; Pharmacia Biosensor AB, Uppsala, Sweden; Janssen Research Foundation, Beerse, Belgium; and Uppsala University, Uppsala, Sweden*
- 11:30 96. Characterization of Human Immunodeficiency Viruses Resistant to Oxathiolane-Cytosine Nucleoside – R.F. Schinazi, R.M. Lloyd, Jr., M.-H. Nguyen, D. Cannon, N. Ilksoy, C.K. Chu, D.C. Liotta, and J.W. Mellors *V.A. Medical Center, Emory University, Decatur, GA; V.A. Medical Center, University of Pittsburgh, Pittsburgh, PA; and College of Pharmacy, University of Georgia, Athens, GA, USA*
- 11:45 97. Synthetic RNA Targets for HIV-1 tat and rev Proteins – F. Hamy, U. Asseline, S. Iwai, D.A. Mann, C. Pritchard, M.J. Gait, and J. Karn *MRC Laboratory of Molecular Biology, Cambridge, UK*
- 12:00 98. Structural Analysis of the Non-nucleoside Binding Site of HIV-1 Reverse Transcriptase – J. Klunder, L. Tong, J. Proudfoot, K. Hargrave, M. Cardozo, C.-K. Shih, P. Grob, and J. Adams *Boehringer Ingelheim Pharmaceuticals, Inc., Ridgefield, CT, USA*
- 12:15 99. Successful Combination Therapy in a Novel Animal Model of Concomitant Retroviral/Lethal Opportunistic Fungal Infection – J.W. Blasecki, and N.M. Mayer-Mikalski *DuPont Merck Pharmaceutical Company, Glenolden, PA and Wilmington, DE, USA*
- 12:30 Lunch

Tuesday, April 27

Oral Session IV: Respiratory Infections

Chairpersons: W.M. Shannon and F.G. Hayden

- 2:00pm Plenary Speaker – Jessie Groothuis
“Hyperimmune Globulin Therapy for RSV Infections in Infants”
Denver, CO, USA
- 2:30 100. The Synthesis and Antipicornaviral Activity of Tetrazole Analogues of Win 54954 – G.D. Diana, D.M. Volkots, D. Cutcliffe, R.C. Oglesby, T.R. Bailey, J.P. Mallamo, T.J. Nitz, and D.C. Pevear *Sterling-Winthrop Pharmaceutical Research Div., Rensselaer, New York, USA*
- 2:45 101. 4-Guanidino Neu5Ac2en is a Potent and Broad Spectrum Inhibitor of Influenza A and B Viruses, In Vitro and In Vivo – J.M. Woods, S.A. Hiscox, D.M. Ryan, and C.R. Penn *Glaxo Group Research Limited, Greenford, Middlesex, UK*
- 3:00 102. Comparative Anti-Influenza Virus Activity of 2'-Deoxy-2' Fluororibosides In Vitro – F. Hayden, A. Elkatieb, and B. Rollins *University of Virginia, Charlottesville, VA, USA*
- 3:15 103. Specific Inhibition of Influenza Transcriptase by 2'-Deoxy-2'- Fluoroguanosine – M. Tisdale, M. Ellis, S. Court, and M. Ford *The Wellcome Research Laboratories, Beckenham, UK*
- 3:30 104. Molecular Characterization of a Poliovirus Enhanced Mutant Selected by the Antiviral Compound 3(2H)-Isoflavene – D. Genovese, S. Catone, M. Elmi Farah, A. Gambacorta, and L. Fiore *Istituto Superiore di Sanità, Rome; III Università, Rome; and “La Sapienza” Università, Rome, Italy*
- 3:45 105. Analysis of the Influenza Virus Endonuclease Through the Use of Recombinant Systems – M.E. Hagen, T.D.Y. Chung, J.T. Matthews, R.J. Colonno, and M. Krystal *Bristol-Myers Squibb Pharmaceutical Research Institute, Princeton, NJ, USA*
- 4:00 106. 9-(2-Phosphonyl-methoxyethyl)Adenine (PMEA) Decreases the Lethal Effect of RNA-Influenza Virus in Mice Through an Immunomodulating Mechanism – R. Calio', E. Balestra, C.F. Perno, J. Balzarini, E. De Clercq, N. Villani, and V. Del Gobbo *University of Rome Tor Vergata, Rome, Italy; and Katholieke Universiteit Leuven, Leuven, Belgium*
- 4:15 107. Use of Microdialysis to Study Drug Distribution of Antiviral Compounds – L. Ståhle, N. Borg, E. Ljungdahl-Ståhle, and B. Öberg *Karolinska Institute, Stockholm; and Medivir AB, Huddinge, Sweden*

Poster Session II: Herpesvirus Infections

4:30-6:30pm

108. Some Aromatic Acyclonucleoside Analogs – G. Shaw and D.C. Agathocleous *University of Bradford, Bradford, West Yorkshire, UK*
109. Glycosyl Phosphotriesters of 5-FdU: Synthesis, Transmembrane Transport, and Antiviral Activity – T. Huynh-Dinh, B. Dupraz, M.F. Saron, J.M. Neumann, and J. Igolen *Institut Pasteur, Paris; and Groupe de RMN, CEN Saclay, Gif sur Yvette, France*
110. Novel Non-nucleoside Inhibitors of Herpes Viruses: Antiviral Activity, Structure-activity Relationships, and Pharmacokinetics of Mappicine Ketone and its Derivatives – R. Hertzberg, D. Berges, G. Gallagher, J. Taggart, R. Johnson, G. Hofmann, M. Mattern, S. Petteway, S. Barney, R. Wittrock, A. Breen, F. McCabe, D. Lambert, and W. Kingsbury *SmithKline Beecham Pharmaceuticals, King of Prussia, PA, USA*
111. Synthesis of Acyclonucleoside Phosphonates as Antiviral Agents – E.J. Reist, B.L. Ruhland-Fritsch, N. Zaveri, P.A. Sturm, E.R. Kern, C. Hartline, J.H. Huffman, and R.W. Sidwell *SRI International Menlo Park, CA; University of Alabama, Birmingham, AL; and Utah State University, Logan, UT, USA*
112. Calix(n)arene Sulfonates as Novel Antiviral Agents – W. Choy, K.M. Hwang, S.Y. Liu, J. Chen, Y.C. Cheng, E.R. Kern, and C. Tseng *Genelabs, Redwood City, CA; Yale University, New Haven, CT; The University of Alabama at Birmingham, Birmingham, AL; and NIAID, NIH, Bethesda, MD, USA*
113. Antiviral Activity and Mechanism of Action of GL-288-C8 on the Replication of Herpes Simplex Viruses (HSV) in Human Cells – S. Chatterjee, P. Burns, C.B. Hartline, K.M. Hwang, J. Chen, and E.R. Kern *The University of Alabama at Birmingham, Birmingham, AL; and Genelabs, Inc., Redwood City, CA, USA*
114. Synthesis, Antiviral Activity, and Pharmacokinetics of an N7-Isomeric 2- Aminopurine Nucleoside Analogue – M. Helsberg, G. Jähne, I. Winkler, G. Gross, and T. Scholl *Hoechst AG, SBU Antiinfectives-Research, Frankfurt am Main, Germany*
115. Anti-herpes Activity of Biscationic Distamycin Analogues – E.M. Iafrate, F. Animati, G. Giannini, P. Lombardi, and S. Manzini *Menarini Ricerche Sud S.p.a., Roma, Italy*
116. Antiviral Activity of the Benthic Algae from the Piran Bay – B. Filipič, K. Hartman-Pretnar, G. Pretnar, and A. Vukovič *Institute for Microbiology, Medical Faculty, Ljubljana, and Institute of Biology, Piran, Slovenia*

117. Antiviral Evaluation of A-73209, a Potent, Orally Active Agent Against VZV and HSV Infections – J. Clement, J. Alder, K. Marsh, D. Norbeck, W. Rosenbrook, T. Herrin, C. Hartline, and E. Kern *Abbott Laboratories, Abbott Park, IL; and The University of Alabama at Birmingham, Birmingham, AL, USA*
118. Inhibition of Herpes Simplex Virus Infection by Antisense Oligonucleotides – R. Hanecak, V. Driver, B. MacDonald, R. Azad, C. Ford, and K.P. Anderson *ISIS Pharmaceuticals, Carlsbad, CA, USA*
119. Inhibition of Varicella-Zoster Virus by Penciclovir – In Vitro Studies – T.H. Bacon, B.A. Howard, J. Gilbert, J. Page, R. Standring-Cox, and M.R. Boyd *SmithKline Beecham Pharmaceuticals, Epsom, Surrey, UK*
120. Dipyridamole Potentiates the Activity of Acyclic Nucleoside Phosphonates Against Varicella-Zoster Virus (VZV), Herpes Simplex Virus (HSV) and Human Cytomegalovirus (HCMV) In Vitro – G. Andrei, R. Snoeck, J. Balzarini, D. Reymen, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium*
121. CMV-Associated DNA Polymerase Activity: Kinetics, Isolation, Characterization and its Potential Application in the Diagnosis of CMV Disease – M.A. Nokta, M. Hassan, and R.B. Pollard *University of Texas Medical Branch, Galveston, TX, USA*
122. Combination Effects of a Human Monoclonal Anti Cytomegalovirus (CMV) Antibody (MSL 109) and Foscarnet or Ganciclovir on CMV Replication In Vitro – M.A. Nokta, M. Tolpin, P. Nadler, and R. Pollard *University of Texas Medical Branch, Galveston, TX; and Sandoz Research Institute, East Hanover, NJ, USA*
123. A Sensitive and Accurate Assay System for the Screening of Antiviral Compounds Against Herpes Simplex Virus Type 1 and Type 2 – K. Sudo, K. Konno, T. Yokota, and S. Shigeta *Rational Drug Design Laboratories, Fukushima; and Fukushima Medical College, Fukushima, Japan*
124. Susceptibility of HCMV Clinical Isolates to Ganciclovir (GCV) and HPMPIC – K. Konno, T. Yokota, M. Baba, and S. Shigeta *Rational Drug Design Laboratories, Fukushima; and Fukushima Medical College, Fukushima, Japan*
125. HSV-1 Morphologic Features after Treatment with Alkaline Autooxidized Catechinic Acid (AOCA): Confirmation of In Vitro Activity – G. Ferrea, C. Savioli, F. Malaguti, F. Callea, P. Corradino, F. Sampietro, E. Ranieri, F. Fioredda, G. Romussi, M. Cruciani, A. Canessa, and D. Bassetti *Universita' di Genova, Genova; and Istituto Giannina Gaslini, Genoa, Italy*

126. Toxicity of Antivirals on Cultured Human Corneal Cells – M. Berry, D.L. Easty, and E. De Clercq *University of Bristol, Bristol, UK; and Katholieke Universiteit Leuven, Leuven, Belgium*
127. Use of Differential Polymerase Chain Reaction in Quantitating Viremia in Varicella Zoster Virus Infections – S.K. Tying, P.F. Rockley, X.L. Shen, I. Arany, and P. Rady *The University of Texas Medical Branch, Galveston, TX, USA*
128. In Vitro Antiviral Activity of 1-(β -D-Arabinofuranosyl)-5-(1-propynyl) Uracil Against Varicella Zoster Virus – C.L. Talarico, S.C. Stanat, S.G. Rahim, D.J.M. Purifoy, and K.K. Biron *Burroughs Wellcome Co., Research Triangle Park, NC, USA; and Beckenham, Kent, UK*
129. Effects of Inhibitors of De Novo Pyrimidine Biosynthesis on Human Cytomegalovirus DNA Replication – F.M. Hamzeh, F.E. Lee, N.B. Assadi, and P.S. Lietman *The Johns Hopkins School of Medicine, Baltimore, MD, USA*
130. Rapid Detection of Thymidine Kinase (TK)-Positive and Negative Varicella- Zoster Virus (VZV) Isolates Using 1- β -D-arabinofuranosyl-E-5-(2-[¹²⁵I]- iodovinyl)uracil (¹²⁵IVaraU) Plaque Autoradiography (PA) – E.M. Smyrnis, S.E. Straus, H. Dougan, and S.L. Sacks *University of British Columbia and TRIUMF, Vancouver, BC, Canada; and National Institutes of Health, Bethesda, MD, USA*
131. Acyclovir Sensitivity – Fifteen Years of Clinical Experience – P. Collins and M. Nixon Ellis *Wellcome Research Laboratories, Beckenham, Kent, UK; and Burroughs Wellcome Co., Research Triangle Park, NC, USA*
132. Purification and Characterization of an Enzyme from Rat Liver that Hydrolyzes 256U87, the L-Valyl Ester Prodrug of Acyclovir (ZOVIRAX[®]) – T.C. Burnette and P. de Miranda *Burroughs Wellcome Co., Research Triangle Park, NC, USA*
133. Antiviral Activity of Nucleoside Derivatives against Thymidine Kinase-deficient Acyclovir Resistant Mutants of Herpes Simplex Virus Type 1 – C.-K. Lee, S.U. Choi, S.K. Hong, and J.G. Rho *Korea Research Institute of Chemical Technology, Daejeon, Korea*
134. In Vitro Acyclovir Susceptibility Monitoring of HSV Clinical Isolates – E.L. Hill, J.T. Rogers, and M.N. Ellis *Wellcome Research Laboratories, Research Triangle Park, NC, USA*
135. Inhibition of Thymidylate Synthetase Activity Induced in Varicella-Zoster Virus Infected Cells by (E)-5-(2-bromovinyl)-2'-deoxyuridine – T. Yokota, K. Konno, and S. Shigeta *Rational Drug Design Laboratories, Fukushima; and Fukushima Medical College, Fukushima, Japan*

136. Evaluation of the In Vitro Activity of SP-303 Against Clinical Isolates of Acyclovir-Resistant and Foscarnet-Resistant Herpes Simplex Virus (HSV) – S. Safrin, L. Phan, and T. Elbeik *University of California, San Francisco, CA, USA*
137. Maturation of Concatameric Viral DNA in HCMV-Infected Cells is Prevented by the Benzimidazole Riboside, 2- bromo- 5,6- dichloro- 1- β - D- ribofuranosyl benzimidazole (BDCRB) – K.K. Biron, S.C. Stanat, M.R. Underwood, M.L. Hemphill, T.J. Miller, J.C. Drach, L.B. Townsend, and R.J. Harvey *Burroughs Wellcome Co., Research Triangle Park, NC; and University of Michigan, Ann Arbor, MI, USA*
138. Antiherpetic Activity, Cytotoxicity and Metabolism of Non-Nucleoside Analogs Related to Toyocamycin, Sangivamycin and Thiosangivamycin – T.E. Renau, C.G. Young, M.R. Nassiri, J.S. Lee, L.L. Wotring, L.B. Townsend, and J.C. Drach *University of Michigan, Ann Arbor, MI, USA*
139. Characterization of S-Adenosylmethionine Decarboxylase Induced by Human Cytomegalovirus – W.M. Shannon, E.L. White, G. Arnett, and J.A. Secrist III *Southern Research Institute, Birmingham, AL, USA*
140. Co-infection of Herpes and Pox Viruses in BSC-1 Cells in the Presence of Antiviral Drugs – E. Katz *Hebrew University, Hadassah Medical School, Jerusalem, Israel*
141. The Nine Carboxyterminal Aminoacids of HSV Ribonucleotide Reductase Fused to an Heterologous Protein are Capable of Binding the Large Subunit of the Enzyme – A. Marcello, T.R. Hirst, and G. Palú *University of Padova, Padova, Italy; and University of Kent at Canterbury, Kent, UK*
142. Antiherpesvirus Activity of BRL 44385 (9-(3-hydroxypropoxy)guanine) in Animals – D. Sutton, R.J. Ashton, T.H. Bacon, and M.R. Boyd *SmithKline Beecham Pharmaceuticals, Epsom, Surrey, UK*
143. Comparative Efficacy of Acyclovir (ACV) and (S)-1-(3-Hydroxy-2-phosphonylmethoxypropyl)cytosine (HPMPC) in the Treatment of Cutaneous HSV-1 and HSV-2 Lesions in Athymic-Nude Mice – G. Andrei, R. Snoeck, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium*
144. Inhibitory Effects of (S)-9-(3-Hydroxy-2-phosphonylmethoxypropyl)adenine and (S)-1-(3-Hydroxy-2-phosphonylmethoxypropyl)cytosine on Murine Adenovirus Replication In Vitro and In Vivo – L. Naesens, J. Neyts, A. Holy, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; and Czechoslovak Academy of Sciences, Praha, Czechoslovakia*

145. Efficacy of (S)-1-(3-Hydroxy-2-phosphonylmethoxypropyl)cytosine (HPMPC) in the Treatment of Lethal Vaccinia Virus Infection in Mice with Severe Combined Immune Deficiency (SCID) – J. Neyts and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium*
146. Protective Activity of Lipid A Analogue GLA-60 Against Murine Cytomegalovirus Infection in Mice – S. Ikeda, J. Neyts, M. Matsuura, M. Kiso, A. Hasegawa, C. Nishimura, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; Kitasato University, Tokyo; Jichi Medical School, Tochigi; and University of Gifu, Gifu, Japan*
147. A Comparison of Ganciclovir and a Phosphonate Analogue, SR 3745A for Treatment of Experimental Cytomegalovirus Infections – E.R. Kern, P.E. Vogt, J. Palmer, C. Hartline, J.P. Sommadossi, and E.J. Reist *The University of Alabama at Birmingham, Birmingham, AL; and SRI International, Menlo Park, CA, USA*
148. Effective Treatment of Acyclovir Resistant Genital Herpes Simplex Virus Infections with 2'Fluoro-Arabinosyl Pyrimidine Nucleosides – E.R. Kern, P.E. Vogt, J. Palmer, C.B. Hartline, and D.W. Adair *The University of Alabama at Birmingham, Birmingham, AL; and Oclassen Pharmaceuticals, Inc., San Rafael, CA, USA*
149. Antiviral Activity of the New Immunostimulator “Vegetan on the Models” of Herpetic Meningoencephalitis of Mice and Genital Herpes of Guinea Pigs – N.D. Lvov, L.M. Alimbarova, V.R. Melnikov, and I.F. Barinsky *D.I. Ivanovsky's Institute of Virology, RAMS, Russia*
150. Efficacy of (-)-9-[4-Hydroxy-2-(Hydroxymethyl)Butyl]Guanine (H2G) in African Green Monkeys Infected with Simian Varicella Virus – K.F. Soike, R. Bohm, J.-L. Huang, and B. Öberg *Tulane Regional Primate Research Center, Covington, LA, USA; and Medivir AB, Huddinge, Sweden*
151. Varicella Encephalitis after Prolonged Steroid Treatment of Varicella Uveitis in a Nonhuman Primate – M.D. Conway, A.N. Dueland, K. Srock, K.F. Soike, L.G. Ungerleider, D.H. Gilen, and G.A. Peyman *LSU School of Medicine, New Orleans, LA; University of Colorado School of Medicine, Denver, CO; Tulane Primate Research Center, Covington, LA; and NIH, Bethesda, MD, USA*
152. Single and Combination Intravenous Therapy using USNUS-08 and DHPG during HCMV Chorioretinal Disease in the Rabbit – E.C. Dunkel, H. Devlin, Q. Zhu, D. Pavan-Langston, and H.A. Blough *Schepens Eye Research Institute, Boston, MA; and US Bioscience, West Conshohocken, PA, USA*
153. Accurate Quantitation of Varicella Zoster Virus (VZV) Genomic DNA in Infected Rabbit Ocular Tissue using Quantitative Competitive PCR

- (QC- PCR) – E.C. Dunkel, B.L. Rong, Q. Zhu, M. Piatak, and D. Pavan-Langston *The Schepens Eye Research Institute, Harvard Medical School, Boston, MA; and Genelabs, Inc., Redwood City, CA, USA*
154. Bovine Herpes Mammillitis Virus Inhibitors In Vitro and in a Novel Guinea Pig Vaginal Infection Model – D.F. Smee and J.A. Leonhardt *Utah State University, Logan, UT, USA*
 155. Effect of Combined Treatment with Antibody and Acyclovir on Neonatal HSV Infection in Guinea Pigs – F.J. Bravo, N. Bourne, M.G. Myers, and D.I. Bernstein *Children's Hospital Research Foundation; and J.N. Gamble Institute of Medical Research, Cincinnati, OH, USA*
 156. Modification of Primary and Recurrent Genital Herpes in Guinea Pigs by Passive Immunoprophylaxis – N. Bourne and L.R. Stanberry *Children's Hospital Research Foundation, Cincinnati, OH, USA*
 157. Efficacy of HSV-2 Glycoprotein D Vaccines Against HSV-1 or HSV-2 Genital Challenge in Guinea Pigs – N. Bourne, F.J. Bravo, M.G. Myers, D.I. Bernstein, M. Slaoui, N. Garcon, P. Hermand, M. Francotte, and L.R. Stanberry *Children's Hospital Research Foundation, Cincinnati, OH, USA; and SmithKline Biologicals, Rixensart, Belgium*
 158. Efficacy of Topical Capsaicin and Its Less Irritating Cis-Isomer, Civamide, in the Treatment of Experimental Genital Herpes – N. Bourne, F.J. Bravo, D.I. Bernstein, M.G. Myers, and L.R. Stanberry *Children's Hospital Research Foundation, Cincinnati, OH, USA*
 159. Use of Passive Antibody (Ab) to Modify Congenital Guinea Pig CMV Infection – N. Bourne, D.F. Bratcher, F.J. Bravo, M. Slaoui, M.G. Myers, and D.I. Bernstein *Children's Hospital Research Foundation; J.N. Gamble Institute of Medical Research, Cincinnati, OH, USA; and SmithKline Biologicals, Rixensart, Belgium*
 160. New Acycloguanosine Analogue – Furavir – O.T. Andreeva, S.N. Nikolaeva, E.I. Boreko, V.I. Votjakov, and R.A. Zhuk *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
 161. Chemotherapy of EHV-1 Induced Abortion in a Murine Model – A.R. Awan and H.J. Field *University of Cambridge, Cambridge, UK*
 162. The Effect of (S)-1-(3-Hydroxy-2-phosphonylmethoxypropyl)cytosine (HPMPC) Against EHV-1 in Mice: Primary and Secondary Infections – J.S. Gibson, A. Thackray, and H.J. Field *University of Cambridge, Cambridge, UK*
 163. Effect of Dextran Sulfate on Experimental Herpes Simplex Keratitis in Rabbits – S.N. Pancheva *Bulgarian Academy of Sciences, Sofia, Bulgaria*

164. O-Alkyl and O-acyl Prodrugs of Sorivudine (BV-araU) – H. Machida, N. Ashida, K. Ijichi, Y. Watanabe, F. Kano, and S. Sakata *Yamasa Corporation, Choshi, Japan*
165. The Pharmacokinetics of 882C, a Thymidine Analogue with Potent Anti- VZV Activity, in Healthy Volunteers – R.W. Peck, B.C. Weatherley, and J. Posner *The Wellcome Foundation Ltd., Beckenham, Kent, UK*
166. Ribavirin in Genital Herpes. Results of a Three-Phase Study – F.A. Carvajal, G.M.E. Palacio, and V.M. Garibay *Hospital Civil ISSSTEP, Puebla, Pue, Mexico*
167. (S)-1-(3-Hydroxy-2-phosphonylmethoxypropyl)cytosine (HPMPC): Successful Topical Treatment of Acyclovir-Resistant HSV-2 Perineal Lesions in an AIDS Patient – R. Snoeck, G. Andrei, J. Balzarini, M. Gerard, and E. De Clercq *Katholieke Universiteit Leuven, Leuven; and St. Pierre Hospital, Brussels, Belgium*
168. Analysis of Consecutive HSV-2 Strains Isolated from a Patient Treated with (S) – 1 – (3 – Hydroxy – 2 – phosphonylmethoxypropyl) cytosine (HPMPC) for Relapsing Perineal Acyclovir-Resistant HSV-2 Lesions – R. Snoeck, G. Andrei, J. Balzarini, M. Gerard, and E. De Clercq *Katholieke Universiteit Leuven, Leuven; and St. Pierre Hospital, Brussels, Belgium*
169. Pathophysiology and Treatment of Clinically Resistant Cytomegalovirus Retinitis – M. Flores-Aguilar, B.D. Kuppermann, J.I. Quiceno, W.M. Dankner, D.G. Wolf, E.V. Capparelli, J.D. Connor, C.H. Sherwood, J.G. Gambertoglio, S.A. Spector, and W.R. Freeman *University of California San Diego; and University of California San Francisco, CA, USA*
170. Long Acting Therapy of Viral Retinitis with HPMPC – M. Flores-Aguilar, J.-S. Huang, B.D. Kuppermman, C. Vuong, D. Munguia, C.A. Wiley, E. De Clercq, K. Assil, and W.R. Freeman *University of California San Diego, La Jolla, CA, USA; Katholieke Universiteit Leuven, Leuven, Belgium; and University of St. Louis, MO, USA*
171. Effect of Acyclovir + 348U87 Cream on Solar Simulator Induced Herpes Simplex Labialis – D.I. Bernstein, L.A. Rheins, R. Beitman, and J. Delehanty *J.N. Gamble Inst. Med. Res., Hilltop Research, Cincinnati, OH; and Burroughs Wellcome Co., Research Triangle Park, NC, USA*
172. The Natural History of Experimental Ultraviolet Radiation (UVR)-induced Herpes Labialis, a Human Model of Recurrent Herpes Simplex Virus Infection: Clinical, Virologic, and Serologic Observations Follow-

- ing Multiple Exposures – S. Spruance, M. McKeough, T. Evans, E. Mishkin, and A. Abramovitz *University of Utah, Salt Lake City, UT; and Lederle-Praxis Biologicals, Pearl River, NY, USA*
173. Use of Viral Blood Cultures in Diagnosing Herpes Simplex Virus Infection in Immunocompromised Patients – S.F. Reising and L.R. Stanberry *Children's Hospital Research Foundation, Cincinnati, OH, USA*
 174. Antiviral Therapy of Acute Retinal Necrosis and Cerebral Vasculitis due to Varicella Zoster Virus in HIV Infected Patients – J.L. Vilde, F. Rousseau, C. Perronne, P. Lisovoski, P. Longuet, and C. Leport *Claude Bernard-Bichat Hospital, Paris, France*
 175. CMV Retinitis Resistant to Foscarnet. A Case with Clinicovirological Correlation – C. Leport, S. Puget, J.M. Pepin, S. Levy, C. Perronne, F. Brun-Vezinet, and J.L. Vilde *Claude Bernard-Bichat Hospital, Paris, France*
 176. Acyclovir – 15 Years of Clinical Experience – A.P. Fiddian *The Wellcome Research Laboratories, Beckenham, Kent, UK*
 177. Comparison of Two Acyclovir Tablet Formulations for Acute Herpes Zoster Treatment – G. Palmieri, L. Bucci, S. Contos, and P. Ferrante *Niguarda Ca' Granda Hospital, Milan; University of Pavia, Pavia; and University of Milan, Milan, Italy*
 178. Treatment by Ganciclovir of HCMV Infection in Lung Transplant Patients Monitored by PCR and Viral Isolation – P. Ferrante, C. Magistrelli, E. Colombo, L. Li, F.R. Guerini, R. Mancuso, L. Bucci, P. Zannini, and M. Solca *University of Milan, Milan; and Niguarda Ca' Granda Hospital, Milan, Italy*

Wednesday, April 28

Oral Session V: Minisymposium – Molecular Targets/Gene Expression

Chairpersons: J.S. Pagano and K.K. Biron

- 9:00 John Taylor
 “Ribozyme Therapy of Chronic Hepatitis B”
 Fox Chase Cancer Center, Philadelphia, PA, USA
- 9:30 Roland Rueckert
 “Design of Inhibitors of Picornavirus Replication”
 University of Wisconsin, Madison, WI, USA
- 10:00 Break
- 10:30 Giuseppe Barbanti-Brodano
 “Mechanisms of Papovavirus Transformation and Oncogenesis”
 University of Ferrara, Ferrara, Italy
- 11:00 Discussion
- 11:15 Bo Öberg
 “A New Series of Potent Non-Nucleoside Reverse Transcriptase Inhibitors”
 Medivir AB, Huddinge, Sweden
- 11:30 ISAR Business Meeting

Thursday, April 29

Oral Session VI: Herpesvirus Infections II

Chairpersons: E.R. Kern and P.S. Lietman

- 8:30am Plenary Speaker – Stephen Straus
“An HSV Vaccine for Recurrent Genital Herpes”
NIAID, NIH, Bethesda, MD, USA
- 9:00 179. 5-Alkynyl Pyrimidine Nucleosides as Potent Selective Inhibitors of Varicella Zoster Virus (VZV) – S.G. Rahim, N. Trivedi, M.J. Pether, K.L. Powell, R. Peck, S. Grieve, and D.J.M. Purifoy *The Wellcome Research Laboratories, Beckenham, Kent, UK*
- 9:15 180. Mappicine Ketone is a Novel Non-Nucleoside Inhibitor with In Vitro Antiviral Activity Against Herpesviruses – D.M. Lambert, S. Barney, R. Wittrock, H.S. Allaudeen, M. Massare, W. Kingsbury, D. Berges, G. Gallagher, J. Taggart, G. Hofmann, M. Mattern, R. Hertzberg, R. Johnson, and S.R. Petteway, Jr *SmithKline Beecham Pharmaceuticals, King of Prussia, PA; and Cytex Corporation, Norcross, GA, USA*
- 9:30 181. Inhibitors of Herpes Simplex Virus Thymidine Kinases – G. Wright, H. Xu, G. Maga, J. Gambino, F. Focher, E. Smith, and S. Spadari *University of Massachusetts Medical School, Worcester, MA, USA; and Istituto Genetica ed Biochimica Evoluzionistica, Consiglio Nazionale delle Ricerche, Pavia, Italia*
- 10:00 Break
- 10:30 182. Growth of Epstein-Barr Virus-Immortalized Cell Lines is Inhibited by Specific Antisense Oligodeoxyribonucleotides – J.S. Pagano, G. Jimenez, and N.S. Sung *University of North Carolina, Chapel Hill, NC, USA*
- 10:45 183. Inhibitors of Herpes Simplex Virus 1 Uracil-DNA Glycosylase – F. Focher, A. Verri, J. Gambino, S. Spadari, R. Manservigi, and G. Wright *Istituto Genetica ed Biochimica Evoluzionistica, Consiglio Nazionale delle Ricerche, Pavia, Italia; University of Massachusetts Medical School, Worcester, MA, USA; and Università di Ferrara, Ferrara, Italia*
- 11:00 184. In Vitro Metabolism and Incorporation into Nucleic Acids of 2-Bromo-5,6-dichloro-1-(β -D-ribofuranosyl)benzimidazole (BDCRB) in Uninfected and HCMV-Infected Mammalian Cells – M.R. Nassiri, K.Z. Borysko, L.B. Townsend, J.C. Drach, S.S. Good, S.R. Tibbels, S.D. Gabriel, and K.K. Biron *University of Michigan, Ann Arbor, MI; and Burroughs Wellcome Co., Research Triangle Park, NC, USA*
- 11:15 185. Evaluation of Nucleotide Prodrugs as Inhibitors of Viral Replication – N. Bischofberger, E. Prisbe, M. Arimilli, K. Cundy, B. Lee, D. Smee,

and A. Fridland *Gilead Sciences, Foster City, CA; Utah State University, Logan, UT; and St. Jude Children's Research Hospital, Memphis, TN, USA*

- 11:30 186. In Vivo Potentiation of Acyclovir by Methoxypolyethyl- eneglycol-Thymidine Phosphorylase – G.W. Koszalka, D. Lobe, M.W. Stonefield, J. Vanhooke, R. Ferone, K. Waters, and M.N. Ellis *Burroughs Wellcome Co., Research Triangle Park, NC, USA*
- 11:45 187. Topical HPMPC is the First Effective Broad-Spectrum Antiviral to Inhibit both HSV-1 and Adenovirus in the NZ Rabbit Eye Models – Y.J. Gordon, E.A. Romanowski, and T. Araullo-Cruz *The Eye & Ear Institute of Pittsburgh, Pittsburgh, PA, USA*
- 12:00 188. Phase I Pharmacokinetics of the Acyclovir Prodrug, Valacyclovir – S. Weller, M.R. Blum, and M.L. Smiley *Burroughs Wellcome Co., Research Triangle Park, NC, USA*
- 12:15 189. An Open Study to Investigate the Clinical Potential, Pharmacokinetics and Safety of 882C in Patients with Herpes Zoster – R.J. Crooks, R.W. Peck, and M.J. Wood *The Wellcome Research Laboratories, Beckenham, Kent; and East Birmingham Hospital, West Midlands, UK*
- 12:30 Lunch

Thursday, April 29

Oral Session VII: Hepadnavirus and Papillomavirus Infections

Chairpersons: C.A. Laughlin and B. Öberg

2:00pm Plenary Speaker – Margaret Stanley
“Culture Systems for HPV and Antivirals”
Cambridge University, Cambridge, UK

2:30 190. Anti-viral Approaches to Inhibiting the Replication of Human Papillomavirus DNA – M.A. Romanos, J.N. Stables, K.L. Powell, and C.J. Sexton *Wellcome Research Laboratories, Beckenham, Kent, UK*

2:45 191. External Guide Sequences (EGS) Elicit Cleavage of Hepatitis B Virus RNA by RNase P – J.M. Bockman, P. Narayan, G.T. Drivas, S. Siony, S.T. George, and A.R. Goldberg *Innovir Laboratories, New York, NY, USA*

3:00 192. Synthesis and Biological Evaluation of D-(2S) and L-(2R)-1,3-Oxathiolanyl- and D-(2R)- and L-(2S)-1,3-Dioxolanyl- Nucleosides as Anti-HIV and Anti-HBV Agents – C.K. Chu, L.S. Jeong, H.O. Kim, J.W. Beach, K. Shanmuganathan, S. Nampalli, R.F. Schinazi, C.-N. Chang, and Y.-C. Cheng *The University of Georgia, Athens, GA; Emory University School of Medicine/VA Medical Center, Decatur, GA; and Yale University School of Medicine, New Haven, CT, USA*

3:15 193. Pharmacokinetics and Metabolic Disposition of (-)-5-Fluoro- 3'-thia-2',3'-dideoxycytidine in Mice, Rats, and Monkeys – L.W. Frick, L. St. John, L.C.E. Taylor, and D.J. Nelson *Wellcome Research Laboratories, Burroughs Wellcome Co., Research Triangle Park, NC, USA*

3:30 194. Antiviral Effect of DNA Gyrase Inhibitors on the Replication of Duck Hepatitis B Virus In Vivo – S. Locarnini, S. Bowden, and Y. Wang *Fairfield Hospital, Fairfield, Victoria, Australia*

3:45 195. Analysis of the Pharmacokinetics of the Antiviral Nucleoside Analog FEAU in the Woodchuck Hepatitis Virus Model Using FMAU as an Internal Standard for HPLC – C.J. Nielsen, B.C. Tennant, J. Pedriani, and M.A. Ussery *DAVDP/Antiviral Research Laboratory, Rockville, MD; and Cornell University, Ithaca, NY, USA*

4:00 196. Treatment of Chronic Hepatitis C with Different Regimes of Interferon Alpha-2a – L. Chemello, G. Diodati, P. Bonetti, P. Pontisso, A. Alberti, and the TVVH Group (C. Donada, P. Casarin, F. Belussi, S. Martinelli, T. Croatto, M. Frezza, and G. Pozzato) *Clinica Medica II^o University of Padova, Padova, Italy*

- 4:15 197. Double-Blind, Vehicle-Controlled Rising Dose Tolerance Study of ISIS 2105, A Phosphorothioate Oligonucleotide for Treatment of Condyloma Acuminatum – S.L. Hutcherson, A. Garrett, J. Venitz, and D. Kisner *ISIS Pharmaceuticals, Inc., Carlsbad, CA; Medical College of Virginia, Richmond, VA; and BioClin., Inc., Richmond, VA, USA*

Poster Session III: Respiratory Virus, Hepadnavirus, Papillomavirus Infections

4:30-6:30pm

198. Synthesis and Antiviral Evaluation of Imidazo[1,5-a]-1,3,5-triazine (5,8-diaza-7,9-dideazapurine) Derivatives – B. Golankiewicz, P. Januszczyk, S. Ikeda, and E. De Clercq *Polish Academy of Sciences, Poznan, Poland; and Katholieke Universiteit Leuven, Leuven, Belgium*
199. Inhibition of Influenza B and C Viruses by Aprotinin – O.P. Zhirnov, P.B. Golyando, and A.V. Ovcharenko *The D.I. Ivanovsky Virology Institute, Moscow, Russia*
200. In Vitro Activity of a Novel Series of Polyoxosilicotungstates against Human Myxo-, Herpes-, and Retroviruses – S. Ikeda, J. Neyts, N. Yamamoto, B. Murrer, B. Theobald, G. Bossard, G. Henson, M. Abrams, D. Picker, and E. De Clercq *Katholieke Universiteit Leuven, Leuven, Belgium; Johnson Matthey, Technology Centre, Reading, Great Britain; Johnson Matthey Pharmaceutical Research, West Chester, PA, USA*
201. Influenza Virus-Inhibitory Activity of a Series of Antisense Oligonucleotides – J.H. Huffman, R.W. Sidwell, A.P. Gessaman, B.J. Moscone, J.Y. Tang, and S. Agrawal *Utah State University, Logan, UT; and Hybridon, Inc., Worcester, MA, USA*
202. In Vitro and In Ovo Effects of Various Nucleoside and Non-Nucleoside Analogues on Influenza A and B Virus Replication – M. Hosoya, S. Shigeta, T. Ishii, H. Suzuki, and E. De Clercq *Fukushima Medical College, Fukushima, Japan; and Katholieke Universiteit Leuven, Leuven, Belgium*
203. Establishment of a Highly Sensitive Assay System for Screening of Anti-Orthomyxo- and -Paramyxoviruses Agents – W. Watanabe, K. Konno, T. Yokota, and S. Shigeta *Rational Drug Design Laboratories, Fukushima; and Fukushima Medical College, Fukushima, Japan*
204. Fluorometric ELISA Method for Rapid Antiviral Susceptibility Testing of Respiratory Syncytial Virus – S.F. Reising, K. Quinn, S. Lindeman, and J. Doughman *Children's Hospital Research Foundation, Cincinnati, OH, USA*

205. Broad Spectrum Antiviral Activities of Sulfated Mucopolysaccharides of a Marine *Pseudomonas* Strain – S. Shigeta, S. Mori, M. Baba, K. Sudo, W. Watanabe, and K. Okutani *Fukushima Medical College, Fukushima; Rational Drug Design Laboratories, Fukushima; and Kagawa University, Kida, Kagawa, Japan*
206. Synthesis and Anti-HRV Activity of New Disoxaril Analogues – P. La Colla, P. Obino, M. Artico, A. Mai, S. Massa, F. Corelli, A. Loi, and A. De Montis *Università di Cagliari, Cagliari; Università di Roma, Roma; and Università di Siena, Siena, Italy*
207. Comparative Potencies of Non-Capsid-Binding and Capsid-Binding Antirhinovirus Compounds – K. Andries, J. Snoeks, R. Willebrords, B. Dewindt, and K. Van Eemeren *Janssen Research Foundation, Beerse, Belgium*
208. Cell Line-Dependent Activity of Capsid-Binding Compounds Against Coxsackievirus B3 – F. Dutko, M. Fox, M. Woods, A. Erenberg, M. McKinlay, and D. Pevear *Sterling Winthrop Pharmaceuticals Research Division, Rensselaer, NY, USA*
209. Testing the Action of Yeast Enzyme Complex on the Replication of RNA on Virus Influenza A/PR₈ – A. Uzunova, P. Petkov, and N. Stoeva *Bulgarian Academy of Sciences, Sofia, Bulgaria*
210. Resistance of Parainfluenza Virus I induced by Treatment with Yeast Enzyme Complex – A. Uzunova, P. Petkov, and M. Balasheva *Bulgarian Academy of Sciences, Sofia, Bulgaria*
211. Mechanism of PGA₁-induced Block of Sendai Virus Protein Synthesis – C. Amici, C. Giorgi, A. Rossi, and M.G. Santoro *University of Tor Vergata, Rome; Istituto Superiore di Sanità, Rome; and University of L'Aquila, L'Aquila, Italy*
212. Inhibition of RNA Virus Replication by Short Hyperthermic Treatment – A. De Marco and M.G. Santoro *Institute of Experimental Medicine, S.N.R., Rome, Italy; and University of L'Aquila, L'Aquila, Italy*
213. Control of Virus Replication by Cyclopentenone Prostaglandins: a Multistage Process, Associated with Induction of Heat Shock Protein Synthesis – M.G. Santoro, C. Amici, A. De Marco, F. Pica, and A. Rossi *Institute of Experimental Medicine, CNR, Rome; II University of Rome, Rome; and University of L'Aquila, L'Aquila, Italy*
214. The Remantadin Inhibition Activity at the Earliest Stages of Virus-Membrane Interaction – V.P. Lositsky, A.S. Fedtchouk, Y.I. Girlya *I.I. Mechnikov Virology and Epidemiology Research Institute, Odessa, Ukraine*

215. Selective Inhibitory Effect of Ribavirine (Virazole) on the Reproduction Strains of HSV-1 with Drug Resistance – G.A. Galegov, V.M. Shobukhov, and E. Grammaticova *The D.I. Ivanovsky Institute of Virology, Russian Academy of Medical Sciences, Moscow, Russia*
216. Inhibition of Influenza Virus Infections in Mice by the Phenolic Biopolymer SP303 – R.W. Sidwell, D.B. Barnard, A.P. Gessaman, B.J. Moscone, and J.H. Huffman *Utah State University, Logan, UT, USA*
217. Combination Therapy with Amantadine and Immunomodulators Potentiates Antiviral Effects in Influenza A Virus-Infected Mice – C. D'Agostini, A.T. Palamara, F. Innocenti, M. Sivilia, and C. Favalli *University of Rome Tor Vergata, Rome, Italy*
218. Safety and Efficacy of Intranasal Pirodavir (R77975) for Treatment of Naturally Occurring Common Colds – F. Hayden, G. Eisen, M. Janssens, K. Andries, and P. Janssen *University of Virginia, Charlottesville, VA; and Janssen Research Foundation, Piscataway, NJ, USA and Beerse, Belgium*
219. Poliovirus Thermostabilization by the Pyridazinamine R 78206 Without Loss in Infectivity – R. Vrijssen, O. Ofori-Anyinam, P. Kronenberger, and A. Boeyé *Vrije Universiteit Brussel, Brussels, Belgium*
220. The In Vitro Anti-Hepatitis B Virus Activity of FIAU is Selective, Reversible, and Determined, at least in part, by the Host Cell – J.M. Colacino, K.A. Staschke, T.E. Mabry, and C.D. Jones *Lilly Research Laboratories, Indianapolis, IN, USA*
221. In Vitro Anti-Hepatitis B Virus and Anti-Human Cytomegalovirus Activities of Selected 2',2'-Difluoro Purine and Pyrimidine Nucleoside Analogs – J.M. Colacino, C.S. Grossman, K.A. Staschke, A.J. Schilke, J.S. Kroin, and L.W. Hertel *Lilly Research Laboratories, Indianapolis, IN, USA*
222. Revealing of Virus Hepatitis A Inhibitors Among Spasmodic Drugs – S.V. Orlova, N.P. Mischaeva, A.B. Tarasenko, A.A. Zgirovskaya, and T.V. Amvrosieva *Byelorussian Research Institute for Epidemiology & Microbiology, Minsk, Republic of Byelorussia*
223. A Novel Hybrid Human Interferon Inhibits Hepadnavirus Replication In Vitro and In Vivo – B.E. Korba, B. Fernie, B.C. Tennant, D. Gangemi, and J.L. Gerin *Georgetown University Medical Center, Rockville, MD; College of Veterinary Medicine, Cornell University, Ithaca, NY; and Clemson- Greenville Hospital Biomedical Alliance, Clemson, SC, USA*
224. Treatment of Chronic Woodchuck Hepatitis Virus Infection with Thymosin Alpha-1 (TA1) – B.C. Tennant, B.E. Korba, B.H. Baldwin,

- L.A. Goddard, W.E. Hornbuckle, P.J. Cote, and J.L. Gerin *Cornell University, Ithaca, NY; and Georgetown University School of Medicine, Rockville, MD, USA*
225. Studies on the Virus Encoded Protease, NS3, of Hepatitis C Virus – B. Clarke, K. Grace, E. D'Souza, A. Carroll, D. Sangar, and D. Rowlands *The Wellcome Foundation Ltd., Beckenham, Kent, UK*
 226. Evaluation of the Potent Anti-HBV Agent (-)-5-Fluoro-2',3'-dideoxy-3'-thiacytidine (FTC) in a Novel In Vivo Model – L. Condreay, R. Jansen, T. Powdrill, L. Johnson, D. Selleseth, G. Painter, P. Furman, D. Averett, and N. Ellis *Burroughs Wellcome Co., Research Triangle Park, NC, USA*
 227. Ribozyme Mediated Cleavage of Hepatitis B Virus Surface Antigen mRNA – S.T. George, A. Shih, G.B. Takle, S. Siony, and A.R. Goldberg *Innovir Laboratories, Inc., New York, NY, USA*
 228. The Observation on the Antiviral Effect of Ribavirin and Combining with Interferon in Patients with Chronic Hepatitis B – Z.-Q. Wu, H.-F. Huang, and K.-J. Xiong *Wuhan Institute of Virology, Chinese Academy of Science and Xiehe Hospital, Tongji Medical University, Wuhan, China*
 229. Hepatitis B Virus Recurrence Following Orthotopic Liver Transplantation: Pathogenesis and Chemotherapy of Severe Infection – S. Locarnini, D.S. Bowden, P. Angus, M. Richards, J. Ireton, R. Sinclair, and R. Jones *Fairfield Hospital, Fairfield, Victoria; Austin Hospital, Heidelberg, Victoria, Australia*
 230. Clinical Features and Response to Interferon in Patients with Different HCV Genotypes in Italy – P. Pontisso, L. Chemello, S.G. Tisminetzky, M. Gerotto, M.G. Ruvoletto, F. Baralle, and A. Alberti *University of Padova, Padova; and ICGEB Trieste, Trieste, Italy*
 231. Leikinferon Treatment of Acute Hepatitis B Patients – S.G. Cheshik, T.D. Goban, and V.P. Kuznetsov *The D.I. Ivanovsky Institute of Virology, RAMS and Research Institute of Epidemiology and Microbiology, Moscow, Russia*
 232. Expression of Cytokine and Tumor Suppressor Genes in Condyloma Acuminata – S.K. Tying, I. Arany, and P. Rady *The University of Texas Medical Branch, Galveston, TX, USA*
 233. RB Tumor Suppressor Gene: A Potential Target of Interferons in HPV Infected Cells – S.K. Tying, I. Arany, and P. Rady *The University of Texas Medical Branch, Galveston, TX, USA*
 234. Trental as a Wide-Spectrum Inhibitor of Virus Activity – V.I. Votyakov, T.V. Amvrosieva, G.V. Vladyko, O.T. Andreeva, S.N. Nikolaeva, and N.P. Mishaeva *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*

235. Broad Spectrum Antiviral Activity of Mangrove Plants – M. Premanathan, K. Kathiresan, and K. Chandra *Centre of Advanced Study in Marine Biology, Tamil Nadu; and Central Drug Research Institute, Lucknow, India*
236. Antiviral Activity of Glutathione: In Vitro Inhibition of RNA and DNA Virus Replication – A.T. Palamara, E. Balestra, P. Di Francesco, C.F. Perno, C. Favalli, M.R. Ciriolo, G. Rotilio, and E. Garaci *University of Rome Tor Vergata, Rome, Italy*
237. Antiviral Effect of Flavonoids in Combinations with Interferon or Nucleoside Analogues – I. Béládi, I. Mucsi, and Z.S. Gyulai *Albert Szent-Györgyi Medical University Szeged, Hungary*
238. New Antiviral Preparation Izatizon. Studies of the Spectrum and of the Antiviral Directed Mechanism – A.I. Potopalsky, Yu.V. Patskovsky, L.V. Loziuk, T.P. Voloschuk, V.V. Gaiduk, S.L. Rybalko, and O.Yu. Zakhartsev *Institute of Molecular Biology and Genetics of Academy of Sciences of Ukraine, Kiev; and L.V. Gromashevsky Research Institute of Epidemiology and Infective Diseases, Kiev, Ukraine*
239. Paradoxal Effect of Antiviral Carbocyclic Substances in Subtoxic Concentrations – E.I. Boreko, N.I. Pavlova, S.N. Nikolaeva, and V.I. Votjakov *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
240. Antiviral Factor of Noninterferon and Noninterleukin Origin – N.V. Gribkova and V.I. Votjakov *Byelorussian Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
241. Experimental Approaches to the Fine Immunochemical Mapping of Antigenic Determinants on Viral Structural Proteins – V.I. Markov *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*
242. Effect of Staurosporine on the Antiviral Activity of Human Interferons – S. Chatterjee, P. Burns, J.D. Gangemi, L. Pirisi, and R.J. Whitley *University of Alabama School of Medicine, Birmingham, AL; Clemson University Biomedical Alliance, Clemson, SC; and University of South Carolina, Columbia, SC, USA*
243. The Study of a New Antiviral Drug Arbidol using Elisa Kits – I.A. Leneva, N.I. Fadeeva, I.T. Fedykina, M.L. Khristova, and I.G. Kharitonov *Chemical Pharmaceutical Research Institute, Moscow, Russia*
244. Adenosine Analogs as Potential Inhibitors of S-Adenosylhomocysteine Hydrolase – P. Tao and J.W. Huggins *USAMRIID, Fort Detrick, Frederick, MD, USA*

245. Lipopolysaccharide Inhibits Reproduction of Amyotrophic Leucospongiosis Agent In Vitro – S.P. Kapituletz, Z.B. Kvacheva, and N.N. Poleshchuk *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
246. Organ Distribution of a Conjugate of Adenine Arabinoside Monophosphate with Lactosaminated Albumin in Rat – L. Fiume, C. Busi, S. Corzani, G. Di Stefano, G.B. Gervasi, and A. Mattioli *University of Bologna, Bologna; and Laboratori Baldacci, Pisa, Italy*
247. N-Phosphonoacetyl-L-Aspartate (PALA): An Effective and Safe Broad Spectrum Antiviral – H.A. Blough, K. Soike, W. Shannon, P. Wyde, E. Dunkel, and D. Pavan- Langston *U.S. Bioscience, West Conshohocken, PA; USAMRIID, Frederick, MD; Tulane University Primate Center, Covington, LA; Southern Research Institute, Birmingham, AL; Baylor University, Houston, TX; and Eye Research Institute and Harvard University, Boston, MA*
248. Antiviral Activity of (PALA) Alone and in Combination with Rifampicin Against Vaccinia Virus Induced Skin Lesions in African Green Monkeys – K.F. Soike, J.-L. Huang, P. Mack, and H. Blough *Tulane Regional Primate Research Center, Covington, LA; and U.S. Bioscience, Inc., West Conshohocken, PA, USA*
249. BCG as a Vehicle for Creation of Recombinant Viral Live-Vaccines – V.N. Lazarenko, O.F. Proskriakova, A.A. Korneev, M.A. Korneev, V.M. Ruchko, A.A. Makhlay, and A.G. Khomenko *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev, Posad; Central Research Institute of Tuberculosis of Russian Academy of Medical Sciences, Moscow, Russia*
250. Antiviral Activity of Unithiolum as the Result of Disulphide Bonds Cracking – V.P. Lositsky, A.S. Fedtchouk, V.V. Clochko, Y.I. Girlya, V.A. Novitskij, A.G. Kolomiets, and N.D. Kolomiets *I.I. Mechnikov Virology and Epidemiology Research Institute, Odessa, Ukraine*
251. Virus-Induced Dyslipidemias and Problem of their Antiviral Chemotherapy – T.V. Amvrosieva, V.I. Votyakov, A.B. Cheschevik, V.G. Gudkov, O.T. Andreeva, I.E. Novikova, S.V. Orlova, and A.A. Zgyrovskaya *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
252. Study in the Monkeys P. Hamadryas the Possibility of the Specific Prophylaxis of the Ebola Fever – V.V. Mikhailov, I.V. Borisevich, N.K. Chernikova, N.V. Potrivaeva, and V.P. Krasnianskiy *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*

253. Immunomodulation Effects of Antiidiotypic Antibodies by Experimental Venezuelan Equine Encephalomyelitis (Vee) Infections – V.I. Markov, V.A. Pschenichnov, and A.A. Makhlay *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*
254. Immunotherapy of the Experimental Ebola Fever – V.V. Mikhailov, I.V. Borisevich, V.P. Krasnianskiy, V.N. Lazarenko, and A.A. Makhlay *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*
255. Peroral use of Vaccinia Virus, Results and Prospects – V.N. Podkuiko, A.A. Vorobiev, V.P. Krasnianskiy, G.T. Patrykeev, V.V. Mikhailov, T.V. Dorokhina, A.A. Makhlay, and G.A. Dikanov *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*
256. Influence of Peroxidation of Ribamydil-Containing Liposomes on the Effects of Chemotherapy on some Experimental Virus Infections – R.A. Khmitov, L.P. Grabareva, V.A. Pshenichnov, and O.A. Ereskina *Virological Centre of Microbiological Research Institute of the Defense Ministry, Sergiev Posad, Russia*
257. Revealing of Adenosine Triphosphoric Acid Antiviral Properties – I.K. Zubovich and I.A. Azarova *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
258. Protective Effect of Aminoglycoside Group Antibiotics in Experimental Encephalitis of Mice, Induced by West-Nile Virus – I.A. Azarova and N.P. Mishaeva *Byelorussian Research Institute for Epidemiology and Microbiology, Minsk, Republic of Byelarus*
259. Hydrophobisation of Virus-specific Antibodies and Antisense Oligonucleotide promotes their Antiviral Actions – A.V. Ovcharenko, Y.G. Suzdaltseva, N.S. Melik-Nubarov, V.P. Pheoktistov, A.V. Kabanov, and O.P. Zhirnov *The D.I. Ivanovsky Virology Institute, Moscow; and Research Center of Molecular Diagnostics, Moscow, Russia*
260. Pharmacokinetics and Distribution to the Brain of (R)-9-[4-Hydroxy-2-(hydroxymethyl)butyl]guanine (H2G) and Plasma Levels of H2G after Dosing a H2G Prodrug in the Rat – L. Ståhle, N. Borg, N.G. Johansson, P. Lind, B. Lindborg, and B. Öberg *Karolinska Institute, Stockholm; and Medivir AB, Huddinge, Sweden*
261. Distribution to the Brain, Protein Binding and Log(P) of 3'-Fluorothymidine Derivatives, A Microdialysis Study – N. Borg, X.-X. Zhou, and L. Ståhle *Karolinska Institute, Stockholm; and Medivir AB, Huddinge, Sweden*

262. Toxicological Research on Mopyridone a New Drug with Antiviral Activity – L. Tantcheva, A.S. Galabov, M. Behar, D. Sidzhakova, and N. Runevski *Bulgarian Academy of Sciences, Sofia; and Higher Medical School, Sofia and Plovdiv, Bulgaria*
263. Arbidol – New Antiviral Drug – T. Guskova and I. Nikolaeva *All-Russia Chemical-pharmaceutical Scientific Research Institute, Moscow, Russia*
264. Antiviral Macromolecular Therapeutic Systems: Principles and Methods of Design – L.L. Stotskaya and A.V. Serbin *A.V. Topchiev Institute of Petrochemical Synthesis, Russian Academy of Sciences, Moscow, Russia*
265. Reversal of the Antiviral Action of Ribavirin – V. Stollar and H.-J. Liao *UMDNJ-Robert Wood Johnson Medical School, Piscataway, NJ, USA*

Friday, April 30

Oral Session VIII: Minisymposium – Interferon Treatment of Chronic Hepatitis

Chairpersons: F. Dianzani and G. Palù

- 8:30am Alfredo Alberti
 “HBe-Chronic Hepatitis B”
 University of Padova, Padova, Italy
- 9:00 Giorgio Saracco
 “Chronic Hepatitis B”
 University of Torino, Torino, Italy
- 9:30 Christian Trepo
 “Chronic Hepatitis C”
 INSERM, Lyon France
- 10:00 Break
- 10:30 Adriano Di Bisceglie
 “Chronic Hepatitis D (Delta)”
 NIDDK, NIH, Bethesda, MD, USA
- 11:00 Antonio Craxi
 “Chronic Hepatitis; A Meta Analysis”
 University of Palermo, Palermo, Italy
- 11:30 Discussion
- 12:00 Conference Adjourns

