
MICHAEL LAWRENCE MILLER, MD, PHD

Vagelos College of Physicians and Surgeons
Columbia University
630 West 168th Street, PH15-124
New York, NY, 10032, USA

PHONE / FAX 212-305-4531 / 707-986-4043
E-MAIL mlm2326@cumc.columbia.edu
WEB michael-l-miller-mdphd.com
GOOGLE SCHOLAR 7EVp2IkAAAAJ
DOXIMITY 6396828

Appointments & Affiliations

- **Vagelos College of Physicians and Surgeons, Columbia University** New York, NY
Assistant Professor of Pathology at CUMC 2022–
- **NewYork–Presbyterian Hospital / Columbia University Irving Medical Center** New York, NY
Assistant Attending, Pathology 2022–

Education & Training

- **NewYork–Presbyterian Hospital** New York, NY
Resident Physician, Pathology 2018–2020
Clinical Fellow, Neuropathology 2020–2022
Postdoctoral Residency Fellow at Vagelos College of Physicians and Surgeons
- **Icahn School of Medicine at Mount Sinai** New York, NY
PhD in Neuroscience (2016), MD (2018) 2010–2018
Dissertation Title: *Genetic and epigenetic risk factors of opiate abuse*
- **Binghamton University** Binghamton, NY
BS in Integrative Neuroscience, B.S. in Biochemistry, 2006–10
Dean's Certificate in evolutionary studies
Summa cum laude

Research Experience

- **Icahn School of Medicine at Mount Sinai** New York, NY
Fishberg Department of Neuroscience, Friedman Brain Institute 2012–2018
Doctoral Candidate, Medical Scientist Training Program
Dissertation Advisor: Yasmin L. Hurd, PhD
- **Brookhaven National Laboratories** New York, NY
Department of Medicine 2008–10
Summer Undergraduate Researcher
Supervisor: Panayotis (Peter) K. Thanos, PhD
- **Binghamton University** Binghamton, NY
Department of Biological Sciences 2007–10
Undergraduate Researcher
Honor's Thesis Advisor: Anne B. Clark, PhD

Grants and Fellowships

- **Shelanski Research Innovation Award** Sept-2021–present
Department of Pathology & Cell Biology, Vagelos College of Physicians and Surgeons \$5,000
- **Ruth L. Kirschstein National Research Service Award Fellow** 2015–2018
National Institute on Drug Abuse, National Institutes of Health \$171,370
Project title: *Identifying distinct striatonigral and striatopallidal disturbances* (F30-DA-038954)
- **Barry M. Goldwater Scholar in Mathematics, Science and Engineering** 2009–10
The Barry M. Goldwater Foundation \$7,500

Publications

- Miller ML, Griep DW, Sun Y, Tamir S, Straus Farber R, Otten ML, & Al-Dalahmah O. (in press). A 53-year-old woman with a rapidly progressive, non-enhancing left frontotemporal lesion. *Brain Pathology*. doi: 10.1111/bpa.13125.
- Argenziano MG, Furnari JL, **Miller ML**, Sun Y, Banu MA, Neira JA, Snuderl M, Bruce JN, Welch M, McCormick P, & Canoll P. (2022). Thoracic low grade glial neoplasm with concurrent H3 K27M and *PTPN11* mutations. *Acta Neuropathologica Communications*, 10, article no. 64. doi: 10.1186/s40478-022-01340-9.
- Troy C, Gill B, **Miller ML**, Hickman R, Canoll P, Zacharoulis S, Feldstein N, & Bruce J. (2022). Adenocarcinoma arising in a yolk sac tumor of the pineal gland. *Journal of Neuropathology and Experimental Neurology*, 81, 291–295. doi: 10.1093/jnen/nlac002.
- Lin WV, Rand GM, **Miller ML**, Marr BP, & Suh L. (2022). A case of sight threatening complications from topical 1% 5-fluorouracil in the treatment of ocular surface squamous neoplasia. *American Journal of Ophthalmology Case Reports*, 25, article no. 101265. doi: 10.1016/j.ajoc.2022.101265.
- Hickman RA, Gionco JT, Faust PL, **Miller ML**, Bruce J, Page-Wilson G, Rosenblum MK, & Asa SL. (2022). Pituitary Corticotroph Tumour with Adrenocortical Cells: A distinct clinicopathologic entity with unique morphology and methylation profile. *Neuropathology & Applied Neurobiology*, 48, e12754. doi: 10.1111/nan.12754.
- Agopyan-Miu AHCW, Banu MA, **Miller ML**, Troy C, Hargus G, Canoll P, Wang TJC, Feldstein N, Haggiagi A, & McKhann II GM. (2021). Synchronous supratentorial and infratentorial oligodendrogliomas with incongruous *IDH1* mutations, a case report. *Acta Neuropathologica Communications*, 9, article no. 160. doi: 10.1186/s40478-021-01265-9.
- Thakur KT, Miller EH, Glendinning MD, Al-Dalahmah O, Banu MA, Boehme AK, Boubour AL, Bruce SS, Chong AM, Claassen J, Faust PL, Hargus G, Hickman RA, Jambawalikar S, Khandji AG, Kim CY, Klein RS, Lignelli-Dipple A, Lin CC, Liu Y, **Miller ML**, Moonis G, Nordvig AS, Overdevest JB, Prust ML, Przedborski S, Roth WH, Soung A, Tanji K, Teich AF, Agalliu D, Uhlemann AC, Goldman JE, & Canoll P. (2021). COVID-19 neuropathology at Columbia University Irving Medical Center/New York Presbyterian Hospital. *Brain*, 144, 2696–2708. doi: 10.1093/brain/awab148.
- Troy C, Sisti J, Maldonado-Soto A, Tosto-D'antonio G, **Miller ML**, Remotti F, & Mandigo G. (2021). A case of pediatric stroke: osteosarcoma embolus in the internal carotid artery. *Case reports in neurology*, 13, 269–275. doi: 10.1159/000514089.
- Manini AF, Gibson CL, **Miller ML**, Richardson LD, Vargas-Torres CC, Vedanthan R, & Hurd YL. (2021). Biomarkers of Endothelial Dysfunction in Cocaine Overdose and Overdose-Related Cardiovascular Events. *Addiction Biology*, 26, e12901. doi: 10.1111/adb.12901.
- Egervari G, Akpoyibo D, Rahman T, Fullard JF, Callens JE, Landry JA, Ly A, Zhou X, Warren N, Hauberg ME, Hoffman G, Ellis R, Ferland JN, **Miller ML**, Keller E, Zhang B, Roussos P, & Hurd YL. (2020). Chromatin accessibility mapping of the striatum identifies tyrosine kinase FYN as a therapeutic target for heroin use disorder. *Nature Communications*, 11, 4634. doi: 10.1038/s41467-020-18114-3.
- Michaelides M, **Miller ML**, Egervari G, Primeaux SD, Gomez JL, Ellis RJ, Landry JA, Szutorisz S, Hoffman AF, Lupica CR, Loos RJF, Thanos PK, Bray GA, Neumaier JF, Zachariou V, Wang G-J, Volkow ND, & Hurd YL. (2020). Striatal Rgs4 regulates feeding and susceptibility to diet-induced obesity. *Molecular Psychiatry*, 25, 2058–2069. doi: 10.1038/s41380-018-0120-7.
- Annunziata J, **Miller ML**, Park DC, Vlad G, Bhagat G, & Alobeid A. (2020). Detection of non-hematologic neoplasms by routine flow cytometry analysis. *American Journal of Clinical Pathology*, 153, 99–104. doi: 10.1093/ajcp/aqz138.
- Miller ML**, Tome-Garcia J, Waluszko A, Sidorenko T, Kumar C, Ye F, & Tsankova NM. (2019). Practical bioinformatic DNA-sequencing pipeline for detecting oncogene amplification and EGFRvIII mutational status in clinical glioblastoma samples. *Journal of Molecular Diagnostics*, 21, 514–524. doi: 10.1016/j.jmoldx.2019.02.001.
- Miller ML**, Chadwick B, Dickstein DL, Purushothaman I, Egervari G, Rahman T, Tessereau C, Hof PR, Roussos P, Shen L, Baxter MG, & Hurd YL. (2019). Adolescent exposure to Δ^9 -tetrahydrocannabinol alters the transcriptional trajectory and dendritic architecture of prefrontal pyramidal neurons. *Molecular Psychiatry*, 24, 588–600. doi: 10.1038/s41380-018-0243-x.

- Miller ML**, Ren Y, Szutorisz H, Warren NA, Tessereau C, Egervari G, Mlodnicka A, Kapoor M, Chaarani B, Morris CV, Schumann G, Garavan H, Goate AM, Bannan MJ, IMAGEN Consortium, Halperin JM, & Hurd YL. (2018). Ventral striatal regulation of *CREM* mediates impulsive action and drug addiction vulnerability. *Molecular Psychiatry*, 23, 1328–1335. doi: 10.1038/mp.2017.80.
- Michaelides M, **Miller ML**, DiNieri JA, Gomez JL, Schwartz E, Egervari G, Wang G-J, Mobbs CV, Volkow ND, & Hurd YL. (2017). Dopamine D2 receptor signaling in the nucleus accumbens comprises a metabolic-cognitive brain interface regulating metabolic components of glucose reinforcement. *Neuropsychopharmacology*, 42, 2365–2376. doi: 10.1038/npp.2017.112.
- Miller ML** & Hurd YL. (2017). Testing the Gateway Hypothesis. *Neuropsychopharmacology*, 42, 985–986. doi: 10.1038/npp.2016.279.
- Egervari G, Jutras-Aswad D, Landry J, **Miller ML**, Anderson SA, Michaelides M, Jacobs MM, Peter C, Yiannoulos G, Liu X, & Hurd YL. (2016). A functional 3UTR polymorphism (rs2235749) of Prodynorphin alters microRNA-365 binding in ventral striatonigral neurons to influence novelty seeking and positive reward traits. *Neuropsychopharmacology*, 10, 2512–2520. doi: 10.1038/npp.2016.53.
- Thanos PK, Michaelides M, Subrizi M, **Miller ML**, Bellezza R, Cooney RN, Leggio L, Wang G-J, Rogers AM, Volkow ND, & Hajnal A. (2015). Roux-en-Y gastric bypass alters brain activity in regions that underlie reward and taste perception. *PLoS One*, 10, e0125570. doi: 10.1371/journal.pone.0125570.
- Miller ML**, Chadwick B, Morris CV, Michaelides M, & Hurd YL. (2015). Cannabinoid-Opioid Interactions. In P. Campolongo & L. Fattore (Eds.) *Cannabinoid Modulation of Emotion Memory and Motivation* (pp 393–407) New York NY: Springer New York. doi: 10.1007/978-1-4939-2294-9_15.
- Maze I, Chaudhury D, Dietz DM, von Schimmelmann M, Kennedy PJ, Lobo MK, Sullivan SE, **Miller ML**, Bagot RC, Sun H, Turecki G, Neve RL, Hurd YL, Shen L, Han M-H, Schaefer A, & Nestler EJ. (2014). G9a influences neuronal subtype specification in striatum. *Nature Neuroscience*, 17, 533–539. doi: 10.1038/nn.3670.
- Szutorisz H, DiNieri JA, Sweet E, Egervari G, Michaelides M, Carter JM, Ren Y, **Miller ML**, Blitzer RD, & Hurd YL. (2014). Parental THC exposure leads to compulsive heroin-seeking and altered striatal synaptic plasticity in the subsequent generation. *Neuropsychopharmacology*, 39, 1315–1323. doi: 10.1038/npp.2013.352.
- Hurd YL, Michaelides M, **Miller ML**, & Jutras-Aswad D. (2014). Trajectory of adolescent cannabis use on addiction vulnerability. *Neuropharmacology*, 76, 416–424. doi: 10.1016/j.neuropharm.2013.07.028.
- Chadwick B, **Miller ML**, & Hurd YL. (2013). Cannabis use during adolescent development: susceptibility to psychiatric illness. *Frontiers in Psychiatry*, 4, 129. doi: 10.3389/fpsyt.2013.00129.
- Michaelides M, **Miller ML**, Subrizi M, Kim R, Robison L, Hurd YL, Wang G-J Volkow ND, & Thanos PK. (2013). Limbic activation to novel versus familiar food cues predicts food preference and alcohol intake. *Brain Research*, 1512, 37–44. doi: 10.1016/j.brainres.2013.03.006.
- Miller ML**, Gallup AC, Vogel AR, Vicario SM, & Clark AB. (2012). Evidence for contagious behaviors in budgerigars (*Melopsittacus undulatus*): An observational study of yawning and stretching. *Behavioural Processes*, 89, 264–270. doi: 10.1016/j.beproc.2011.12.012.
- Miller ML**, Gallup AC, Vogel AR, & Clark AB. (2012). Auditory disturbances promote temporal clustering of yawning and stretching in small groups of budgerigars (*Melopsittacus undulatus*). *Journal of Comparative Psychology*, 126, 324–328. doi: 10.1037/a0026520.
- Miller ML**, Gallup AC, Vogel AR, & Clark AB. (2010). Handling-stress initially inhibits but then potentiates yawning in budgerigars (*Melopsittacus undulatus*). *Animal Behaviour*, 80, 615–619. doi: 10.1016/j.anbehav.2010.05.018.
- Gallup AC, **Miller ML**, & Clark AB. (2010). The direction and range of ambient temperature change influences yawning in budgerigars (*Melopsittacus undulatus*). *Journal of comparative Psychology*, 124, 133–138. doi: 10.1037/a0018006.
- Gallup AC, **Miller ML**, & Clark AB. (2009). Yawning and thermoregulation in budgerigars: Science as an incremental process. *Animal Behaviour*, 78, e3–e5. doi: 10.1016/j.anbehav.2009.09.017.
- Gallup AC, **Miller ML**, & Clark AB. (2009). Yawning and thermoregulation in parakeets (*Melopsittacus undulatus*). *Animal Behaviour*, 77, 109–113. doi: 10.1016/j.anbehav.2008.09.014.

Presentations

Talks

Miller ML, Fernandes H, Hsiao SJ, & Mansukhani MM. Comprehensive molecular profiling of pediatric CNS malignancies: A single-institution experience using a clinical platform. 97th Annual Meeting of the American Association of Neuropathologists, St. Louis, Missouri, 10–13 June 2021.

Miller ML. Transcriptional microdissection of striatal neurocircuits: applications for studying substance use disorder. Undergraduate Research Symposium in Biological, Chemical, Structural, and Computational Sciences, Icahn School of Medicine at Mount Sinai, New York, NY, 17 September 2016.

Posters

Miller ML, Katsyv I, Fernandes H, Hsiao SJ, & Mansukhani MM. Whole exome and transcriptome sequencing of pediatric ependymomas: A single institution experience. Association for Molecular Pathology's 25th Annual Meeting and Expo, Baltimore Convention Center, Baltimore, MD, 7–9 November 2019.
doi: 10.1016/S1525-1578(19)30391-5.

Miller ML, Ye F, Tome-Garcia J, Zhang DY, & Tsankova NM. Assessment of focal gene amplifications and EGFRvIII mutation in glioblastoma through next-generation sequencing. 93rd Annual Meeting of the American Association of Neuropathologists, Hyatt Regency Orange County, Garden Grove, CA, 8–11 June 2017.

Miller ML, Ren Y, Szutorisz H, Egervári G, Morris CV, Sperry J, & Hurd YL. Striatal *CREM* mediates impulsive action and associates with fatal overdose in heroin abusers. 7th Annual Neuroscience Retreat at the Icahn School of Medicine at Mount Sinai, The New York Academy of Medicine, New York, NY, 13 May 2015.

Miller ML, Chadwick B, & Hurd YL. Identifying distinct striatonigral and striatopallidal disturbances after developmental cannabis exposure: pathway-specific changes in miRNAs and their contribution to heroin addiction. 6th Biennial Gordon Research Conference on Cannabinoid Function in the CNS, Renaissance Tuscany Il Ciocco, Barga LU, Italy, 24–29 May 2015.

Miller ML & Hurd YL. Identifying distinct striatonigral and striatopallidal disturbances after developmental cannabis exposure: pathway-specific changes in miRNAs and their contribution to heroin addiction. 14th Annual Medical-Scientist Training Program Retreat at the Icahn School of Medicine at Mount Sinai, Honors Haven Resort, Ellenville, NY, 5–7 September 2014.

Miller ML & Hurd YL. The impact of adolescent THC on mesolimbic microRNA regulation. 5th Biennial Gordon Research Conference on Cannabinoid Function in the CNS, Waterville Valley, NH, 4–9 August 2013.

Mentorship and Teaching

- **Teaching Assistant for Brain & Behavior**
Fall 2012 through Fall 2015, Directed by Carrie Ernst, M.D.
- **Teaching Assistant for Principles of Neurobiology: Systems Neuroscience**
Winter 2013, Directed by Elizabeth Cropper, Ph.D.
- **Teaching Assistant for General Pathology**
Winter 2012, Directed by Margret S. Magid, M.D.
- **Undergraduate Teaching Assistant for Cellular Neurobiology**
Fall 2008 and Fall 2009, Directed by Carol I. Miles, Ph.D.
- **Mentored summer undergraduate interns and Master's students**
J Rodriguez (2013), N Downer (2014), Y Valentine (2015) and T Rahman (2015–2016).
Directed by Yasmin L. Hurd, Ph.D.

Awards

- Association of Pathology Chairs' Society of '67 Scholar (July 2019), conference registration and travel

- Icahn School of Medicine Medical Student Travel Award (Spring 2017), \$500
- Icahn School of Medicine Graduate Student Travel Award (Spring 2015, Spring 2017), \$400 each
- Society for Neuroscience Graduate Student Travel Award (2013)
- Gordon Research Conference (GRC) Graduate Student Poster Award (2013)
- President's Award for Undergraduate Student Excellence (2010), \$1000
- State University of New York Chancellor's Award (2010)
- John L. Fuller Memorial Award (2010), \$100
- Binghamton University Undergraduate Research Award (2008, 2009), \$169 & \$250
- Edward Thorsen Memorial Scholarship (2008), \$400
- Freshman Chemistry Award (Fall 2006, Spring 2007), \$50 each
- Brain Awareness Week Travel Award (2009), \$750 + conference registration
- Sigma Xi Undergraduate Research Poster Award (2008, 2009), \$100 each
- U.S. Department of Energy Summer Undergraduate Lab Internship (Summer 2009), \$3200 stipend
- Plainview Diner Scholarship (2006), \$500