

Curriculum Vitae Yuntao Wu

National Center for Biodefense and Infectious Diseases
School of Systems Biology
George Mason University
Manassas, VA 20110

Tel: 703-993-4299

Email: ywu8@gmu.edu

Academic Training

- 1999 – 2002 Postdoctoral Fellow, Laboratory of Molecular Biology, National Institute of Mental Health, NIH, Bethesda, Maryland
- 1993 – 1998 Ph.D., Molecular Virology, Department of Microbiology and Immunology, Queen's University, Kingston, Ontario, Canada

Employment

- 2009 – Tenured full professor, Department of Molecular and Microbiology, George Mason University, Manassas, Virginia 20110
- 2002 – 2008 Assistant Professor (Tenure Track), Department of Molecular and Microbiology, George Mason University, Manassas, Virginia 20110
- 1998 – 1999 NSERC Visiting Fellow, Animal Disease Research Institute, Canadian Food Inspection Agency, Ottawa, Ontario, Canada

Professional Activities

Editor-in-chief: Current HIV Research

Associated editor: Virological Sinica

Academic editor: PLoS One

Editorial Boards: Retrovirology, Frontier of Virology, Journal of HIV/AIDS Research & Therapy.

Ad hoc Reviewer for Journals and Grant Agencies: Nature Communications, Journal of Virology; mBio, Virology Journal, Journal of Immunology, Retrovirology, PLoS One, PLoS Pathogens, Gene Therapy, Molecular and Cellular Biochemistry, BMC Bioinformatics, IUBMB Life, International Journal of Bioinformatics Research and Applications, Current Drug Delivery, International AIDS Conference, Journal of Neuroimmune Pharmacology, NIH study sections: ZRG1 AARR-J; ADDT; ZRG1 AARR-M; ZRG1 AARR-K; ZRG1 AARP-P; Special Emphasis Panel (SEP) RCMI(U54), Kentucky Science and Engineering Foundation, SickKids Foundation, United States - Israel Binational Science Foundation, California HIV/AIDS Research Program, 2014 Killam Prizes from the Canada Council for the Arts.

Academic Memberships

American Society for Microbiology, American Society for Virology; American Society for Biochemistry and Molecular Biology; The American Association of Immunologists; Society of Chinese Bioscientists in America

Selected Research Publications

2019

1. Liu, Y., Y. Fu, Q. Wang, M. Li, Z. Zhou, D. Dabbagh, C. Fu, H. Zhang, S. Li, T. Zhang, J. Gong, X. Kong, W. Zhai, J. Su, J. Sun, Y. Zhang, X. Yu, Z. Shao, F. Zhou*, **Y. Wu*** & X. Tan*. 2019, Proteomic profiling of HIV-1 infection of human CD4 T cells identifies PSGL-1 as an HIV restriction factor. *Nature Microbiology*, 4, DOI:10.1038/s41564-019-0372-2
2. He, S., Y. Fu, J. Guo, M. Spear, J. Yang, B. Trinité, C. Qin, S. Fu, Y. Jiang, Z. Zhang, J. Xu, H. Ding, D. N. Levy, W. Chen, E. Petricoin III, L. A. Liotta, H. Shang, **Y. Wu**. 2019, Cofilin hyperactivation in HIV infection and targeting the cofilin pathway using an anti- α 4 β 7 integrin antibody. *Science Advances* 5(1), eaat7911. DOI: 10.1126/sciadv.aat7 911

2018

3. Perez, S., A. Johnson, S. Xiang, J. Li, B. T. Foley, L. Doyle-Meyers, A. Panganiban, A. Kaur, R. S. Veazey, 2018, **Y. Wu**, and B. Liang. Persistence of SIV in the brain of SIV-infected Chinese rhesus macaques with or without antiretroviral therapy. *J. Neurovirology*, 24(1): 62-74
4. Wang, R., Zhang, X., H. Ding, Y. Qiao, X. Han, W. Geng, G. Guan, H. Cui, B. Zhao, **Y. Wu**, G. Liang and H. Shang. 2018. AID recruits the RNA exosome to degrade HIV-1 nascent transcripts through interaction with the Tat-PTEFb-TAR RNP complex. *FEBS Letters*, 592:284-293.
5. Meltzer, B., D. Dabbagh, J. Guo, F. Kashanchi, M. Tyagi, **Y. Wu**. 2018. Tat controls transcriptional persistence of unintegrated HIV genome in primary human macrophages. *Virology*, 518:241-252.

2017

6. Yi, F., J. Guo, D. Dabbagh, M. Spear, S. He, K. Kehn-Hall, J. Fontenot, Y. Yin, M. Bibian, C. M. Park, K. Zheng, H. Park, V. Soloveva, D. Gharaibeh, C. Retterer, R. Zamani, M. L. Pitt, J. Naughton, Y. Jiang, H. Shang, R. M. Hakami, B. Ling, J. A. T. Young, S. Bavari, X. Xu, Y. Feng, and **Y. Wu**. 2017. Discovery of Novel Small Molecule Inhibitors of LIM Domain Kinase for Inhibiting HIV-1. *J. Virol.* doi: 10.1128/JVI.02418-16
7. Wang, Z., T. Wu, M. Ma, Z. Zhang, Y. Fu, J. Liu, J. Xu, H. Ding, X. Han, Z. Chu, **Y. Wu**, H. Shang, and Y. Jiang. 2017. Elevated IP-10 and its receptor CXCR3 impair NK cell function during HIV infection. *J. Leukocyte Biology* 102: 163–170. DOI: 10.1189/jlb.5A1016-444R.
8. Li, Q., W. Li, W. Yin, J. Guo, Z. Zhang, D. Zeng, X. Zhang; **Y. Wu***, **X. Zhang***, and **Z. Cui***. 2017. Single-Particle Tracking of Human Immunodeficiency Virus Type 1 Productive Entry into Human Primary Macrophages. *ACS Nano*. DOI: 10.1021/acsnano.7b00275 (*Co-corresponding author)

2016

9. Guo, J., and **Wu, Y.** 2015. Genistein as an antioxidant and use in treating HIV infection. In: *HIV/AIDS: Oxidative Stress and Dietary Antioxidants*. Victor R. Preedy and Ronald R. Watson, eds. Elsevier.
10. Ma Y, He Z, Tan T, Li W, Zhang Z, Song S, Zhang X, Hu Q, Zhou P, **Wu Y**, Zhang XE, Cui Z. 2016. Effects Real-Time Imaging of Single HIV-1 Disassembly with Multicolor Viral Particles. *ACS Nano* 10(6):6273-82. DOI: 10.1021/acsnano.6b02462.

2015

11. Yin, Y., K. Zheng, N. Eid, S. Howard, J. Jeong, F. Yi, J. Guo, C. M. Park, M. Bibian, W. Wu, P. Hernandez, H. Park, **Y. Wu**, J. Luo, P. V. LoGrasso, and Y. Feng. 2015. Bis-aryl Urea Derivatives as Potent and Selective LIM Kinase (Limk) Inhibitors. **J. Med. Chem.**, 58 (4), pp 1846–1861. DOI: 10.1021/jm501680m.
12. Liang H., Toro R, **Wu Y**, Guo J. 2015. Effects of Tadalafil and Sildenafil on HIV Infection *in vitro*. **J Hum Virol Retrovirol** 2(1): 00030. DOI: [10.15406/jhvr.2015.02.00030](https://doi.org/10.15406/jhvr.2015.02.00030)
13. Iordanskiya, S., R. V. Duynea, G. C. Sampeya, C. M. Woodsona, K. Frya, M. Saifuddina, J. Guo, **Y. Wu**, F. Romerio, F. Kashanchi. 2015, Therapeutic doses of irradiation activate viral transcription and induce apoptosis in HIV-1 infected cells. **Virology**, 485:1-15. DOI: [10.1016/j.virol.2015.06.021](https://doi.org/10.1016/j.virol.2015.06.021)
14. **Wu, Y.** 2015. Flow Cytometry-based quantification of HIV-induced T cell chemotactic response. In: **Methods in Molecular Biology: Chemotaxis (2nd)**. Tian Jin and Dale Hereld, eds. Humana Press Inc.
15. Guendel I., B. W. Meltzer, A. Baer, S. Dever, K. Valerie, J. Guo, **Y. Wu**, K. Kehn-Hall. 2015. BRCA1 functions as a novel transcriptional cofactor in HIV-1 infection. **Virology Journal** 12:40.

2014

16. **Wu, Y.** 2014. Actin. In: **Encyclopedia of AIDS**. Thomas J. Hope, Mario Stevenson, and Douglas Richman, eds. Springer. DOI 10.1007/978-1-4614-9610-6_71-1.
17. **Wu, Y.** 2014. Cofilin/Traficking. In: **Encyclopedia of AIDS**. Thomas J. Hope, Mario Stevenson, and Douglas Richman, eds. Springer. DOI 10.1007/978-1-4614-9610-6_69-1.
18. Spear M. and **Wu, Y.** 2014. Arp2/3. In: **Encyclopedia of AIDS**. Thomas J. Hope, Mario Stevenson, and Douglas Richman, eds. Springer. 2014. DOI 10.1007/978-1-4614-9610-6_71-1.
19. Xu, G. J. Guo, and **Y. Wu**. 2014. Chemokine receptor CCR5 antagonist maraviroc: medicinal chemistry and clinical applications. **Current Topics in Medicinal Chemistry** 14:1504-14.
20. Spear M, and **Y. Wu**. 2014. Viral exploration of actin: force-generation and scaffolding functions in viral infection. **Virologica Sinica** 29(3):139-147 (Invited review)
21. Spear M, J. Guo, A. Turner, D. Yu, W. Wang, Xi. Hu, J. Kuhn, **Y. Wu**. 2014: HIV-1 triggers WAVE2 phosphorylation in primary CD4 T cells and macrophages, mediating Arp2/3-dependent nuclear migration. **J Biol Chem** 289(10):6949-59.

2013

22. Spear, M., J. Guo, and **Y. Wu**. 2013. Novel anti-HIV therapeutics targeting chemokine receptors and actin regulator pathways (Invited review). **Immunological Review** 256(1):300-312.
23. Hawley, T., M. Spear, J. Guo, and **Y. Wu**. 2013: Inhibition of HIV replication *in vitro* by clinical immunosuppressants and chemotherapeutic agents. **Cell & Biosciences** 3:22.
24. Guo, J., X. Xu, T. Rasheed, D. Yu, H. Liang, F. Yi, T. Hawley, T. Jin, B. Ling, and **Y. Wu**. 2013. Genistein interferes with SDF-1 and HIV-mediated actin dynamics and inhibits HIV infection of resting CD4 T cells. **Retrovirology** 10:62.

2012

25. Li, Z., J. Guo, **Y. Wu**, and Q. Zhou. 2012. The BET bromodomain inhibitor JQ1 activates HIV latency through antagonizing Brd4 inhibition of Tat-transactivation. **Nucl Acids Res**

DOI:10.1093/nar/gks976.

26. Guo, J., X. Xu, W. Yuan, T. Jin, **Y. Wu**. 2012. HIV gp120 is an aberrant chemoattractant for blood resting CD4 T cells. **Current HIV Research** 19(8):636-42.
27. Wang, W., J. Guo, D. Yu, P. J. Vorster, W. Chen, and **Y. Wu**. 2012. A dichotomy in cortical actin and chemotactic actin activity between human memory and naïve T cells contributes to their differential susceptibility to HIV-1 infection. **J Bio Chem** 287:35455-35469.
28. Spear, M. J. Guo, and **Y. Wu**. 2012. The trinity of the cortical actin in the initiation of HIV-1 infection. **Retrovirology** 9:45.
29. Xu, X., J. Guo, P. Vorster, and **Y. Wu**. 2012. Involvement of LIM Kinase 1 in actin polarization in human CD4 T cells. **Communicative & Integrative Biology** 5(4). July/August 2012.

2011

30. Guo, J., W. Wang, D. Yu, **Y. Wu**. 2011. Spinoculation triggers dynamic actin and cofilin activity facilitating HIV infection of transformed and resting CD4 T cells. **J Virol** 85:9824-33.
31. Vorster, J. P., J. Guo, A. Yoder, W. Wang, Y. Zheng, X. Xu, D. Yu, Spear, M, **Y. Wu**. 2011. LIM Kinase 1 Modulates Cortical Actin and CXCR4 Cycling and is Activated by HIV-1 to Initiate Viral Infection. **J Bio Chem** 286:12554-12564.
32. Yoder, A., D. Yu, Z. Cai, X. Zhang, J. Guo, and **Y. Wu**. 2011. Effect of microtubule modulators on HIV-1 infection of transformed and resting CD4 T cells. **J Virol** 85 (6): 3020-4.

2010

33. Maruyama, T., J. Li, J. P. Vaque, J. E. Konkel, W. Wang, B. Zhang, P. Zhang, B. F. Zamarron, D. Yu, **Y. Wu**, Y. Zhuang, J. S. Gutkind & W. Chen. 2010. Control of the Differentiation of Regulatory T Cells and TH17 Cells by the DNA-binding Inhibitor Id3. **Nature Immunology** DOI:10.1038/ni.1965.
34. Guo J., C. Enos, **Y. Wu**. 2010. Specific Marking of HIV-1 Positive Cells using a Rev-dependent Lentiviral Vector Expressing the Green Fluorescent Protein. **J Vis Exp** 43. <http://www.jove.com/index/details.stp?id=2198>, DOI: 10.3791/2198
35. **Wu, Y.** 2010. Chemokine Control of HIV Infection: Beyond a Binding Competition. **Retrovirology** 7:86.
36. Wang, Z., Z. Tang, Y. Zheng, D. Yu, M. Spear, S. R. Iyer, B. Bishop, and **Y. Wu**. 2010. Development of a Non-integrating Rev-dependent Lentiviral Vector Carrying Diphtheria Toxin A Chain and Human TRAF6 to Target HIV Reservoirs. **Gene Therapy** DOI:10.1038/gt.2010.53

2009

37. **Wu, Y** and A. Yoder. 2009. Chemokine Coreceptor Signaling in HIV-1 Infection and Pathogenesis. **PLoS Pathogens** 5(12): e1000520.
38. Yu, D., W. Wang, A. Yoder, M. Spear and **Y. Wu**. 2009. The HIV Envelope but not VSV-G Glycoprotein is Capable of Mediating HIV Latent Infection of Resting CD4 T Cells. **PLoS Pathogens** 5(10): e100633.
39. Iyer, S., D. Yu, A. Biancotto, L. B. Margolis, **Y. Wu**. 2009. Measurement of HIV-1 Preintegration Transcription Using the Rev-dependent Rev-CEM Cell Reveals a Sizable Transcribing DNA Population Comparable with that of Proviral Templates. **J Virol** 83:8662-73.
40. **Wu, Y.** 2009. The Co-receptor Signaling Model of HIV-1 Pathogenesis in Peripheral CD4 T cells. **Retrovirology** 6:41 (highly accessed).

41. **Wu, Y.** 2009. Chemokine Receptor Signaling and HIV Infection. In: **Methods in Molecular Biology: Chemotaxis**. Tian Jin and Dale Hereld, eds. Humana Press Inc.
42. **Wu, Y., A. Yoder, D. Yu, W. Wang, J. Liu, T. Barrett, D. Wheeler, K. Schlauch.** 2008. Cofilin activation in peripheral CD4 T cells of HIV-1 infected patients: a pilot study. **Retrovirology** 5:95.

2008

43. **Wu, Y.** 2008. The second chance story of HIV-1 DNA: Unintegrated? Not a problem! **Retrovirology** 5:61 (Invited Commentary).
44. Yoder, A., D. Yu, L. Dong, S. R. Iyer, X. Xu, J. Kelly, J. Liu, W. Wang, P. J. Vorster, L. Agulto, D. A. Stephany, J. N. Cooper, J. W. Marsh and **Y. Wu.** 2008. HIV-1 envelope-CXCR4 interaction activates cofilin to overcome cortical actin restriction in resting CD4 T cells. **Cell** 134:782-792.
(Evaluated by Faculty 1000 Biology for essential reading, and Faculty 1000 Medicine for recommended reading)
45. Young, J., Z. Tang, Q. Yu, D. Yu, and **Y. Wu.** 2008. Selective killing of HIV-1-positive macrophages and T cells by a Rev-dependent lentivirus carrying *anthrolysin O* from *Bacillus anthracis*. **Retrovirology** 5:36.
46. Kelly, J., H. Beddall, D. Yu, J. W. Marsh and **Y. Wu.** 2008. Persistence of transcriptional activity from non-integrated HIV-1 DNA in macrophages. **Virology** 372(2), 300-12.

2007 & before

47. Amarnath, S., L. Dong, J. Li, **Y. Wu** and W. Chen. 2007. Endogenous TGF-beta activation by reactive oxygen species is key to Foxp3 induction in TCR-stimulated and HIV-1 infected human CD4+CD25- T cells. **Retrovirology** 4:57.
48. **Wu, Y., M. H. Beddall and J. W. Marsh** 2007. Rev-dependent indicator T cell line. **Current HIV Research** 5(4), 394-402.
49. **Wu, Y., M. H. Beddall and J. W. Marsh.** 2007. Rev-dependent expression vector. **Retrovirology** 4:12 (*highly accessed*).
50. Carstens, E. B and **Y. Wu.** 2007. No single homologous region is essential for DNA replication of the baculovirus *Autographa californica multiple nucleopolyhedrovirus*. **J Gen Virol.** 88,114-122.
51. **Wu, Y.** 2004. HIV-1 gene expression: lessons from provirus and non-integrated DNA. **Retrovirology** 1:13 (*highly accessed*).
52. **Wu, Y.** and J. Marsh. 2003. Gene transcription in HIV infection. **Microbes and Infection** 5,1023-27.
53. **Wu, Y.** and J. W. Marsh. 2003. Early transcription from nonintegrated DNA in human immunodeficiency virus infection. **J Virol** 77(19), 10376-10382.
54. **Wu, Y.** and J. W. Marsh. 2001. Selective transcription and modulation of resting T cell activity by preintegrated HIV DNA. **Science** 293(5534), 1503-6.
55. **Wu, Y., G. Liu and E. B. Carstens.** 1999. Replication, integration, and packaging of plasmid DNA following cotransfection with baculovirus viral DNA. **J Virol** 73(7), 5473-80.
56. **Wu, Y.** and E. B. Carstens. 1998. A baculovirus single-stranded DNA binding protein, LEF-3, mediates the nuclear localization of the putative helicase P143. **Virology** 247(1), 32-40.
57. **Wu, Y.** and E. B. Carstens. 1996. Initiation of baculovirus DNA replication: early promoter regions can function as infection-dependent replicating sequences in a plasmid- based replication assay. **J Virol** 70(10), 6967-72.

58. **Wu, Y.** and Y. Cai. 1993. Fast clinical hepatitis B virus DNA detection using biotinylated oligonucleotide. *Virologica Sinica* 8, 310-315.
59. Fong, Q., **Y. Wu**, and Y. Cai. 1993. Fast clinical hepatitis B virus DNA detection using PCR and biotinylated oligonucleotide. *Virologica Sinica* 9, 261-265.
60. **Wu, Y.**, L. Ke, and Y. Cai. 1992. Identification of *Prodenia litura* Nuclear Polyherosis Virus genes with Sandwich hybridization. *Virologica Sinica* 7, 63-68.
61. **Wu, Y.** and Q. Fong. 1989. New advancement in non-isotopic labeling of nuclear acid probes. *Medicine Abroad* (Molecular Biology) 11, 101-104.
62. **Wu, Y.**, and Y. Cai. 1989. Polyhedrin gene mapping and gene homology analysis of

Research Grants

R01 MH102144 **05/01/2014 – 04/30/2019**

NIMH/NIH: **\$3,300,000** total cost
Role: Principal Investigator

Validation of the Rev-dependent vector for targeting SIV macrophage reservoirs

This NIMH-supported R01 grant is to develop an HIV/SIV Rev-dependent vector carrying therapeutic genes to target viral reservoirs.

R03 AI110174 **09/01/2014 – 08/31/2016**

NIAID/NIH: **\$140,000** total cost
Role: Principal Investigator

Development of a novel HIV-1 nuclear localization assay

With this NIAID-supported R03 grant, we were successful in developing a novel HIV-1 nuclear localization assay.

R03 AI093157 **07/01/2011 – 06/30/2013**

NIAID/NIH: **\$150,000** total cost
Role: Principal Investigator

Development of an HIV Rev-dependent dual-reporter cell for anti-HIV drug screening

With this NIAID-supported R03 grant, we were successful in developing a dual-reporter cell for anti-HIV drug screening.

R01 AI081568 **07/01/2009 – 06/30/2013**

NIAID/NIH: **\$1,500,000** total cost
Role: Principal Investigator

Regulation of cofilin activation in HIV-1 infection of resting CD4 T cells

This NIAID-supported R01 grant was to study cofilin activation in HIV infection of resting CD4 T cells. We mapped the signaling pathways and identified the phosphatases that are responsible for cofilin activation. We also mapped the signaling domains on the HIV-1 envelope.

R21 AI069981 **04/01/2007 - 03/31/2010**

NIAID/NIH: **\$340,000** total cost
Role: Principal Investigator

Determine the transcriptional activity of non-integrated HIV-1 DNA.

With this NIH-supported project, we were successful in studying the transcriptional activity of non-integrated HIV-1 DNA in CD4 T cells and we identified the active template for this transcriptional activity.

R21 NS051130 **04/01/2005 - 03/31/2007**

NINDS/NIH: **\$340,000** total cost.

Role: Principal Investigator

Targeting brain macrophages by a novel lentiviral vector

This NIH-supported project was to develop an HIV Rev-dependent lentiviral vector carrying the Anthrolysin gene from *Bacillus anthracis* to selectively target HIV-1 infected brain macrophages. We had developed a novel lentiviral vector that can express genes in HIV-infected cells. We successfully applied this vector to deliver cytotoxic genes into HIV-positive cells to reduce the viral reservoir.

New York City to Washington DC (NYCDC) AIDS Research Ride: 2008-2012

\$300,000 to support Dr. Wu's Research to find a cure.

Role: Principal Investigator

Roche (China) Research Grant **07/01/2013 – 06/30/2015**

\$200,000 to support development of a drug screening system for anti-HBV drugs

Role: Principal Investigator

United Soybean Board **11/01/2014 – 10/30/2016**

\$10,000

Development of genistein as an anti-HIV drug

Role: Principal Investigator