

CURRICULUM VITAE

Veronica A. Alvarez, Ph.D.

Investigator, Section on Neuronal Structure
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National Institute of Alcohol Abuse and Alcoholism, NIH

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Education and Certifications:

1987-1992: B.S. in Neuroscience with honors, School of Science, University of Buenos Aires
1992-1997: Ph.D. in Neuroscience, University of Buenos Aires, Argentina
1996 Neurobiology course, Marine Biological Laboratories, Wood Hole, MA

Postdoctoral training:

2002-2007 Harvard Medical School, Department of Neurobiology. Boston, MA. Laboratory of Dr. Bernardo L. Sabatini.
1998-2001 Vollum Institute, Oregon Health and Sciences University. Portland, OR.
Laboratory of Dr. John T. Williams.

Professional Work Experience:

2008-current Tenure-Track Investigator and Acting Chief, NIAAA, National Institutes of Health. Bethesda, MD.

Honors and Awards:

2006 *Goldenson* Research Fellowship, Harvard Medical School
1999-2000 *Tartar* Research Fellow, Oregon Health and Sciences University
1996 *Phillip H. Presley* travel Award from Woods Hole Laboratories
1992 Diploma of Honor, University of Buenos Aires, Argentina

Research interests:

- Neurobiology of addiction: synaptic mechanisms underlying reward motivated behaviors and drug abuse
- Neuronal circuits and modulation of synaptic transmission in physiological and pathological conditions
- Neuronal morphology and function: effect of drugs of abuse on dendritic spine formation morphology and function

Peer-review research articles

1. K.B. Holroyd, M.F. Adrover, R.L. Fuino, R. Bock, A.R. Kaplan, M. Rubinstein, **V. A. Alvarez**. (2015) Loss of feedback inhibition via D2 autoreceptors enhances acquisition of cocaine taking and reactivity to drug-paired cues. *Neuropsychopharmacology*, in press.
2. Adrover MF, Shin JH and Alvarez VA. (2014) Glutamate and dopamine transmission from midbrain dopamine neurons share similar release properties but are differentially affected by cocaine. *Journal of Neuroscience* 34: 3183-3192.
3. Wilcox MV, Cuzon-Carlson VC, Sherazee N, Sprow GM, Bock R, Thiele TE, Lovinger DM and **Alvarez VA**. (2014) Repeated binge-like ethanol drinking alters ethanol drinking patterns and depresses striatal GABAergic transmission. *Neuropsychopharmacology* 39: 579-94.
4. Bock R, Shin JH, Kaplan AR, Dobi A, Markey E, Kramer PF, Gremel CM, Christensen CH, Adrover MF and **Alvarez VA** (2013) Strengthening of accumbal indirect pathway promotes resilience to compulsive cocaine use. *Nature Neuroscience* 16: 632-8.
Faculty of 1000 "Recommended" list

5. E. Bello Gay, Y. Mateo, D.M. Gelman, D. Noaín, J.H. Shin, C.M. Bäckman, M.J. Low, **V.A. Alvarez**, D.M. Lovinger and M. Rubinstein (2011) Cocaine supersensitivity and enhanced motivation for reward in mice lacking dopamine D2 autoreceptors. *Nature Neuroscience* 14: 1033-8.
6. A. Dobi, G.K. Seabold, C.H. Christensen, R. Bock and **V.A. Alvarez** (2011) Cocaine-induced plasticity in the nucleus accumbens is cell specific and develops without withdrawal. *Journal of Neuroscience* 31:1895-904.
7. P.F. Kramer, C.H. Christensen, L.A. Hazelwood, A. Dobi, R. Bock, D.R. Sibley, Y. Mateo and **V.A. Alvarez**. (2011) Dopamine D2 receptor overexpression alters behavior and physiology in *Drd2*-EGFP mice. *Journal of Neuroscience* 31:126-32.
Faculty of 1000 Article factor: FFa/6.
8. V. Cuzon Carlson, G.K. Seabold, C.M. Helms, N. Garg, M. Odagiri, A.R. Rau, J. Daunais, **V.A. Alvarez**, D.M. Lovinger and K.A. Grant (2011) Synaptic and morphological neuroadaptations in the putamen associated with long-term, relapsing alcohol drinking in primates. *Neuropsychopharmacology* 36: 2513-28.
9. B.N. Mathur, N.A. Capik, **V.A. Alvarez**, D.M. Lovinger (2011) Serotonin induces long-term depression at corticostriatal synapses. *Journal of Neuroscience* 31:7402-11.
10. G. K. Seabold, J. B. Daunais, A. Rau, K. A. Grant, **V. A. Alvarez**, DiOLISTIC Labeling of Neurons from Rodent and Non-human Primate Brain Slices (2010) *J Vis Exp.* 41. pii: 2081. doi: 10.3791/2081
11. J.M. Feyder, R.M. Karlsson, P. Mathur, M. Lyman, R. Bock, R. Momenan, J. Munasinghe, M.L. Scattoni, J. Ihne, M. Camp, C. Graybeal, D. Strathdee, A. Begg, **V.A. Alvarez**, P. Kirsch, M. Rietschel, S. Cichon, H. Walter, A. Meyer-Lindenberg, S.G.N. Grant, and A. Holmes (2010) Mouse *Dlg4* (*PSD-95*) gene deletion and human *DLG4* gene variation is associated with phenotypes relevant to autism-spectrum disorders and Williams-Beuren syndrome. *American Journal of Psychiatry.* 167:1508-17.
12. Cheng, X. Zhou, E.L. Miller, **V.A. Alvarez**, B.L. Sabatini, S.T. Wong (2010) Oriented Markov Random Field Based Dendritic Spine Segmentation for Fluorescence Microscopy Images. *Neuroinformatics* 8: 157-70J.
13. L. Brigman, T. Wright, G. Talani, S. Prasad-Mulcare, S. Jinde, G. K. Seabold, P. Mathur, M. I. Davis, R. Bock, R. M. Gustin, R. J. Colbran, **V. A. Alvarez**, K. Nakazawa, E. Delpire, D. M. Lovinger and A. Holmes (2010). Loss of GluN2B-containing NMDA receptors in CA1 hippocampus and cortex impairs long-term depression, reduces dendritic spine density and disrupts learning. *Journal of Neuroscience* 30: 4590–600.
14. **V. A. Alvarez**, D.A. Ridenour and B.L. Sabatini (2007). Distinct Structural and Ionotropic Roles of NMDA Receptors in Controlling Spine and Synapse Stability. *Journal of Neuroscience* 27: 7365–76.
15. **V. A. Alvarez**, D.A. Ridenour and B.L. Sabatini (2006). Retraction of synapses and dendritic spines induced by off-target effects of RNA interference. *Journal of Neuroscience* 26: 7820–5. Selected by TWIJ. *Journal of Neuroscience* 26 : 7820-5
Faculty of 1000 “Must Read” list
16. S. F. Tavazoie*, **V. A. Alvarez***, D. A. Ridenour, D. J. Kwiatkowski, B. L. Sabatini (2005). Regulation of neuronal morphology and function by the tumor suppressors *Tsc1* and *Tsc2*. *Nature Neuroscience* 8: 1727–34. *, equal contribution.
Faculty of 1000 “Recommended” list
17. **V. A. Alvarez**, C. Chow, E. J. Van Bockstaele and J. T. Williams (2002). Frequency-dependent synchronization of locus coeruleus neurons: role of electrotonic coupling. *Proc. Natl. Acad. Sci. U. S. A.* 99: 4032–6.
Faculty of 1000 “Recommended” list
18. **V. A. Alvarez***, S. Arttamangkul*, J. Whistler, M. van Zastrow, D. Grandy and J. T. Williams (2002). μ -Opioid receptors: activation of potassium conductance, desensitization and internalization. *Journal of Neuroscience* 22: 5769–76. *, equal contribution
19. **V. A. Alvarez**, S. Arttamangkul, and J. T. Williams (2001). A RAVE about Opioid Withdrawal. *Neuron* 32: 761–3. *New and View*.
20. **V. A. Alvarez** Maubecin, F. Garcia-Hernandez, J. T. Williams and E. Van Bockstaele (2000). Functional coupling between neurons and glia. *Journal of Neuroscience* 20: 4091–8.
21. S. Arttamangkul*, **V. A. Alvarez** Maubecin*, G. Thomas, J. T. Williams and D. K. Grandy (2000). Binding and internalization of novel fluorescent opioid peptides in living cells. *Molecular Pharmacology* 58: 1570–1580. *, equal contribution.

22. **V. A. Alvarez** Maubecin, V. Sanchez, M. Rosato Siri, B. D. Cherksey, M. Sugimori, R. R. Llinas and O. D. Uchitel (1995). Pharmacological characterization of the voltage-dependent Ca²⁺ channels present in synaptosomes from rat and chicken central nervous system. *Journal of Neurochemistry* 64: 2544–2551.
23. O. D. Uchitel, F. S. Scornik, D. A. Protti, C. Fumberg, **V. A. Alvarez** and S. H. Appel (1992). Long term neuromuscular dysfunction produced by passive transfer of amyotrophic lateral sclerosis (ALS) immunoglobulins. *Neurology* 42: 2175–2180.

Submitted

24. L.K. Dobbs, A.R. Kaplan, J.C. Lemos, M. Rubinstein, **V.A. Alvarez**. Lateral inhibition between striatal neurons gates the stimulant actions of cocaine. *Manuscript under review*.
25. J.H. Shin, M.F. Adrover and **V.A. Alvarez**. Presynaptic muscarinic acetylcholine M5 receptors potentiate dopamine and glutamate transmission from VTA dopamine terminal in the nucleus accumbens. *Manuscript submitted*.

Book Chapters

26. N. Sherazee and **V.A. Alvarez** (2013) DiOligosites-delivery of fluorescent dyes into cells. In *Methods in Molecular Biology*. 940: 391-400. Editors: S. Sudowe and AB Reske-Kunz. Publisher: Springer
27. **V. A. Alvarez**, G. M. Shankar, B. L. Bloodgood, D. J. Selkoe and B. L. Sabatini (2007). Chapter 7: Multiple levels of synaptic regulation by NMDA-type glutamate receptor in normal and disease states. In “*Synaptic Plasticity and the Mechanism of Alzheimer's Disease*”. Editors: Selkoe, Triller and Christen. Publisher: Springer

Reviews

28. Cui C, Noronha A, Morikawa H, **Alvarez VA**, Stuber GD, Szumlinski KK, Kash TL, Roberto M, Wilcox MV (2012) New Insights on Neurobiological Mechanisms underlying Alcohol Addiction. *Neuropharmacology* 67C:223-232.
29. **V. A. Alvarez** and B. L. Sabatini (2007). Anatomical and physiological plasticity of dendritic spines. *Annu. Rev. Neurosci.* 30: 79–97.
29. **V. A. Alvarez** Maubecin and J. T. Williams (1999). Developmental changes that regulate the activity of locus coeruleus neurons. *Tokai Journal of Experimental Clinical Medicine* 24: 41–51. Review

In Preparation

1. J.C. Lemos, A.R. Kaplan, D.M. Friend, J.H. Shin, M. Rubinstein, A. Kravitz, **V.A. Alvarez**. Dopamine D2 receptors in indirect-pathway striatal neurons depress GABAergic transmission to disinhibit direct-pathway striatal neurons and sustain locomotion. *Manuscript in preparation*.
2. M.F. Adrover, J.H. Shin and **V.A. Alvarez**. Monosynaptic and multisynaptic mechanisms of dopamine release in the striatum. *Manuscript in preparation*.

Invited Presentations:

- 2015 Department of Neuroscience, MUSC, South Carolina
Department of Pharmacology, Georgetown University, Washington DC
- 2014 Department of Neuroscience, Columbia University, New York
Vollum Institute, OHSU, Oregon
Department of Psychiatry, UT Southwestern Medical Center, Dallas, Texas
Gordon Research Conference on Alcohol and the Nervous System, Galveston, Texas
Neuroscience Seminar, Uniformed Services, Bethesda, Maryland.
- 2013 Department of Physiology, Northwestern University, Chicago
INMED, Marseille, France
Université of Montpellier, France
International Neuroscience Symposium, Belo Horizonte, Brazil
Gordon Research Conference on Catecholamines, Vermont
Research Society on Alcohol, Orlando, Florida
- 2012 "Dopamine 2013" meeting. Sardinia, Italy

- Department of Neuroscience, University of Connecticut Health Center, CT
Gallo Institute, UCSF, San Francisco, CA
Intramural Research Program, NIDA, Baltimore, MD
- 2011 Waggoner Center. University of Texas, Austin, TX
"Frontiers in Addiction Research". NIDA Mini-Convention. Washington, DC
Society for Neuroscience Meeting. Washington, DC
"Alcoholism and Stress: a framework for future treatment strategies" Volterra, Italy
NINDS, Intramural Retreat, Warrenton, Virginia
- 2010 Winter Conference on Brain Research, Colorado
- 2009 Bowles Center for Alcohol Studies, UNC, Chapel Hill, North Carolina
Department of Pharmacology, Uniformed Services, Bethesda, Maryland.
IRSN- Argentinean Society for Neuroscience. Cordoba, Argentina
- 2008 Department of Behavioral Neuroscience, OHSU, Portland, Oregon
"Synapse: postsynaptic mechanisms of plasticity". Warrenton, Virginia
- 2007 NIEHS, National Institute of Health, North Carolina
Tuberous Sclerosis Alliance Meeting, Annapolis, Maryland
Gallo Institute, UCSF. San Francisco, California
NIAAA, NIH. Bethesda, Maryland
Department of Neurobiology, The University of Texas at Austin, Texas
Department of Cell Biology and Neuroscience, UC Riverside, CA
Department of Neurobiology, University of Pittsburgh, Pittsburgh, Pennsylvania
Department of Biology, Washington University, St. Louise, MO
- 2006 Department of Biology, University of Pennsylvania. Philadelphia, Pennsylvania
Burdick Neuropsychiatric Research Institute, U. Mass, Worcester, MA
Gladstone Institute, UCSF. San Francisco, CA
American Epilepsy Society, San Diego, CA
- 2002 Vollum Institute, Oregon Health Sciences University, Portland, OR
Winter Conference on Brain Research, Snowmass, CO

Professional services/Activities:

Mentor, Sallie Rosen Kaplan Postdoctoral Fellowship, NCI, NIH (2015)
Search Committee Member, NIAAA Intramural Research Program (2014)
Search Committee Member, Earl Stadtman Investigator, NIH (2014)
Ad Hoc Reviewer, Neurobiology of Motivated Behaviors (NMB) Study Section (2013)
Search Committee Member, Earl Stadtman Investigator (2012, 2010)
Search Committee Member, NIAAA Intramural Research Program (2009)
Ad hoc journal reviewer (alphabetical order): Addiction Biology, Biological Psychiatry, European Journal of Neuroscience, Journal of Neuroscience, Journal of Physiology, Molecular Psychiatry, Nature Communications, Nature Neuroscience, Neuron, NeuroImage, Neuroscience, Neuroscience Letters, Neuropharmacology, Neuropsychopharmacology, PlosOne, Proceedings of the National Academy of Science USA.

Teaching:

Guest Lecturer (2013) Neurobiological Basis of Drug Addiction, UFMG, Brazil
Teaching Assistant (2000) "Physiological Approaches to Ion channel Biology", Cold Spring Harbor Laboratory, NY.
Teaching Assistant (1994-97) "Neurophysiology", undergraduate course at School of Psychology, University of Buenos Aires
Teaching Assistant (1990-92) "Biology" undergraduate course at Department of Biological Science, School of Science, University of Buenos Aires

Mentoring and Supervision of Trainees and Postdoctoral Fellows

Miriam Bocarsly, postdoctoral fellow (2015-current)
Aya Matsui, postdoctoral fellow (2013-current)
Julia Lemos, postdoctoral fellow (2012-current)
Lauren Dobbs, postdoctoral fellow (2012-current)
Martin Adrover, postdoctoral fellow (2010-current)
Alice Dobi, postdoctoral fellow (2008-2012) Current: full time mother
Gail Seabold, postdoctoral fellow (2008-2009) Current: Assistant, OITE, NIH
Maria Blegen, post-baccalaureate fellow (2013-current)

Alanna Kaplan, post-baccalaureate fellow (2011-2013). Current: MD/PhD student, Yale University
Kathryn Holroyd, post-baccalaureate fellow (2012-2013). Current: MD student, Johns Hopkins University
Mark Wilcox, post-baccalaureate fellow (2011-2012). Current: MD student, Johns Hopkins University
Paul Kramer, post-baccalaureate fellow (2009-2011). Current: Graduate student, Vollum Institute, OHSU
Robert Fuino, post-baccalaureate fellow (2010-2011). Current: MD student, University of Rochester
Nyssa Sherazee, post-baccalaureate fellow (2010-2011). Current: Graduate student, Columbia University
Christine Christensen, post-baccalaureate fellow (2009-2010). Current: Registered Nurse. Duke Hospital

Thesis Committee:

Russell Morton, George Washington University, Maryland
Jillian Iafrati, University of Montpelier, France

Funding

2008-current *PI*, Intramural Research funding ZIA AA000421. Title: “Synaptic mechanisms underlying reward seeking and compulsive drug use”
2014-2018 *Co-PI*, U01 AA023489. PI: Dorit Ron. Title: “Pathway-specific Fyn signaling in the striatum and ethanol drinking”
2012-2017 *Collaborator*, R01 AA020501. PI: Gilles Martin. Title: “Ethanol modulation of synaptic plasticity in the nucleus accumbens”
2009-present *Collaborator*, ZIA NS002263. PI: David Sibley. Title: “Molecular and pharmacological studies of dopamine receptors”
2013-present *Collaborator*, ZIA DK075096. PI: Alexxai Kravitz. Title: “Does the Drd2 receptor play a causal role in obesity?”