Vinay K. Pathak, Ph.D.

Bibliography (all papers):

1. Proffitt, R.T., V.K. Pathak, D.G. Villacorte, and C.A. Presant. 1983. Sensitive radiochemical assay for inosine 5' monophosphate dehydrogenase and determination of activity in murine tumor and tissue extracts. Cancer Res. **43**:1620-1623.

2. Pathak, V.K., R. Strange, L.J.T. Young, D.W. Morris, and R.D. Cardiff. 1987. Survey of *int* region DNA rearrangements in C3H and BALB/cfC3H mouse mammary tumor system. JNCI **78**:327-331.

3. Pathak, V.K., D. Schindler, and J.W.B. Hershey. 1988. Generation of a mutant form of protein synthesis initiation factor eIF-2 lacking the site of phosphorylation by eIF-2 kinases. Mol. Cell. Biol. **8**:993-995.

4. Pathak, V.K., P.J. Nielsen, H. Trachsel, and J.W.B. Hershey. 1988. Structure of the β subunit of translational initiation factor eIF-2. Cell **54**:633-639.

5. Kaufman, R.J., M.V. Davies, V.K. Pathak, and J.W.B. Hershey. 1988. The critical role of eIF-2α phosphorylation in translational control. In: Viral Vectors. Ed. Y. Gluzman and S. Hughes. Cold Spring Harbor, New York, pg. 62-67.

6. Kaufman, R.J., M.V. Davies, V.K. Pathak, and J.W.B. Hershey. 1988. The phosphorylation state of the eukaryotic initiation factor 2 alters translational efficiency of specific mRNAs. Mol. Cell. Biol. **9**:946-958.

7. Pathak, V.K., and H.M. Temin. 1990. Broad spectrum of *in vivo* forward mutations, hypermutations, and mutational hotspots in a novel retroviral shuttle vector after a single replication cycle: Substitutions, frameshifts, and hypermutations. Proc. Natl. Acad. Sci. USA **87**:6019-6023.

8. Pathak, V.K., and H.M. Temin. 1990. Broad spectrum of *in vivo* forward mutations, hypermutations, and mutational hotspots in a novel retroviral shuttle vector after a single replication cycle: Deletions and deletions with insertions. Proc. Natl. Acad. Sci. USA **87**:6024-6028.

9. Pathak, V.K., and H.M. Temin. 1992. 5-Azacytidine (AZC) and RNA secondary structure increase retroviral mutation rate. J. Virol. **66**:3093-3100.

10. Julias, J.G., D. Hash, and V.K. Pathak. 1995. E^- vectors: Development of novel self-inactivating and self-activating retroviral vectors for safer gene therapy. J. Virol. **69**:6839-6846.

11. Bowman, E.H., V.K. Pathak, and W.-S. Hu. 1996. Efficient initiation and strand transfer of polypurine tract-primed plus-strand DNA prevents strand transfer of internally initiated plus-strand DNAs. J. Virol. **70**:1687-1694.

12. Kim, T., R.A. Mudry, Jr., C.A. Rexrode II, and V.K. Pathak. 1996. Retroviral mutation rates and A-to-G hypermutations during different stages of retroviral replication. J. Virol. **70**:7594-7602.

13. Yin, P.D., V.K. Pathak, A.E. Rowan, R.J. Teufel II, and W.-S. Hu. 1997. Utilization of non-homologous minus-strand DNA transfer to generate recombinant retroviruses. J. Virol. **71**:2487-2494.

14. Julias, J.G., T. Kim, G. Arnold, and V.K. Pathak. 1997. Antiretroviral drug AZT increases retroviral mutation rate. J. Virol. **71**:4254-4263.

15. Hu, W.-S., E.H. Bowman, K.A. Delviks, and V.K. Pathak. 1997. Homologous recombination occurs in a distinct retroviral subpopulation and exhibits high negative interference. J. Virol. **71**:6028-6036.

16. Delviks, K.A., W.-S. Hu, and V.K. Pathak. 1997. Ψ^- vectors: Murine leukemia virus-based self-inactivating and self-activating retroviral vectors for human gene therapy. J. Virol. **71**:6218-6224.

17. Bowman, R., W.-S. Hu, and V.K. Pathak. 1998. Relative rates of retroviral reverse transcriptase template switching during RNA- and DNA-dependent DNA synthesis. J. Virol. **72**:5198-5206.

18. Julias, J., and V.K. Pathak. 1998. Deoxyribonucleoside triphosphate pool imbalances in vivo are associated with an increased retroviral mutation rate. J. Virol. **72**:7941-7949.

19. Delviks, K.D., and V.K. Pathak. 1999. Effect of distance between homologous sequences and 3' homology on the frequency of retroviral reverse transcriptase template switching. J. Virol. **73**:7923-7932.

20. Delviks, K.D., and V.K. Pathak. 1999. Development of murine leukemia virus (MLV)-based self-activating vectors that efficiently delete the drug-resistance gene during reverse transcription. J. Virol. **73**:8837-8842.

21. Halvas, E., E.S. Svarovskaia, and V.K. Pathak. 2000. Development of an in vivo assay to identify structural determinants of murine leukemia virus reverse transcriptase important for fidelity. J. Virol. **74**:312-319.

22. Halvas, E., E.O. Freed, and V.K. Pathak. 2000. Wildtype and YMDD mutant of murine leukemia virus (MLV) reverse transcriptase is highly resistant to 2',3'-deoxy-3'-thiacytidine. J. Virol. **74**:6669-6674.

23. Anderson, J.A., V.K. Pathak, and W.-S. Hu. 2000. Effect of the murine leukemia virus extended packaging signal on the rates and locations of retroviral recombination. J. Virol. **74**:6953-6963.

24. Svarovskaia, E.S., K.A. Delviks, C.K. Hwang, and V.K. Pathak. 2000. Structural determinants of murine leukemia virus reverse transcriptase that affect the frequency of template switching. J. Virol. **74**:7171-7178.

25. Cheslock, S.R., J.A. Anderson, C.K. Hwang, V.K. Pathak, and W.-S. Hu. 2000. Utilization of nonviral sequences for minus-strand DNA transfer and gene reconstitution during retroviral replication. J. Virol. **74**:9571-9579.

26. Halvas, E., E.S. Svarovskaia, and V.K. Pathak. 2000. Role of murine leukemia virus reverse transcriptase deoxyribonucleoside triphosphate-binding site in retroviral replication and in vivo fidelity. J. Virol. **74**:10349-10358.

27. Hwang, C.K., E.S. Svarovskaia, and V.K. Pathak. 2001. Dynamic copy-choice: Steady state between murine leukemia virus polymerase and polymerase-dependent RNase H activity determines frequency of in vivo template switching. Proc. Natl. Acad. Sci. USA **98**:12209-12214.

28. Zhang, W.-H., C.K. Hwang, W.-S. Hu, R.B. Gorelick, and V.K. Pathak. 2002. Zinc finger domain of murine leukemia virus nucleocapsid protein enhances the rate of viral DNA synthesis in vivo. J. Virol. **76**:7473-7484.

29. Zhang, W.-H., E.S. Svarovskaia, R. Barr, and V.K. Pathak. 2002. Y586F mutation in murine leukemia virus reverse transcriptase decreases fidelity of DNA synthesis in regions associated with adenine-thymine tracts. Proc. Natl. Acad. Sci. USA **99**:10090-10095.

30. Pais, G.C.G., X. Zhang, C. Marchand, N. Neamati, K. Cowansage, E.S. Svarovskaia, V.K. Pathak, Y. Tang, M. Nicklaus, Y. Pommier, and T.R. Burke, Jr. 2002. Structure activity of 3-aryl-1,3-diketo-containing compounds as HIV-1 integrase inhibitors. J. Med. Chem. **45**:3184-3194.

31. Zhang, X., G.C.G. Pais, E.S. Svarovskaia, C. Marchand, V.K. Pathak, Y. Pommier, and T.R. Burke, Jr. 2003. Azido-containing aryl-β-diketo acid HIV-1 integrase inhibitors. Bioorg. Med. Chem. Lett. **13**:1215-1219.

32. Voronin, Y.A., and V.K. Pathak. 2003. Frequent dual initiation of reverse transcription in murine leukemia virus-based vectors containing two primer-binding sites. Virology **312**:281-294.

33. Dang, Q., J. Chen, D. Unutmaz, J.M. Coffin, V.K. Pathak, D. Powell, V.N. KewalRamani, F. Maldarelli, and W.-S. Hu. 2004. Nonrandom HIV-1 infection and double infection via direct and cell-mediated pathways. Proc. Natl. Acad. Sci. USA **101**:632-637.

34. Svarovskaia, E.S., R. Barr, X. Zhang, G.C.G. Pais, C. Marchand, Y. Pommier, T.R. Burke, Jr., and V.K. Pathak. 2004. Azido-containing diketo acid derivatives inhibit human immunodeficiency virus type 1 integrase in vivo and influence the frequency of deletions at 2-long terminal repeat-circle junctions. J. Virol. **78**:3210-3222.

35. Xu, H., E.S. Svarovskaia, R. Barr, Y. Zhang, and V.K. Pathak. 2004. A single amino acid substitution in human APOBEC3G antiretroviral enzyme confers resistance to HIV-1 vif induced depletion. Proc. Natl. Acad. Sci. USA **101**: 5652-5657.

36. Voronin, Y., and V.K. Pathak. 2004. Frequent dual-initiation in human immunodeficiency virus-based vectors containing two primer-binding sites provides a quantitative in vivo assay for mutational analysis of initiation complexes. J. Virol. **78**:5402-5413.

37. Nikolenko, G.N., E.S. Svarovskaia, K.A. Delviks, and V.K. Pathak. 2004. Antiretroviral drug resistance mutations in human immunodeficiency virus type 1 reverse transcriptase increase template-switching frequency. J. Virol. **78**:8761-8770.

38. Svarovskaia, E.S., H. Xu, J.L. Mbisa, R. Barr, R.J. Gorelick, A. Ono, E.O. Freed, W.-S. Hu, and V.K. Pathak. 2004. Human apolipoprotein B mRNA-editing enzyme-catalytic polypeptide-like 3G (APOBEC3G) is incorporated into HIV-1 virions through interactions with viral and nonviral RNAs. J. Biol. Chem. **279**:35822-35828.

39. Mbisa, J.L., G.N. Nikolenko, and V.K. Pathak. 2005. Mutations in RNase H primer grip domain of murine leukemia virus reverse transcriptase decrease efficiency and accuracy of plus-strand DNA transfer. J. Virol. **79**:419-427.

40. Chen, J., Q. Dang, D. Unutmaz, V.K. Pathak, F. Maldarelli, D. Powell, and W.-S. Hu. 2005. Mechanisms of nonrandom human immunodeficiency virus type 1 infection and double infection: Preference in virus entry is important but is not the sole factor. J. Virol. **79**:4140-4149.

41. Nikolenko, G.N., S. Palmer, F. Maldarelli, J.W. Mellors, J.M. Coffin, and V.K. Pathak. 2005. Mechanism for nucleoside analog-mediated abrogation of HIV-1 replication: Equilibrium between RNase H activity and nucleotide excision. Proc. Natl. Acad. Sci USA **102**:2093-2098.

42. Williams, K., Y. Zhang, N. Shkriabai, R.G. Karki, M.C. Nicklaus, S. Hess, S.F.J. Le Grice, R. Craigie, V.K. Pathak, and M. Kvaratskhelia. 2005. Mass spectrometric analysis of the HIV-1 integrase:pyridoxal-5'-phosphate complex reveals a nucleotide inhibitor binding site. J. Biol. Chem. **9**:7949-7955.

43. Fu, W., Q. Dang, K. Nagashima, E.O. Freed, V.K. Pathak, and W.-S. Hu. 2006. Effects of Gag mutation and processing on retroviral dimeric RNA maturation. J. Virol. **80**:1242-1249.

44. Krajewski, K., Y. Zhang, D. Parrish, J. Deschamps, P.P. Roller, and V.K. Pathak. 2006. New HIV-1 RT inhibitors based on a tricyclic benzothiophene scaffold. Synthesis, resolution, and inhibitory activity. Bioorg. Med. Chem. Lett. **16**:3034-3038.

45. Voronin, Y.A., I.A. Sidorov, and V.K. Pathak. 2006. A probability model predicting initiation efficiency of retroviral vectors with two primer-binding sites. J. Theoret. Biol. **242**:347-355.

46. Boyko, V., M. Leavitt, R. Gorelick, W. Fu, O. Nikolaitchik, V.K. Pathak, K. Nagashima, and W.-S. Hu. 2006. Coassembly and complementation of Gag proteins from HIV-1 and HIV-2, two distinct human pathogens. Mol. Cell **23**:281-287.

47. Xu, H., E. Chertova, J. Chen, D.E. Ott, J.D. Roser, W.-S. Hu, and V.K. Pathak. 2007. Stoichiometry of the antiviral protein APOBEC3G in HIV-1 virions. Virology **360**:247-256.

48. Nikolenko, G.N., K.A. Delviks-Frankenberry, S. Palmer, F. Maldarelli, M.J. Fivash, Jr., J.M. Coffin, and V.K. Pathak. 2007. Mutations in the connection domain of HIV-1 reverse transcriptase increase AZT resistance. Proc. Natl. Acad. Sci. USA **104**:317-322.

49. Thomas, D. C., Y.A. Voronin, G.N. Nikolenko, J. Chen, W.-S. Hu, and V.K. Pathak. 2007. Determination of the ex vivo rates of HIV-1 reverse transcription using novel strand-specific amplification (SSA) analysis. J. Virol. **81**:4798-4807.

50. Delviks-Frankenberry, K.A., G.N. Nikolenko, R. Barr, and V.K. Pathak. 2007. Mutations in human immunodeficiency virus type 1 RNase H primer grip enhance 3'-azido-3'-deoxythymidine resistance. J. Virol. **81**:6837-6845.

51. Mbisa, J.L., R. Barr, J.A. Thomas, N. Vandergraff, I.J. Dorweiler, E.S. Svarovskaia, W.L. Brown, L.M. Mansky, R.J. Gorelick, R.S. Harris, A. Engelman, and V.K. Pathak**.** 2007. HIV-1 cDNAs produced in the presence of APOBEC3G exhibit defects in plus-strand DNA transfer and integration. J. Virol. **81**:7099-7110.

52. Russell, R.A., and V.K. Pathak. 2007. Identification of two distinct HIV-1 Vif determinants critical for interactions with human APOBEC3G and APOBEC3F. J. Virol. **81**:8201-8210.

53. Brehm, J.H., D. Koontz, V.K. Pathak, N. Sluis-Cremer, and J.W. Mellors. 2007. Selection of mutations in the connection and RNase H domains of human immunodeficiency virus type 1 reverse transcriptase that increase resistance to 3'-azido-3'-dideoxythymidine. J. Virol. **81**:7852-7859.

54. Santos, A.F.A., R.B. Lengruber, E.A.J.M. Soares, A. Jere, E. Sprinz, A.M.B. Martinez, J. Silveira, F.S. Sion, F.S., V.K. Pathak, and M. A. Soares. 2008. Conservation patterns of HIV-1 RT connection and RNase H domains: Identification of new mutations in NRTI-treated patients. PLoS ONE **3**:e1781.

55. Nikolaitchik, O.A., R.J. Gorelick, M.G. Leavitt, V.K. Pathak, and W.-S. Hu. 2008. Functional complementation of nucleocapsid and late domain PTAP mutants of human immunodeficiency virus type 1 during replication. Virology **375**:539-549.

56. Chen, J., V.K. Pathak, W. Peng, and W.-S. Hu. 2008. Capsid proteins from human immunodeficiency virus type 1 and simian immunodeficiency virus SIVmac can coassemble into mature cores of infectious viruses. J. Virol. **82**:8253-8261.

57. Delviks-Frankenberry, K.A., G.N. Nikolenko, P.L. Boyer, S.H. Hughes, J.M. Coffin, A. Jere, and V.K. Pathak. 2008. HIV-1 reverse transcriptase connection subdomain mutations reduce template RNA degradation and enhance AZT excision. Proc. Natl. Acad. Sci. USA **105**:10943-10948.

58. Moore, M.D., W. Fu, F. Soheilian, K. Nagashima, R.G. Ptak, V.K. Pathak, and W.-S. Hu. 2008. Suboptimal inhibition of protease activity in human immunodeficiency virus type 1: Effects on virion morphogenesis and RNA maturation. Virology **379**:152-160.

59. Russell, R.A., J. Smith, R. Barr, D. Bhattacharyya, and V.K. Pathak. 2009. Distinct domains within APOBEC3G and APOBEC3F interact with separate regions of HIV-1 Vif. J. Virol. **83**:1992-2003.

60. LaRue, R.S., V. Andrésdóttir, Y. Blanchard, S.G. Conticello, D. Derse, M. Emerman, W.C. Greene, S.R. Jónsson, N.R. Landau, M. Löchelt, H.S. Malik, M.H. Malim, C. Münk, S.J. O'Brien, V.K. Pathak, K. Strebel, S. Wain-Hobson, X.F. Yu, N. Yuhki, and R.S. Harris. 2009. Guidelines for naming non-primate APOBEC3 genes and proteins. J. Virol. **83**:494-497.

61. Perkovic, M., S. Schmidt, D. Marino, R.A. Russell, B. Stauch, H. Hofmann, F. Kopietz, B.P. Kloke, J. Zielonka, H. Strover, J. Hermie, D. Lindemann, V.K. Pathak, G. Schneider, M. Lochelt, K. Cichutek, and C. Munk. 2009. Species-specific inhibition of APOBEC3C by the prototype foamy virus protein Bet. J. Biol. Chem. **284**:5819-1826.

62. Friew, Y.N., V. Boyko, W.-S. Hu, and V.K. Pathak. 2009. Intracellular interactions between APOBEC3G, RNA, and HIV-1 Gag: APOBEC3G multimerization is dependent on its association with RNA. Retrovirology **6**:56.

63. Jern, P., R.A. Russell, V.K. Pathak, and J.M. Coffin. 2009. Likely role of APOBEC3G-mediated G-to-A mutations in HIV-1 evolution and drug resistance. PLoS Pathog. **5**:e1000367.

64. Russell, R.A., M.D. Moore, W.-S. Hu, and V.K. Pathak. 2009. APOBEC3G induces a hypermutation gradient: Purifying selection at multiple steps during HIV-1 replication results in levels of G-to-A mutations that are high in DNA, intermediate in cellular viral RNA, and low in virion RNA. Retrovirology **6**:16.

65. Delviks-Frankenberry, K.A., G.N. Nikolenko, F. Maldarelli, S. Hase, Y. Takebe, and V.K. Pathak. 2009. Subtype-specific differences in the HIV-1 reverse transcriptase connection subdomain of CRF01_AE are associated with higher AZT resistance. J. Virol. **83**:8502-8513.

66. Chen, J., O. Nikolaitchik, J. Singh, A. Wright, C.E. Bencsics, J.M. Coffin, N. Ni, S. Lockett, V.K. Pathak, and W.-S. Hu. 2009. High efficiency of HIV-1 genomic RNA packaging and heterozygote formation revealed by single virion analysis. Proc. Natl. Acad. Sci. USA **106**:13535-13540.

67. Nikolenko, G.N., K.A. Delviks-Frankenberry, and V.K. Pathak. 2010. A novel molecular mechanism of dual resistance to NRTIs and NNRTIs. J. Virol. **84**:5238-5249.

68. Mbisa, J.L., W. Bu, and V.K. Pathak. 2010. APOBEC3F and APOBEC3G inhibit HIV-1 DNA integration by different mechanisms. J. Virol. **84**:5250-5259.

69. Paprotka, T., N.J. Venkatachari, C. Chaipan, R. Burdick, K.A. Delviks-Frankenberry, W.-S. Hu, and V.K. Pathak. 2010. Inhibition of xenotropic murine leukemia virus-related virus by APOBEC3 proteins and antiviral drugs. J. Virol. **84**:5719-5729.

70. Galli, A., M. Kearney, O.A. Nikolaitchik, S. Yu, M.P.S. Chin, F. Maldarelli, J.M. Coffin, V.K. Pathak, and W.-S. Hu. 2010. Patterns of human immunodeficiency virus type 1 recombination ex vivo provide evidence for coadaptation of distant sites resulting in purifying selection for intersubtype recombinants during replication. J. Virol. **84**:7651-7561.

71. Burdick, R., J.L. Smith, C. Chaipan, Y. Friew, J. Chen, N.J. Venkatachari, K.A. Delviks-Frankenberry, W.-S. Hu, and V.K. Pathak. 2010. P body-associated protein Mov10 inhibits HIV-1 replication at multiple stages. J. Virol. **84**:10241-10253.

72. Smith, J.L., and V.K. Pathak. 2010. Identification of specific determinants of human APOBEC3F, APOBEC3C, APOBEC3DE, and African green monkey APOBEC3F that interact with HIV-1 Vif. J. Virol. **84**:12599-12608.

73. Nikolaitchik, O.A., A. Galli, M.D. Moore, V.K. Pathak, and W.-S. Hu. 2011. Multiple barriers to recombination between divergent HIV-1 variants revealed by a dual-marker recombination assay. J. Mol. Biol. **407**:521-531.

74. Chaipan, C., K.A. Dilley, T. Paprotka, K.A. Delviks-Frankenberry, N.J. Venkatachari, W.-S. Hu, and V.K. Pathak. 2011. Severe restriction of xenotropic murine leukemia virus-related virus replication and spread in cultured human peripheral blood mononuclear cells. J. Virol. **85**:4888-4897.

75. Lengruber, R., K.A. Delviks-Frankenberry, G.N. Nikolenko, J. Baumann, A.F. Santos, V.K. Pathak, and M.A. Soares. 2011. Phenotypic characterization of drug resistance-associated mutations in HIV-1 RT connection and RNase H domains and their correlation with thymidine analogue mutations. J. Antimicrob. Chemother. **66**:702-708.

76. Ni, N., O.A. Nikolaitchik, K.A. Dilley, J. Chen, A. Galli, W. Fu, V.V.S.P. Prasad, R.G. Ptak, V.K. Pathak, and W.-S. Hu. 2011. Mechanisms of human immunodeficiency virus type 2 RNA packaging: Efficient trans packaging and selection of RNA copackaging partners. J. Virol. **85**:7603-7612.

77. Paprotka, T., K.A. Delviks-Frankenberry, O. Cingöz, A. Martinez, H.-J. Kung, C.G. Tepper, W.-S. Hu, M.J. Fivash, Jr., J.M. Coffin, and V.K. Pathak. 2011. Recombinant origin of the retrovirus XMRV. Science **333**:97-101.

78. Pak, V., G. Heidecker, V.K. Pathak, and D. Derse. 2011. The role of amino-terminal sequences in cellular localization and anti-viral activity of APOBEC3B. J. Virol. **85**: 8538-8547.

79. Delviks-Frankenberry, K.A., C. Chaipan, R. Bagni, K. Wyvill, R. Yarchoan, and V.K. Pathak. 2011. Lack of detection of xenotropic murine leukemia virus-related virus in HIV-1 lymphoma patients. Adv. Virol., vol. 2011, article ID 797820, 4 pages.

80. Ndongwe, T.P., A.O. Adedeji, E. Michailidis, Y.-T. Ong, A. Hachiya, B. Marchand, E.M. Ryan, D.K. Rai, K.A. Kirby, A.S. Whatley, D.H. Burke, M. Johnson, S. Ding, Y.-M. Zheng, S.-L. Liu, E.-I. Kodama, K.A. Delviks-Frankenberry, V.K. Pathak, H. Mitsuya, M.A. Parniak, K. Singh, and S.G. Sarafianos. 2011. Biochemical, inhibition and inhibitor resistance studies of xenotropic murine leukemia virus-related virus reverse transcriptase. Nucleic Acids Res. **40**:345-359.

81. Kearney, M.F., K. Lee, R.K. Bagni, A. Wiegand, J. Spindler, F. Maldarelli, P.A. Pinto, W.M. Linehan, C.D. Vocke, K.A. Delviks-Frankenberry, R.W. deVere White, G.Q. Del Prete, J.W. Mellors, J.D. Lifson, V.N. KewalRamani, V.K. Pathak, J.M. Coffin, and S.F.G. Le Grice. 2011. Nucleic acid, antibody, and virus culture methods to detect xenotropic MLV-related virus in human blood samples. Adv. Virol., vol. 2011, article ID 272193, 12 pages.

82. Cingöz, O., T. Paprotka, K.A. Delviks-Frankenberry, S. Wildt, W.-S. Hu, V.K. Pathak, and J.M. Coffin. 2012. Characterization, mapping, and distribution of the two XMRV parental proviruses. J. Virol. **86**:328-338.

83. Del Prete, G.Q., M.F. Kearney, J.C. Spindler, A.M. Wiegand, E. Chertova, J.D. Roser, J.D. Estes, X.P. Hao, C.M. Trubey, A. Lara, K. Lee, C. Chaipan, J.W. Bess, Jr., K. Nagashima, B.F. Keele, R. Pung, J. Smedley, V.K. Pathak, V.N. KewalRamani, J.M. Coffin, and J.D. Lifson. 2012. Restricted replication of xenotropic murine leukemia virus-related virus in pigtailed macaques. J. Virol. **86**:3152-3166.

84. Delviks-Frankenberry, K.A., R.B. Lengruber, A.F. Santos, J.M. Silveira, M.A. Soares, M.F. Kearney, F. Maldarelli, and V.K. Pathak. 2012. Connection subdomain mutations in HIV-1 subtype-C treatment-experienced patients enhance NRTI and NNRTI drug resistance. Virology **435**:433-441.

85. Chaipan, C., J.L. Smith, W.-S. Hu, and V.K. Pathak. 2013. APOBEC3G restricts HIV-1 to a greater extent than APOBEC3F and APOBEC3DE in human primary CD4+ T cells and macrophages. J. Virol. **87**:444-453.

86. Nikolaitchik, O.A., K.A. Dilley, W. Fu, R.J. Gorelick, S.-H.S. Tai, F. Soheilian, R.G. Ptak, K. Nagashima, V.K. Pathak, and W.-S. Hu. 2013. Dimeric RNA recognition regulates HIV-1 genome packaging. PLoS Pathog. **9(3)**:e1003249.

87. Murgai, M., J. Thomas, O. Cherepanova, K. Delviks-Frankenberry, P. Deeble, V.K. Pathak, D. Rekosh, and G. Owens. 2013. Xenotropic MLV envelope proteins induce tumor cells to secrete factors that promote the formation of immature blood vessels. Retrovirology **10**:34.

88. Izumi, T., R. Burdick, M. Shigemi, S. Plisov, W.-S. Hu, and V.K. Pathak. 2013. Mov10 and APOBEC3G localization to processing bodies is not required for virion incorporation and antiviral activity. J. Virol. **87**:11047-11062.

89. Hatch, S.C., L. Sardo, J. Chen, R. Burdick, R. Gorelick, M.J. Fivash, Jr., V.K. Pathak, and W.-S. Hu. 2013. Gag-dependent enrichment of HIV-1 RNA near the uropod membrane of polarized T cells. J. Virol. **87**:11912-11915.

90. Delviks-Frankenberry, K., T. Paprotka, O. Cingöz, S. Wildt, W.-S. Hu, J.M. Coffin, and V.K. Pathak. 2013. Generation of multiple replication-competent retroviruses through recombination between PreXMRV-1 and PreXMRV-2. J. Virol. **87**:11525-11537.

91. Burdick, R.C., W.-S. Hu, and V.K. Pathak. 2013. Nuclear import of APOBEC3F-labeled preintegration complexes. Proc. Natl. Acad. Sci. USA Plus **110**:E4780-E4789.

92. Smith, J.L., T. Izumi, T.C. Borbet, A.N. Hagedorn, and V.K. Pathak. 2014. HIV-1 and HIV-2 Vif interact with human APOBEC3 proteins using completely different determinants. J. Virol. **88**:9893-9908.

93. Sato, K., J.S. Takeuchi, N. Misawa, T. Izumi, T. Kobayashi, Y. Kimura, S. Iwami, A. Takaori-Kondo, W.-S. Hu, K. Aihara, M. Ito, D.S. An, V.K. Pathak, and Y. Koyanagi. 2014. APOBEC3D and APOBEC3F potently promote HIV-1 diversification and evolution in humanized mouse model. PLoS Pathog. **10(10)**:e1004453.

94. Chen, J., D. Grunwald, L. Sardo, A. Galli, S. Plisov, O.A. Nikolaitchik, D. Chen, S. Lockett, D.R. Larson, V.K. Pathak, and W.-S. Hu. 2014. Cytoplasmic HIV-1 RNA is mainly transported by diffusion in the presence or absence of Gag protein. Proc. Natl. Acad. Sci. USA Plus **111**:E5205–E5213.

95. Chikaev, A.N., A.Y. Bakulina, R.C. Burdick, L.I. Karpenko, V.K. Pathak, and A.A. Ilyichev. 2015. Selection of peptide mimics of HIV-1 epitope recognized by neutralizing antibody VRC01. PLoS One **10(3)**:e0120847.

96. Nikolaitchik, O., B. Keele, R. Gorelick, W.G. Alvord, D. Mazurov, V.K. Pathak, W.-S. Hu. 2015. High recombination potential of subtype A HIV-1. Virology **484**:334-340.

97. Sardo, L., S.C. Hatch, J. Chen, O. Nikolaitchik, R.C. Burdick, D. Chen, C.J. Westlake, S. Lockett, V.K. Pathak, and W.-S. Hu. 2015. Dynamics of HIV-1 RNA near the plasma membrane during virus assembly. J. Virol. **89**:10832-10840.

98. Chen, J., S.A. Rahman, O.A. Nikolaitchik, D. Grunwald, L. Sardo, R.C. Burdick, S. Plisov, E. Liang, S. Tai, V.K. Pathak, and W.-S. Hu. 2016. HIV-1 RNA genome dimerizes on the plasma membrane in the presence of Gag protein. Proc. Natl. Acad. Sci. USA **113**:E201-E208.

99. Delviks-Frankenberry, Frankenberry, K.A., O.A. Nikolaitchik, R.C. Burdick, R.J. Gorelick, B.F. Keele, W.-S. Hu*, and V.K. Pathak*. 2016. Minimal contribution of APOBEC3-induced G-to-A hypermutation to HIV-1 recombination and genetic variation. PLOS Pathog. **12**:e1005646. (*joint corresponding author)

100. Desimmie, B.A., R.C. Burdick, T. Izumi, H. Doi, W. Shao, W.G. Alvord, K. Sato, Y. Koyanagi, S. Jones, E. Wilson, S. Hill, F. Maldarelli, W.S. Hu, and V.K. Pathak. 2016. APOBEC3 proteins can copackage and comutate HIV-1 genomes. Nucleic Acids Res., in press.

Reviews and Book Chapters:

1. Hershey, J.W.B., H.S. Cummings, J.F. Sands, V.K. Pathak, and H. Ernst. 1988. The structure and expression of DNAs encoding initiation factors from bacterial and mammalian cells. In: Genetics of Translation: New Approaches. Ed. M.F. Tuite, M. Picard, and M.B. Fukahara. NATO series H **14**:249-257.

2. Hershey, J.W.B., V.K. Pathak, H. Ernst, H.M. Humbelin, and R.J. Kaufman. 1989. The structure and regulation of mammalian initiation factor eIF-2. In: The Guanine Nucleotide Binding Proteins: Common Structural and Functional Properties. Ed. L. Bosch, B. Kraal, and A. Parmeggiani. New York, Plenum Press. NATO ASI series A **165**:143-150.

3. Hershey, J.W.B., R.F. Duncan, S.C. Milburn, V.K. Pathak, S.Y. Choi, and R.J. Kaufman. 1989. Translational control by phosphorylation of mammalian initiation factors. In: Evolutionary Tinkering in Gene Expression. Ed. M.G. Manago, B.F.C. Clark, and H.G. Zachau. New York, Plenum Press. NATO ASI series A **169**:49-57.

4. Pathak, V.K., W.-S. Hu, and H.M. Temin. 1991. Hypermutation and other variation in retroviruses. In: Somatic Hypermutation in V-regions. Ed. E.J. Steele. Boca Raton, Florida, CRC Press, pg. 149-158.

5. Temin, H.M., M. Hannink, W.-S. Hu, and V.K. Pathak. 1991. Retrovirus variation and regulation of c-*rel*. In: Viruses That Affect the Immune System. Ed. H.Y. Fan, et al. American Society for Microbiology, Washington D.C., pg. 135-141.

6. Hu, W.-S., V.K. Pathak, and H.M. Temin. 1993. Retroviral recombination. In: Reverse Transcriptase. Ed. S. Goff and A.M. Skalka. Cold Spring Harbor Laboratory Press, pg. 251-274.

7. V. K. Pathak and W.-S. Hu. 1997. "Might as well Jump!" Template switching by retroviral reverse transcriptase leads to defective RNA formation and recombination. Invited review. Sem. Virol **8**:1-11.

8. Pathak, V.K., and W.-S. Hu. 1998. Mutation, recombination, and dynamics of HIV-1 in vivo. In: Human Immunodeficiency Viruses: Biology, Immunology, and Molecular Biology. Ed. N. Saksena. Medical Systems SpA, pg. 299-330.

9. Hu, W.-S., and V. K. Pathak. 2000. Design of retrovirus-based vectors and helper cells for gene therapy. Pharmacol. Rev. **52**:493-511.

10. Hu, W.-S., T. Rhodes, Q. Dang, and V. Pathak. 2003. Retroviral recombination: Review of genetic analyses. Front. Biosci. **8**:D143-D155.

11. Svarovskaia, E.S., S.R. Cheslock, W.-H. Zhang, W.-S. Hu, and V.K. Pathak. 2003. Retroviral mutation rates and reverse transcriptase fidelity. Front. Biosci. **8**:D117-D135.

12. Mbisa, J.L., K.A. Delviks-Frankenberry, J.A. Thomas, R.J. Gorelick, and V.K. Pathak. 2009. Real-time PCR analysis of HIV-1 replication post-entry events. Methods Mol. Biol. **485**:55-72.

13. Smith, J.L., W. Bu, R.C. Burdick, and V.K. Pathak. 2009. Multiple ways of targeting APOBEC3-virion infectivity factor interactions for anti-HIV-1 drug development. Trends Pharm. Sci. **30**:638-646.

14. Delviks-Frankenberry, K.A., G.N. Nikolenko, and V.K. Pathak. 2010. The "connection" between HIV drug resistance and RNase H. Viruses **2**:1476-1503.

15. Delviks-Frankenberry, K., A. Galli, O. Nikolaitchik, H. Mens, V.K. Pathak, and W.-S. Hu. 2011. Mechanisms and factors that influence high frequency retroviral recombination. Viruses **3**:1650-1680.

16. Delviks-Frankenberry, K., O. Cingoz, J.M. Coffin, and V.K. Pathak. 2012. Recombinant origin, contamination, and de-discovery of XMRV. Curr. Opin. Virol. **2**:409-507.

17. Desimmie, B.A., K.A. Delviks-Frankenberry, D. Qi, R.C. Burdick, T. Izumi, and V.K. Pathak. 2013. Multiple APOBEC3 restriction factors and one Vif to rule them all. J. Mol. Biol. **426**:1220-1245.