

CURRICULUM VITAE

1. Name, position academic departments

Gretchen V. Gee
Assistant Professor (Research): Brown University
Department of Molecular Biology, Cell Biology and Biochemistry
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2. Education

1997 Worcester Polytechnic Institute, B.S. in Biotechnology, Graduated with Distinction

2004 Ph.D. Brown University, Graduate Program in Molecular Biology, Cell Biology and Biochemistry: Division of Biology and Medicine, Dissertation Topic: "*Mechanisms Restricting the Cellular Tropism of the Human Polyomavirus JCV*"

3. Professional Appointments

2004-2006 *Postdoctoral Research Associate*: Department of Molecular Biology, Cell Biology and Biochemistry, Brown University Providence, RI

2006-2008 *Postdoctoral Research Associate*: Department of Ecological and Evolutionary Biology Brown University Providence, RI

2008-2010 *Postdoctoral Research Fellow*: Department of Pathology & Laboratory Medicine, Brown University Providence, RI

2010-2015 *Investigator*: Department of Molecular Biology, Cell Biology and Biochemistry, Brown University Providence, RI

2015-Present *Assistant Professor of Molecular Biology, Cell Biology and Biochemistry (Research)*: Department of Molecular Biology, Cell Biology and Biochemistry, Brown University Providence, RI

4. Completed Publications

4.a. Refereed Journal Articles

1. Baum S, Ashok A, **Gee G**, Dimitrova S, Querbes W, Jordan J, Atwood WJ. 2003. Early events in the life cycle of JC virus as potential therapeutic targets for the treatment of progressive multifocal leukoencephalopathy. *J. Neurovirol.* 9 Suppl 1:32-7.
2. **Gretchen V Gee**, Manley K, and Atwood WJ. 2003. Derivation of a JC virus-resistant human glial cell line: implications for the identification of host cell factors that determine viral tropism. *Virology.* 314(1):101-9.
3. Elphick GF, Querbes W, Jordan JA, **Gee GV**, Eash S, Manley K, Dugan A, Stanifer M, Bhatnagar A, Kroeze WK, Roth BL, Atwood, WJ. 2004. The human polyomavirus, JCV, uses serotonin receptors to infect cells. *Science.* 306(5700):1380-3.
4. **Gretchen V Gee** Tsomaia N, Mierke DF, Atwood WJ. 2004. Modeling a sialic acid binding pocket in the external loops of JCV VP1. *J. Biol. Chem.* 279(47):49172-6.
5. **Gretchen V Gee**, Dugan AS, Tsomaia N, Mierke DF, and Atwood WJ. 2006. The role of sialic acid in human polyomavirus infections. *Glycoconj J.* 23(1-2):19-26.
6. Manley K, O'Hara BA, **Gee GV**, Simkevich CP, Sedivy JM, and Atwood WJ. 2006. NFAT4 is required for JCV infection of glial cells. *J. Virol.* 80(24):12079-85.
7. Gasparovic ML, **Gee GV**, and W.J. Atwood. 2006. JC virus minor capsid proteins Vp2 and Vp3 are essential for virus propagation. *J. Virol.* 80(21):10858-61.
8. Manley K, **Gee GV**, Simkevich CP, Sedivy JM, Atwood WJ. 2007. Microarray analysis of glial cells resistant to JCV infection suggests a correlation between viral infection and inflammatory cytokine gene expression. *Virology.* 366(2):394-404.
9. **Gretchen V. Gee**, Koestler DC, Christensen BC, Sugarbaker, Ugolini D, GP Ivaldi, Resnick MB, Houseman EA, Kelsey KT, Marsit CJ. 2010. Downregulated microRNAs in the differential diagnosis of malignant pleural mesothelioma. *Int J Cancer.* 15;127(12):2859-69.
10. **Gretchen V. Gee**, Stanifer ML, Christensen BC, Atwood WJ, Ugolini D, Bonassi S, Resnick MB, Nelson HH, Marsit CJ, Kelsey KT. 2010. SV40 Associated miRNAs are not detectable in mesotheliomas. *Br. J. Cancer.* 103(6):885-8.
11. Maginnis MS, Haley SA, **Gee GV**, and Atwood WJ. 2010. Role of N-linked glycosylation of the 5-HT_{2A} receptor in JC virus infection. *J. Virol.* 84(19):9677-84.
12. Maginnis MS, Ströh LJ, **Gee GV**, O'Hara BA, Derdowski A, Stehle T, Atwood WJ. 2013. Progressive multifocal leukoencephalopathy-associated mutations in the JC polyomavirus capsid disrupt lactoseries tetrasaccharide c binding. *MBio.* 4(3):e00247-13.
13. Assetta B, Maginnis MS, Gracia Ahufinger I, Haley SA, **Gee GV**, Nelson CD, O'Hara BA, Allen Ramdial SA, Atwood WJ. 2013. 5-HT₂ receptors facilitate JC polyomavirus entry. *J. Virol.* 87(24):13490-8.

14. **Gretchen V. Gee**, O'Hara BA, Derdowski A, Atwood WJ. 2013. Pseudovirus mimics cell entry and trafficking of the human polyomavirus JCPyV. *Virus Res.*178(2):281-6.
15. Nelson CD, Carney DW, Derdowski A, Lipovsky A, **Gee GV**, O'Hara BA, Williard P, DiMaio D, Sello JK, Atwood WJ. 2013. A retrograde trafficking inhibitor of ricin and Shiga-like toxins inhibits infection of cells by human and monkey polyomaviruses. *MBio.* 4(6):e00729-13.
16. Bouley SJ, Maginnis MS, Derdowski A, **Gee GV**, O'Hara BA, Nelson CD, Bara AM, Atwood WJ, Dugan AS. 2014. Host cell autophagy promotes BK virus infection. *Virology.* 356-7,87-95.
17. Nelson CD, Ströh LJ, **Gee GV**, O'Hara BA, Stehle T, Atwood WJ. 2015. Modulation of a pore in the capsid of JC polyomavirus reduces infectivity and prevents exposure of the minor capsid proteins. *J. Virol.* 89(7):3910-21.
18. Ströh LJ, Maginnis MS, Blaum BS, Nelson CD, Neu U, **Gee GV**, O'Hara BA, Motamedi N, DiMaio D, Atwood WJ, Stehle T. 2015. The Greater Affinity of JC Polyomavirus Capsid for α 2,6-Linked Lactoseries Tetrasaccharide c than for Other Sialylated Glycans Is a Major Determinant of Infectivity. *J. Virol.* 89(12):6364-75.
19. Ströh LJ, **Gee GV**, Blaum BS, Dugan AS, Feltkamp MC, Atwood WJ, Stehle T. 2015 *Trichodysplasia Spinulosa*-associated Polyomavirus Uses a Displaced Binding Site on VP1 to Engage Sialylated Glycolipids. *PLoS Pathog.* 11(8):e1005112.
20. Luo Y, Motamedi N, Magaldi TG, **Gee GV**, Atwood WJ, DiMaio D. 2016. Interaction between Simian Virus 40 Major Capsid Protein VP1 and Cell Surface Ganglioside GM1 Triggers Vacuole Formation. *MBio* 7(2);e00297-16.
21. O'Hara B, **Gee GV**, Atwood WJ, and Haley SA. 2018. Susceptibility of Primary Human Choroid Plexus Epithelial Cells and Meningeal Cells to Infection by JC Virus. *J. Virol.* 92(8)e00105-18.
22. Morris-Love J*, Gee G*, O'Hara BA, Assetta B, Atkinson AL, Dugan AS, Haley SA and Atwood WJ. *In Press* JC polyomavirus uses Extracellular Vesicles to Infect Target Cells. *MBio.* * Co-first authors

4.b. Manuscripts in Preparation

1. Genetic and Functional Dissection of the Role of Individual 5-HT₂ Receptors as Entry Receptors for JC polyomavirus.
2. Pseudovirus Purification: Implications for a Novel Mode of JCPyV Infection.

4.c. Abstracts

1. "Genetic identification of factors controlling JCV tropism", 4th International Symposium on NeuroVirology. Dusseldorf, Germany, June 19-22, 2002.
2. "Viral determinants of JCV tropism", Workshop on Receptors and Entry for Oncogenic Retroviruses. Park City, UT, July 9-12, 2003.
3. "Viral determinants of JCV tropism", 5th International Symposium on NeuroVirology, Baltimore, MD, September 2-6, 2003.

4. "Sensitive detection of SV40 microRNA", American Association for Cancer Research 100th Annual Meeting. Denver, CO, April 18-22, 2009.
5. "Downregulated MicroRNAs in the Differential Diagnosis of Malignant Pleural Mesothelioma", American Association for Cancer Research 101st Annual Meeting, Washington, DC April 17-21, 2010.
6. "Epigenetic Control of the human polyomaviruses JC and BK" 30th Annual Meeting of the American Society for Virology, Minneapolis, MN July 16-20, 2011.
7. "Epigenetic control of the human polyomavirus JC" 4th Northeast Regional IDeA Meeting, Newport, RI, August 10-12, 2012.
8. "Pseudovirus Purification: Implications for a Novel Mode of JCPyV Infection" Emerging Issues in Oncogenic Virus Research, San Pietro in Bevagna, Italy June 15-19, 2016.
9. "JC polyomavirus uses extracellular vesicles to infect target cells" International Society For Extracellular Vesicles, Barcelona Spain May 2-6 2018.

4.d. Invited Lectures

1. "Genetic identification of factors controlling JCV tropism" 21st Annual Meeting of the American Society for Virology, Lexington, KY, July 20-24, 2002.
2. "Viral determinants of JCV tropism" 5th International Symposium on NeuroVirology, Baltimore, MD, September 2-6, 2003.
3. "Identification of a receptor binding pocket on the major capsid protein VP1 of JC virus" 2nd International Symposium: Polyomaviruses and Human Diseases, Sapporo, Japan. June 11-13, 2004.
4. "Viral determinants of JCV tropism" 23rd Annual Meeting of the American Society for Virology, Montreal, Canada. July 10-14, 2004.
5. "Identification of a sialic acid binding pocket in the external loops of JCV VP1" The 2004 Molecular Biology of DNA Tumor Viruses Conference, Madison, WI, July 13-18, 2004.

5a. Active Funding

National Institutes of Health Grant # P01-NS065719-06; "Structure-function based development of JC virion specific antagonists for PML; 08/01/14-05/31/19; Principal Investigator, W.J. Atwood; Director, Pseudovirus Production Core, Gretchen V. Gee, Direct costs-\$123,213/yr; 100% effort.

5b. Service to the Profession

Ad hoc Reviewer, International Journal of Cancer
Ad hoc Reviewer, Expert Review of Respiratory Medicine
Ad hoc Reviewer, Mutations Research

6a. Academic Honors

1. 2002: Workshop on Receptors and Entry for Oncogenic Retroviruses Travel Award
2. 2003: 4th International Symposium on NeuroVirology. Poster Award
3. 2003: International Society for NeuroVirology 5th International Symposium on NeuroVirology. "Investigator in Training Award"
4. 2004: Molecular Biology of DNA Tumor Viruses Conference Travel Award
5. 2004: Molecular Biology, Cell Biology and Biochemistry Graduate Department Annual Retreat "Excellent Poster Award"
6. 2008-2010: Post Doctoral Research Fellow in Pathology and Laboratory Medicine: NIEHS Training Program in Environmental Pathology

7.b. Professional Societies & other Experience

2000-2005: International Society for Neurovirology
2000-Present: American Society for Virology
2008-Present: American Association for the Advancement of Science
2008-2010: American Association for Cancer Research
2017-Present: International Society for Extracellular Vesicles
2018 Certificate for Basics of Extracellular Vesicles MOOC International Society for Extracellular Vesicles (ISEV), University of California Irvine (USA), University of Gothenburg (Sweden) and Pohang University of Science and Technology (South Korea)

8. Teaching

2000: Teaching Assistant: "Genetics Laboratory"
2001: Teaching Assistant: "Medical Microbiology"
2010: Summer Teaching Assistant: CEBI0907-"Exploring Infectious Disease: The Exotic Misconception"
2011-14: Summer Teaching Assistant: CEBI0942-"Infectious and Epidemic Disease"
2015: Summer Teaching Assistant: CEBI0961-"Ancient Viruses"
2016: Summer Teaching Assistant: CEBI0961-"Viruses Ancient Machines in a Modern World"
2017: Summer Teaching Assistant: CEBI0961-"Viruses Ancient Machines in a Modern World"
Summer Teaching Assistant: CEBI0942-"Infectious and Epidemic Disease"
2018: Summer Teaching Assistant: CEBI0942-"Infectious and Epidemic Disease"