

BIOGRAPHICAL SKETCH

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NAME Spearman, Paul W.	POSITION TITLE Professor and Director Pediatric Infectious Diseases Emory University School of Medicine		
eRA COMMONS USER NAME SPEARMANP			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Austin College, Sherman, Texas	B.A.	1982	Biology
U.T. Southwestern Medical School	M.D.	1986	Medicine

A. Positions and Honors.

Year	Position
1986-1990	Resident in Internal Medicine/Pediatrics, Ohio State University, Columbus, Ohio
1990-1994	Fellow, Division of Infectious Diseases, Washington University, St. Louis, Missouri
1994-1995	Instructor, Division of Infectious Diseases, Washington University, St. Louis, Missouri
1995-2001	Assistant Professor, Pediatrics and Microbiology/Immunology, Vanderbilt University
2001-2005	Associate Professor, Pediatrics and Microbiology/Immunology, Vanderbilt University
2001-2005	Co-Principal Investigator, Vanderbilt HIV Vaccine Trials Unit, Vanderbilt University
2003-2005	Director, Pediatric Infectious Diseases Fellowship Program, Vanderbilt University
2005-present	Director of Pediatric Infectious Diseases, Emory University
2006-	Professor of Pediatrics and Microbiology and Immunology, Emory University
Year	Honors
1990	Award for Outstanding Performance in Medicine, Ohio State University
1990	Resident Teaching Award, Ohio State University
1994	Scholar Award, American Foundation for AIDS Research
2001-present	Member, Phase I/II Committee, HIV Vaccine Trials Network
2004	Chair, NIH Special Emphasis Panel for HIV Vaccine Design/Development Teams
2005-2008	Member AIDS Molecular and Cellular Biology Study Section, NIH
2006-	Member, NCI Council of Scientific Advisors

B. **peer-reviewed publications (in chronological order, 1-41 from 47 total)**

1. Lu, Y.L., P. **Spearman**, and L. Ratner, *Human immunodeficiency virus type 1 viral protein R localization in infected cells and virions*. J Virol, 1993. **67**(11): p. 6542-50.
2. **Spearman**, P., J.J. Wang, N. Vander Heyden, and L. Ratner, *Identification of human immunodeficiency virus type 1 Gag protein domains essential to membrane binding and particle assembly*. J Virol, 1994. **68**(5): p. 3232-42.
3. **Spearman**, P. and L. Ratner, *Human immunodeficiency virus type 1 capsid formation in reticulocyte lysates*. J Virol, 1996. **70**(11): p. 8187-94.
4. **Spearman**, P., R. Horton, L. Ratner, and I. Kuli-Zade, *Membrane binding of human immunodeficiency virus type 1 matrix protein in vivo supports a conformational myristyl switch mechanism*. J Virol, 1997. **71**(9): p. 6582-92.
5. Sandefur, S., V. Varthakavi, and P. **Spearman**, *The I domain is required for efficient plasma membrane binding of human immunodeficiency virus type 1 Pr55Gag*. J Virol, 1998. **72**(4): p. 2723-32.
6. Fang, Z.Y., I. Kuli-Zade, and P. **Spearman**, *Efficient human immunodeficiency virus (HIV)-1 Gag-Env pseudovirion formation elicited from mammalian cells by a canarypox HIV vaccine candidate*. J Infect Dis, 1999. **180**(4): p. 1122-32.
7. Gicheru, M.M., M. Otsyula, P. **Spearman**, B.S. Graham, C.J. Miller, H.L. Robinson, N.L. Haigwood, and D.C. Montefiori, *Neutralizing antibody responses in Africa green monkeys naturally infected with simian immunodeficiency virus (SIVagm)*. J Med Primatol, 1999. **28**(3): p. 97-104.

8. Varthakavi, V., P.J. Browning, and P. **Spearman**, *Human immunodeficiency virus replication in a primary effusion lymphoma cell line stimulates lytic-phase replication of Kaposi's sarcoma-associated herpesvirus*. J Virol, 1999. **73**(12): p. 10329-38.
9. Wang, J.J., R. Horton, V. Varthakavi, P. **Spearman**, and L. Ratner, *Formation and release of virus-like particles by HIV-1 matrix protein*. Aids, 1999. **13**(2): p. 281-3.
10. Haas, D.W., L.A. Clough, B.W. Johnson, V.L. Harris, P. **Spearman**, G.R. Wilkinson, C.V. Fletcher, S. Fiscus, S. Raffanti, R. Donlon, J. McKinsey, J. Nicotera, D. Schmidt, R.E. Shoup, R.E. Kates, R.M. Lloyd, Jr., and B. Larder, *Evidence of a source of HIV type 1 within the central nervous system by ultraintensive sampling of cerebrospinal fluid and plasma*. AIDS Res Hum Retroviruses, 2000. **16**(15): p. 1491-502.
11. Haas, D.W., J. Stone, L.A. Clough, B. Johnson, P. **Spearman**, V.L. Harris, J. Nicotera, R.H. Johnson, S. Raffanti, L. Zhong, P. Bergqwisst, S. Chamberlin, V. Hoagland, and W.D. Ju, *Steady-state pharmacokinetics of indinavir in cerebrospinal fluid and plasma among adults with human immunodeficiency virus type 1 infection*. Clin Pharmacol Ther, 2000. **68**(4): p. 367-74.
12. Pastey, M.K., T.L. Gower, P.W. **Spearman**, J.E. Crowe, Jr., and B.S. Graham, *A RhoA-derived peptide inhibits syncytium formation induced by respiratory syncytial virus and parainfluenza virus type 3*. Nat Med, 2000. **6**(1): p. 35-40.
13. Sandefur, S., R.M. Smith, V. Varthakavi, and P. **Spearman**, *Mapping and characterization of the N-terminal I domain of human immunodeficiency virus type 1 Pr55(Gag)*. J Virol, 2000. **74**(16): p. 7238-49.
14. Tang, Y.W., J.T. Huong, R.M. Lloyd, Jr., P. **Spearman**, and D.W. Haas, *Comparison of human immunodeficiency virus type 1 RNA sequence heterogeneity in cerebrospinal fluid and plasma*. J Clin Microbiol, 2000. **38**(12): p. 4637-9.
15. Evans, T.G., M.J. McElrath, T. Matthews, D. Montefiori, K. Weinhold, M. Wolff, M.C. Keefer, E.G. Kallas, L. Corey, G.J. Gorse, R. Belshe, B.S. Graham, P.W. **Spearman**, D. Schwartz, M.J. Mulligan, P. Goepfert, P. Fast, P. Berman, M. Powell, and D. Francis, *QS-21 promotes an adjuvant effect allowing for reduced antigen dose during HIV-1 envelope subunit immunization in humans*. Vaccine, 2001. **19**(15-16): p. 2080-91.
16. Fang, Z.Y., K. Limbach, J. Tartaglia, J. Hammonds, X. Chen, and P. **Spearman**, *Expression of vaccinia E3L and K3L genes by a novel recombinant canarypox HIV vaccine vector enhances HIV-1 pseudovirion production and inhibits apoptosis in human cells*. Virology, 2001. **291**(2): p. 272-84.
17. **Spearman**, P., S.A. Fiscus, R.M. Smith, R. Shepard, B. Johnson, J. Nicotera, V.L. Harris, L.A. Clough, J. McKinsey, and D.W. Haas, *Comparison of Roche MONITOR and Organon Teknika NucliSens assays to quantify human immunodeficiency virus type 1 RNA in cerebrospinal fluid*. J Clin Microbiol, 2001. **39**(4): p. 1612-4.
18. Wang, J.J., S. Sandefur, P. **Spearman**, C.T. Chiou, P.H. Chiang, and L. Ratner, *Tracking the assembly pathway of human immunodeficiency virus type 1 Gag deletion mutants by immunogold labeling*. Appl Immunohistochem Mol Morphol, 2001. **9**(4): p. 371-9.
19. Gupta, K., M. Hudgens, L. Corey, M.J. McElrath, K. Weinhold, D.C. Montefiori, G.J. Gorse, S.E. Frey, M.C. Keefer, T.G. Evans, R. Dolin, D.H. Schwartz, C. Harro, B. Graham, P.W. **Spearman**, M. Mulligan, and P. Goepfert, *Safety and immunogenicity of a high-titered canarypox vaccine in combination with rgp120 in a diverse population of HIV-1-uninfected adults: AIDS Vaccine Evaluation Group Protocol 022A*. J Acquir Immune Defic Syndr, 2002. **29**(3): p. 254-61.
20. Varthakavi, V., R.M. Smith, H. Deng, R. Sun, and P. **Spearman**, *Human immunodeficiency virus type-1 activates lytic cycle replication of Kaposi's sarcoma-associated herpesvirus through induction of KSHV Rta*. Virology, 2002. **297**(2): p. 270-80.
21. Ding, L., A. Derdowski, J.J. Wang, and P. **Spearman**, *Independent segregation of human immunodeficiency virus type 1 Gag protein complexes and lipid rafts*. J Virol, 2003. **77**(3): p. 1916-26.
22. Haas, D.W., B.W. Johnson, P. **Spearman**, S. Raffanti, J. Nicotera, D. Schmidt, T. Hulgand, R. Shepard, and S.A. Fiscus, *Two phases of HIV RNA decay in CSF during initial days of multidrug therapy*. Neurology, 2003. **61**(10): p. 1391-6.
23. Hammonds, J., X. Chen, L. Ding, T. Fouts, A. De Vico, J. zur Megede, S. Barnett, and P. **Spearman**, *Gp120 stability on HIV-1 virions and Gag-Env pseudovirions is enhanced by an uncleaved Gag core*. Virology, 2003. **314**(2): p. 636-49.
24. Nydegger, S., M. Foti, A. Derdowski, P. **Spearman**, and M. Thali, *HIV-1 egress is gated through late endosomal membranes*. Traffic, 2003. **4**(12): p. 902-10.

25. **Spearman, P.**, *HIV vaccine development: lessons from the past and promise for the future*. *Curr HIV Res*, 2003. **1**(1): p. 101-20.
26. Varthakavi, V., R.M. Smith, S.P. Bour, K. Strebel, and P. **Spearman**, *Viral protein U counteracts a human host cell restriction that inhibits HIV-1 particle production*. *Proc Natl Acad Sci U S A*, 2003. **100**(25): p. 15154-9.
27. Derdowski, A., L. Ding, and P. **Spearman**, *A novel fluorescence resonance energy transfer assay demonstrates that the human immunodeficiency virus type 1 Pr55Gag I domain mediates Gag-Gag interactions*. *J Virol*, 2004. **78**(3): p. 1230-42.
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29. Batonick, M., M. Favre, M. Boge, P. **Spearman**, S. Honing, and M. Thali, *Interaction of HIV-1 Gag with the clathrin-associated adaptor AP-2*. *Virology*, 2005. **342**(2): p. 190-200.
30. Chen, X., M.T. Rock, J. Hammonds, J. Tartaglia, A. Shintani, J. Currier, B. Slike, J.E. Crowe, Jr., M. Marovich, and P. **Spearman**, *Pseudovirion particle production by live poxvirus human immunodeficiency virus vaccine vector enhances humoral and cellular immune responses*. *J Virol*, 2005. **79**(9): p. 5537-47.
31. Dong, X., H. Li, A. Derdowski, L. Ding, A. Burnett, X. Chen, T.R. Peters, T.S. Dermody, E. Woodruff, J.J. Wang, and P. **Spearman**, *AP-3 directs the intracellular trafficking of HIV-1 Gag and plays a key role in particle assembly*. *Cell*, 2005. **120**(5): p. 663-74.
32. Goepfert, P.A., H. Horton, M.J. McElrath, S. Gurunathan, G. Ferrari, G.D. Tomaras, D.C. Montefiori, M. Allen, Y.L. Chiu, P. **Spearman**, J.D. Fuchs, B.A. Koblin, W.A. Blattner, S. Frey, M.C. Keefer, L.R. Baden, and L. Corey, *High-dose recombinant Canarypox vaccine expressing HIV-1 protein, in seronegative human subjects*. *J Infect Dis*, 2005. **192**(7): p. 1249-59.
33. Hammonds, J., X. Chen, T. Fouts, A. DeVico, D. Montefiori, and P. **Spearman**, *Induction of neutralizing antibodies against human immunodeficiency virus type 1 primary isolates by Gag-Env pseudovirion immunization*. *J Virol*, 2005. **79**(23): p. 14804-14.
34. **Spearman, P.**, *Current progress in the development of HIV vaccines*. *Curr Pharm Des*, 2006. **12**(9): p. 1147-67.
35. **Spearman, P.**, *Cellular cofactors involved in HIV assembly and budding*. *Curr Opin HIV AIDS*, 2006. **1**(1): p. 200-207.
36. Varthakavi, V., R.M. Smith, K.L. Martin, A. Derdowski, L.A. Lapierre, J.R. Goldenring, and P. **Spearman**, *The pericentriolar recycling endosome plays a key role in Vpu-mediated enhancement of HIV-1 particle release*. *Traffic*, 2006. **7**(3): p. 298-307.
37. Burnett, A. and P. **Spearman**, *APOBEC3G multimers are recruited to the plasma membrane for packaging into human immunodeficiency virus type 1 virus-like particles in an RNA-dependent process requiring the NC basic linker*. *J Virol*, 2007. **81**(10): p. 5000-13.
38. Goepfert, P.A., G.D. Tomaras, H. Horton, D. Montefiori, G. Ferrari, M. Deers, G. Voss, M. Koutsoukos, L. Pedneault, P. Vandepapeliere, M.J. McElrath, P. **Spearman**, J.D. Fuchs, B.A. Koblin, W.A. Blattner, S. Frey, L.R. Baden, C. Harro, and T. Evans, *Durable HIV-1 antibody and T-cell responses elicited by an adjuvanted multi-protein recombinant vaccine in uninfected human volunteers*. *Vaccine*, 2007. **25**(3): p. 510-8.
39. Zhang, X., F. Cassis-Ghavami, M. Eller, J. Currier, B.M. Slike, X. Chen, J. Tartaglia, M. Marovich, and P. **Spearman**, *Direct Comparison of Antigen Production and Induction of Apoptosis by Canarypoxvirus and Modified Vaccinia Ankara (MVA) HIV Vaccine Vectors*. *J Virol*, 2007.
40. Hammonds, J., X. Chen, X. Zhang, F. Lee, and P. **Spearman**, *Advances in methods for the production, purification, and characterization of HIV-1 Gag-Env pseudovirion vaccines*. *Vaccine*, 2007. **25**(47): p. 8036-48.
41. Li, H., J. Dou, L. Ding, and P. **Spearman**, *Myristoylation is required for human immunodeficiency virus type 1 Gag-Gag multimerization in mammalian cells*. *J Virol*, 2007. **81**(23): p. 12899-910.
42. Wang, T., W. Zhang, C. Tian, B. Liu, Y. Yu, L. Ding, P. **Spearman**, and X-F Yu. *Distinct viral determinants for the packaging of human cytidine deaminases APOBEC3G and APOBEC3C*. **Virology** (in press).