

## CURRICULUM VITAE

David M. Lovinger, Ph.D.



### Current Contact Information

Laboratory for Integrative Neuroscience  
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### Personal Information

Birthdate: December 28, 1959  
Birthplace: Flint, Michigan  
Citizenship: United States

### Education and Experience

1977-1981	University of Arizona, B.A. with honors 1981, Major: Psychology.
1981-1984	Northwestern University, M.S. 1984, Major Field: Psychology, Behavioral Neurobiology Program, Advisor: Dr. Aryeh Routtenberg.
1985-1987	Northwestern University, Ph.D. 1987, Major Field: Psychology, Behavioral Neurobiology Program, Advisor: Dr. Aryeh Routtenberg, Dissertation Title: <u>Regulation of the Maintenance of Hippocampal Long-Term Potentiation by Protein Kinase C and Protein F1.</u>
1987-1988	IRTA Fellow, NINCDS, Supervisor: Dr. Forrest F. Weight.
1988-1991	Staff Fellow, NIAAA, Supervisor: Dr. Forrest F. Weight.

1991-1994	Assistant Professor, Departments of Molecular Physiology and Biophysics and Pharmacology, Vanderbilt University School of Medicine. Kennedy Center Investigator, Vanderbilt University.
1994-1998	Associate Professor with tenure, Departments of Molecular Physiology and Biophysics and Pharmacology, Vanderbilt University School of Medicine. Kennedy Center Investigator, Vanderbilt University.
1998-2002	Professor, Departments of Molecular Physiology & Biophysics, and Pharmacology, Vanderbilt University School of Medicine. Associate Professor of Anesthesiology, Vanderbilt University School of Medicine. Kennedy Center Investigator, Vanderbilt University. Deputy Director for Biomedical Science and Director of Neuroscience Core, Kennedy Center, Vanderbilt University (2000-2001).
2002-Present	Chief, Laboratory for Integrative Neuroscience, NIAAA, NIH Tenured Investigator
2014-Present	Deputy Scientific Director and Training Director, Division of Intramural Clinical and Biological Research, NIAAA

## **Awards**

1989	National Research Council travel award to attend the International Congress of Physiological Sciences.
1991	Pharmaceutical Manufacturers Association Research Fellowship.
1991	Alcoholic Beverage Medical Research Foundation Research Fellowship.
1992	Woodrow W. Patterson Award.
1992	Research Society on Alcoholism Young Investigators Award.
1999	Sigrid Juselius Foundation Grant to support research during summer visit to the University of Turku, Finland.
2000	MERIT Award, NIAAA.
2014	NIH Director's Award (research category)

2014	Bowles Center for Research Excellence Award, from University of North Carolina Chapel Hill.
2019	NIAAA Scientific Achievement Award
2109	NIH Director's Award (team category) for service on the NIH Equity Committee

### **Professional Affiliations**

1990-Present	Society for Neuroscience
1990-Present	Research Society on Alcoholism
1995-Present	International Society for Biomedical Research on Alcoholism
1992-2001	Biophysical Society
1996-2001	American Association for the Advancement of Science

### **Research Interests**

Role of cortico-basal ganglia circuitry in control and learning of actions. Cellular and molecular mechanisms involved in learning and memory involving this circuitry.

Synaptic transmission, modulation and plasticity in the striatum. Role of neuromodulators such as endocannabinoids in synaptic plasticity. Synaptic contributions to Parkinson's Disease.

Interactions of intoxicating and general anesthetic agents with synaptic transmission in mammalian neurons, and the contributions of such interactions to intoxication and substance use/abuse and addiction.

### **Teaching Experience**

1981-1985	Teaching assistant and senior teaching assistant for Introduction to Neuroscience, taught by Dr. Aryeh Routtenberg.
1984-1985	Teaching assistant for Experimental Psychology.
1983-1985	Trained technician to perform in vivo electrophysiological experiments on the anesthetized rat. Supervised technician's research.

1989-1991	Assisted in training technicians to culture neurons from fetal mouse brain.
1991-Present	<p>Trained postdoctoral fellow and graduate students to perform patch-clamp experiments. Trained graduate students and postdoctoral fellows to perform brain slice experiments. Supervised activities of technicians including use of cell culture, brain slice and molecular biological techniques.</p> <p>Served on Biophysics Track committee and participated in review and oral portion of qualifying examinations.</p> <p>Served on thesis committees for several students from Molecular Physiology and Biophysics Department, as well as Pharmacology Department at Vanderbilt University. Served on dissertation committees for student in the George Washington University Department of Pharmacology, Georgetown University Departments of Physiology and Pharmacology, George Mason University Krasnow Institute, Rutgers University Neuroscience program, and the University of Calgary Neuroscience program.</p>
1992-2001	<p>Lectured in:</p> <p>Medical Physiology (6 contact hours per year)</p> <p>Human Physiology and Molecular Medicine (1-3 contact hours per year)</p> <p>Interdisciplinary Graduate Program Core Course (2 contact hours per year)</p> <p>Cellular and Integrative Neuroscience (responsible for organizing one third of the course, 7 contact hours per year)</p> <p>Co-course developer, co-organizer and lecturer in Excitable Membrane Properties in Nerve and Muscle (10-15 contact hours per year)</p> <p>Lectures in Special Topics in Neuroscience as needed (&lt;1 lecture per year)</p> <p>Lectures in Molecular Neuroscience, Psychopharmacology section (~2 lectures per year)</p>
2002-Present	

Six 2 hour lectures in Introductory Neuroscience course, George Washington University School of Medicine, Neuroscience Graduate Program

Two 2 hour lectures in Introductory Neuroscience course, Georgetown University School of Medicine, Neuroscience Graduate Program

## **Supervision, Mentoring and Departmental Graduate Training**

### Faculty Members

Faculty mentor for Dr. Danny Winder, Department of Molecular Physiology and Biophysics, Vanderbilt University School of Medicine, 1999-2001, Dr. Winder is now a tenured Full Professor within the MPB Department at Vanderbilt.

Dr. Andrew Holmes, Chief, Laboratory of Behavioral and Genomic Neuroscience, NIAAA Division of Intramural Clinical and Basic Research, 2003-2010. Dr. Holmes was within LIN while on tenure-track and was awarded tenure in 2010. Dr. Holmes was awarded the 2012 Jacob P. Waletzky award for addiction research from the Society for Neuroscience.

Dr. Rui Costa, Acting Chief, Section on In Vivo Neural Function within LIN, NIAAA, DICBR, January 2006-2009. Dr. Costa held a tenure track position equivalent in rank to Assistant Professor. He is now a senior scientist at the Champalimaud Research Institute in Lisbon, Portugal. Dr. Costa was awarded the 2012 Young Investigator Award from the Society for Neuroscience. HHMI International Early Career Scientist.

Dr. Veronica Alvarez, Chief, Section on Neuronal Structure within LIN, NIAAA, DICBR, January 2008-Present. Dr. Alvarez was awarded tenure in December 2015.

Dr. Margaret I. Davis, Staff Scientist, Laboratory for Integrative Neuroscience, NIAAA Division of Clinical and Basic Research, 2003-Present. This position is equivalent to a Research Track faculty position.

Dr. Li Zhang, Staff Scientist, Laboratory for Integrative Neuroscience, NIAAA Division of Clinical and Basic Research, 2004-Present.

Dr. Yolanda Mateo, Staff Scientist, Laboratory for Integrative Neuroscience, NIAAA Division of Clinical and Basic Research, 2008-Present.

Dr. Prosper N'Gouemo, Assistant Professor, Georgetown University.

Dr. Soohyun Lee, Tenure-Track Investigator, NIMH

Dr. Hugo Tejeda, Tenure-Track Investigator, NIMH

Dr. Michelle Antoine, Tenure-Track Investigator, NIAAA

Postdoctoral fellows

Brian A. McCool, Ph.D. (1993-1997). Currently tenured Associate Professor of Pharmacology and Physiology, Wake Forest University School of Medicine.

Honors and Awards: Recipient of a postdoctoral fellowship from NINDS, 1994-1997. Recipient of a travel award to attend the 2<sup>nd</sup> International Meeting on Metabotropic Glutamate Receptors, Taormina Italy, September 1996. Has received R01 and R21 grants from NIH.

R. Lisa Popp, Ph.D. (winter 1995-November 2000), Currently Associate Professor with tenure, Department of Pharmacology and Toxicology, Texas Tech University Health Science University.

Honors and Awards: Recipient of a postdoctoral fellowship from NIAAA, 1997-1999. Recipient of an Alcoholic Beverage Medical Research Foundation grant, 1999-2001. Recipient of an R01 award from NIAAA.

Ki-Wug Sung, M.D. (February 1998-December 2000), Currently Professor and former Chair of Pharmacology Department, Catholic University of Korea Medical School.

Honors and Awards: Recipient of grants from the Korean Science and Engineering Foundation 1999-2000, 2004-2011.

Gabriella Stocca, Ph.D. (Spring 1998-2002) Currently in a research track position, Florence, Italy.

Honors and Awards: Recipient of a Huntington's Disease Society postdoctoral fellowship, 2001. Awarded a fellowship to attend the Cold Spring Harbor course on imaging, summer 2001.

Margaret Davis, Ph.D. (2002-present) Promoted to Staff Scientist, 2003.

Gabor Oroszi, M.D., Ph.D. (2002-2003) Currently Visiting Fellow in LNG, NIAAA/DICBR.

Xiang-Qun Hu, Ph.D. (2004-2005) Currently Research Assistant Professor, Loma Linda University, Loma Linda, CA.

Pingjun Zhu, M.D. (2003-2005) Currently a senior research associate at Baylor University, Houston, TX.

Yumiko Honse, Ph.D. (2003-September 2006) Currently a Pharmacy intern.

Anton Sheinin, Ph.D. (August 2006-August 2007) Currently postdoctoral fellow at Tel Aviv University, Israel.

Henry Yin, Ph.D. (December 2004-July 2008) Currently tenured Associate Professor of Psychology, Duke University.

Honors and Awards: Recipient of an R22 transition award, 2007.

Louise Adermark, Ph.D. (August 2005-December 2007) Currently Research Associate Professor equivalent, University of Goteborg, Sweden.

Honors and Awards: Recipient of a postdoctoral fellowship and multiple research support fellowships from the Swedish government and foundations in Sweden.

Wei Xiong, Ph.D. (2006-2013) Currently Professor, School of Life Sciences, University of Science and Technology of China.

Giuseppe Talani, Ph.D. (March 2007-March 2009) Currently Research Assistant Professor equivalent, University of Cagliari, Sardinia, Italy.

Sang Beom Jun, Ph.D. (January 2008-February 2011) Currently tenure-track Assistant Professor of Biomedical Engineering, Ewha University, Seoul, Republic of Korea.

Xin Jin, Ph.D. (Autumn 2008-February 2012) Currently tenure-track Assistant Professor of Molecular Neurobiology, the Salk Institute, San Diego, CA, USA.

Honors and Awards: Recipient of the annual NIAAA Gordis award, 2011. Recipient of the Gruber International Investigator award from the Society for Neuroscience, 2011.

Brian Mathur, Ph.D. (October 2008-July 2013) Currently tenure-track Assistant Professor of Pharmacology, University of Maryland School of Medicine, Baltimore, MD, USA.

Honors and Awards: Recipient of a K22 transitional grant from NIAAA, summer 2012. Recipient of a travel award to attend the 2011 Gordon Conference on Cannabinoids in the CNS.

Verginia Cuzon Carlson, Ph.D. (December 2008-October 2013) Currently tenure-track Assistant Professor, Division of Neuroscience, Oregon National Primate Research Center, Oregon Health and Science University, Portland, OR, USA.

Honors and Awards: Recipient of a K99 award from NIAAA, 2013.

Guohong Cui, Ph.D. (Autumn 2008-2014) Currently tenure-track acting Section Chief, National Institute of Environmental Health Sciences

Honors and Awards: Recipient of an NIH FARE Award, 2012. Recipient of the annual NIAAA Gordis award, 2013.

Christina Gremel (Autumn 2008-Autumn 2014) Currently tenure-track Assistant Professor, Psychology Department, University of California San Diego

Honors and Awards: Recipient of a poster presentation award at the 2010 meeting of the International Basal Ganglia Society. Recipient of a travel award to attend the 2011 Winter Conference on Brain Research. Recipient of a K99 award from NIAAA, 2012.

Brady Atwood (March 2011-January 2016) Currently tenure-track Assistant Professor of Neurobiology, Indiana University Medical School

Honors and Awards: Recipient of a K99 award from NIAAA, 2015. Recipient of travel awards to attend the 2012 and 2013 International Narcotics Research Conferences

Matthew Pava (December 2011-January 2017) Currently employed by Lockheed-Martin company.

Honors and Awards: Memorial fellowship to attend the 2015 Research Society on Alcoholism annual meeting.

David Kupferschmidt (April 2012-August 2017) Currently Staff Scientist, laboratory of Dr. Joshua Gordon, National Institute on Neurological Disorders and Stroke

Honors and Awards: Recipient of a Postdoctoral Fellowship from the National Sciences and Engineering Research Council of Canada, 2013. Society for Neuroscience travel award to attend the 2015 IBRO meeting. Travel award for the 2016 Winter Conference on Brain Research.

Jessica Chancey (November 2013-June 2017) Currently senior postdoctoral fellow, University of Texas at Austin

Honors and Awards: Society for Neuroscience travel award to attend the 2015 IBRO meeting. FARE award from NIH 2016.

Kari Johnson (October 2013-present) Currently Assistant Professor, tenure-track, Uniformed Services University

Honors and Awards: Named as a PRAT postdoctoral fellow in the 2014 class. Summer Intern mentorship 2016. Recipient of a K99 award from NIAAA, 2017.

Karina Possa Abrahao (November 2013-present) Currently Assistant Professor, Federal University of Sao Paulo, Brazil

Honors and Awards: Recipient of a CAPES fellowship from the Brazilian Government (2013-2014), as well as an IBRO postdoctoral fellowship (2014).

Shana Augustin (April 2014-present)

Honors and Awards: Society for Neuroscience travel award to attend the 2015 IBRO meeting. Recipient of a K99/R00 award from the Brain Initiative in 2019.

Armando Salinas (May 2014-present): Jointly mentored by Dr. Avrama Blackwell, George Mason University



Honors and Awards: Carl Storm Fellowship to attend the 2015 Catecholamine Gordon Research Conference.

Konrad Juczewski (August 2017-present)

Jeong Oen Lee (January 2018-present)

Andrew Kesner (January 2019-present)

Sebastiano Bariselli (September 2019-present)

#### Graduate students

Elizabeth Tyler (Vanderbilt University, M.D./Ph.D., 1997), Currently Assistant Professor of Pediatric Neurological Surgery, University of Pittsburgh Medical School.

Qing Zhou (Vanderbilt University, Ph.D., 1997), Currently working in Biomedical Informatics.

Honors and Awards: Received a postdoctoral fellowship from NIAAA, 1999.

Sukwoo Choi (Vanderbilt University, Ph.D., 1997), Completed a postdoctoral fellowship in the laboratory of Dr. Richard W. Tsien, Department of Cellular and Molecular Physiology, Stanford University Medical School. Currently tenured Professor at Seoul National University, Republic of Korea.

Honors and Awards: Recipient of a Stanford University postdoctoral fellowship, 1998-1999. Awarded tenure 2013.

John Partridge (Vanderbilt University, Ph.D., 2000), Currently a Research Assistant Professor in the laboratory of Dr. Stefano Vicini, Georgetown University Medical School.

Honors and Awards: Received the Best Poster Award at the 1998 meeting of the Southeastern Pharmacological Society.

Ka-Choi "Jeffrey" Tang (Vanderbilt University, Ph.D., 2000), Currently Director of Marketing for Axon Instruments branch of Molecular Devices.

Honors and Awards: Received the Department of Molecular Physiology and Biophysics Student Poster Award, May 2000.

Gregory L. Gerdeman (Vanderbilt University, Ph.D., 2001) Currently Chief Scientific Officer, 3 Boys Farms, Ruskin, Florida.

Honors and Awards: Recipient of a predoctoral fellowship from NIDA 1998-2000. Received the Student Presentation Award at the International Cannabinoid Research Society meetings in both 2000 and 2001.

Jennifer Ronesi (Vanderbilt University, Ph.D., 2005) Currently working as a freelance scientific writer.

Russell Morton (June 2007- June 2011) Currently director of an imaging and equipment core at the University of New Mexico.

Konrad Juczewski (April 2014-August 2017) Visiting as part of a Karolinska Institute-NIH graduate partnership program. Currently a postdoctoral fellow in the laboratory.

Giacomo Sitzia (January 2020-Present) Visit as part of a Karolinska Institute-NIH individual partnership.

#### Academic Positions and Responsibilities Related to Education

Director of Graduate Studies, Molecular Physiology and Biophysics Department at Vanderbilt Medical School, June 1995-July 1998.

Director of Graduate Studies, Neuroscience Ph.D. Program at Vanderbilt Medical School, July 1998-January 2002.

Participant in organizing Neuroscience Graduate Curriculum, Vanderbilt University, beginning August 1997.

Member of the NIH Mentoring Committee, 2008-2011.

Training Director, Division of Intramural Clinical and Biological Research, NIAAA, 2014-Present.

Member of the NIH Equity Committee, 2018-Present.

#### **Professional Service**

Member of site visit team for NIAAA, University of North Carolina, November, 1992.

Ad Hoc reviewer for Veterans Administration Alcohol Research Merit Reviews 1991,1993,1994, 1995, 1997, 1999.

Ad Hoc reviewer for NIAAA/ADAMHA ALCB-2 study section, October 1993, February 1994.

Ad Hoc reviewer for NIH review groups including: MDCN-3, Fall 2001; MDCN-4, Spring 2003; and SYN, Winter 2006.

Member of Research Society on Alcoholism Program Committee, 1993, 1997, 2000, 2003, 2005, 2006.

Member of ALCB-2 study section beginning in 1995. Changed name to ALTX-3 in 1996. Service completed in June 1998.

Member of NTRC study section, 2013-present.

Ad Hoc reviewer for special NIH review panels 1997, 1998 and 2000, 2004, 2007, 2008, 2009, 2012.

Participant in NIAAA Neuroscience and Behavior portfolio review, May 1998.

Review of NIAAA Center Grant application, April 2000.

Member, Scientific Advisory Board, Dystonia Medical Research Foundation, 2005.

Member and Chair, NIAAA DICBR Promotion and Tenure Committee, 2002-2010.

Chair, Fishers Lane Animal Care User's Committee, 2005 - 2014.

Chair, NIAAA DICBR Animal Care and Use Committee, 2009 - 2014.

Member of NIH Central Tenure Committee, September 2010 - September 2014.

## **Research Publications**

Routtenberg, A., **Lovinger, D.** and Steward, O. (1985), Selective increase in the phosphorylation of a 47kD protein (F1) directly related to long-term potentiation, Behav. Neur. Biol., 43: 3-11.

**Lovinger, D.**, Akers, R., Nelson, R., Barnes, C., McNaughton, B. and Routtenberg, A. (1985), A selective increase in hippocampal protein F1 phosphorylation directly related to three day growth of long-term synaptic enhancement. Brain Res., 343: 137-148.

Akers, R., **Lovinger, D.**, Colley, P., Linden, D. and Routtenberg, A. (1986), Translocation of protein kinase C activity may mediate hippocampal long-term potentiation, Science, 231: 587-589.

Routtenberg, A., Colley, P., Linden, D., **Lovinger, D.**, Murakami, K. and Sheu, F-S. (1986), Phorbol ester promotes growth of synaptic plasticity, Brain Res., 378: 374-378.

**Lovinger, D.**, Colley, P.A., Akers, R.F., Nelson, R.B. and Routtenberg, A. (1987), Direct relation of long-term synaptic potentiation to phosphorylation of membrane protein F1: A substrate for membrane protein kinase C, Brain Res., 399: 205-211.

**Lovinger, D.**, Wong, K.L., Murakami, K. and Routtenberg, A. (1987) Protein kinase C inhibitors eliminate hippocampal long-term potentiation, Brain Res., 436: 177-183.

- Lovinger, D.** and Routtenberg, A. (1988), Synapse-specific protein kinase C activation enhances maintenance of long-term potentiation in rat hippocampus, J. Physiol., 400: 321-334.
- Barnes, C.A., Mizumori, S.J.Y., **Lovinger, D.M.**, Sheu, F.-S., Murakami, K., Chan, S.Y. Linden, D.J., Nelson, R.B. and Routtenberg, A. (1988), Selective decline in protein F1 phosphorylation in hippocampus of senescent rats, Neurobiol. of Aging, 9: 393-398.
- Lovinger, D.M.** and Weight, F.F. (1988), Glutamate induces a depolarization of adult rat dorsal root ganglion neurons that is mediated predominantly by NMDA receptors, Neurosci. Lett., 94: 314-320.
- Lovinger, D.M.**, White, G. and Weight, F.F. (1989), Ethanol inhibits NMDA-activated ion current in hippocampal neurons, Science, 243: 1721-1724.
- Lovinger, D.M.** and White, G. (1989), Postnatal development of burst firing behavior and the low-threshold transient calcium current examined using freshly isolated neurons from rat dorsal root ganglia, Neurosci. Lett., 102: 50-57.
- White, G., **Lovinger, D.M.** and Weight, F.F. (1989), A transient low-threshold  $\text{Ca}^{2+}$  current triggers burst firing through an afterdepolarization in an adult mammalian neuron, Proc. Nat'l Acad. Sci. USA, 86: 6802-6806.
- White, G., **Lovinger, D.M.** and Weight, F.F. (1990) Ethanol inhibits NMDA-activated current but does not affect GABA-activated current in an isolated adult mammalian neuron, Brain Res., 507: 332-336.
- Lovinger, D.M.**, White, G. and Weight, F.F. (1990) NMDA receptor-mediated synaptic excitation selectively inhibited by ethanol in hippocampal slice from adult rat, J. Neurosci., 10: 1372-1379.
- Lovinger, D.M.**, White, G. and Weight, F.F. (1990) Ethanol inhibits NMDA receptor-mediated excitation in neurons from mammalian CNS, Annals of Medicine, 22 (4): 247-252.
- Harrison, N.L., **Lovinger, D.M.**, Lambert, N.A., Teyler, T.J., Prager, R., Ong, J. and Kerr, D.I.B. (1990) Antagonism at presynaptic GABA<sub>B</sub> receptors in the rat hippocampus by 2-hydroxy-saclofen, Neurosci. Lett., 119: 272-276.
- White, G., **Lovinger, D.M.**, Peoples, R.W. and Weight, F.F. (1990) Inhibition of N-methyl-D-aspartate activated ion current by desmethylinipramine, Brain Res., 537: 337-339..

- Lovinger, D.M.** (1991) Ethanol potentiates 5-HT<sub>3</sub> receptor-mediated ion current in NCB-20 neuroblastoma cells, Neurosci Lett., 122: 54-56.
- Lovinger, D.M.** (1991) Trans-1-amino-cyclopentane-1,3-dicarboxylic acid (t-ACPD) decreases synaptic excitation in rat striatal slices through a presynaptic action, Neurosci. Lett., 129: 17-21.
- Lovinger, D.M.** and White, G. (1991) Ethanol potentiation of 5-HT<sub>3</sub> receptor-mediated ion current in neuroblastoma cells and adult mammalian neurons, Mol. Pharm., 40(2): 263-270.
- Lovinger, D.M.** (1991) Inhibition of 5-HT<sub>3</sub> receptor-mediated ion current by divalent metal cations in NCB-20 neuroblastoma cells, J. Neurophys., 66(4): 1329-1337.
- Lovinger, D.M.**, Harrison, N.L. and Lambert, N.A. (1992) The actions of 3-aminopropanephosphinic acid at GABA<sub>B</sub> receptors in rat hippocampus, Eur. J. Pharmacol., 211: 337-341.
- Swartz, K.J, Merritt, A., Bean, B.P. and **Lovinger, D.M.** (1993) Protein kinase C modulates glutamate receptor inhibition of Ca channels and synaptic transmission, Nature, 361: 165-168.
- Lovinger, D.M.**, Zimmerman, S.A, Levitin, M., Jones, M.L. and Harrison, N.L. (1993) Trichloroethanol potentiates synaptic transmission mediated by GABAA receptors in hippocampal neurons, J. Pharmacol. Exper. Therap., 264: 1097-1103.
- Lovinger, D.M.**, Tyler, E., Fidler, S. and Merritt, A. (1993) Properties of a presynaptic metabotropic glutamate receptor in rat neostriatal slices, J. Neurophys., 69: 1236-1244.
- Harrison, N.L., Radke, H.K., Tamkun, M.M. and **Lovinger, D.M.** (1993) Modulation of gating of cloned rat and human K<sup>+</sup> channels by micromolar Zn<sup>2+</sup>, Mol. Pharmacol., 43: 482-486.
- Lovinger, D.M.** and Zhou, Q. (1993) Trichloroethanol potentiation of 5-HT<sub>3</sub> receptor-mediated ion current in nodose ganglion neurons from adult rat, J. Pharmacol. Exper. Therap., 264: 1097-1103.
- Lovinger, D.M.** (1993) High ethanol sensitivity of recombinant AMPA-type glutamate receptors expressed in mammalian cells, Neurosci. Lett., 159: 83-87.
- Lovinger, D.M.**, Tyler, E. and Merritt, A. (1993) Short and long term synaptic depression in rat neostriatum, J. Neurophys., 70 (5): 1937-1949.

- Deal, K.K., **Lovinger, D.M.** and Tamkun, M.M. (1994) The brain Kv1.1 potassium channel: In vitro and in vivo studies on subunit assembly and posttranslational processing, J. Neurosci., 14 (3): 1666-1676.
- Lovinger, D.M.**, Merritt, A. and Reyes, D. (1994) Involvement of N- and non-N-type Calcium Channels in Synaptic Transmission at Corticostriatal Synapses, Neurosci., 62(1): 31-40.
- Lovinger, D.M.** and Zhou, Q. (1994) Alcohols potentiate ion current mediated by recombinant 5-HT<sub>3</sub> receptors expressed in a mammalian cell line, Neuropharmacol., 33: 1567-1572.
- Lovinger, D.M.** and McCool, B.A. (1995) Activation of presynaptic metabotropic glutamate receptors at corticostriatal synapses by mGluR<sub>2,3</sub> specific agonists. J. Neurophys., 73(3): 1076-1083.
- Ikeda, S.R., **Lovinger, D.M.**, McCool, B.A. and Lewis, D.A. (1995) Heterologous expression of metabotropic glutamate receptors in adult rat sympathetic neurons: Subtype specific coupling to ion channels. Neuron, 14: 1029-1038.
- Lovinger, D.M.** (1995) Developmental decrease in ethanol sensitivity of NMDA receptors on cortical neurons: Relation to the actions of ifenprodil. J. Pharmacol. Exper. Therap., 274(1): 164-172.
- McCool, B.A. and **Lovinger, D.M.** (1995) Ifenprodil inhibition of the 5-hydroxytryptamine<sub>3</sub> receptor. Neuropharm., 34(6): 621-629.
- Tyler, E.C. and **Lovinger, D.M.** (1995) Metabotropic glutamate receptor modulation of synaptic transmission at corticostriatal co-cultures: Role of calcium influx. Neuropharm., Special Issue on Metabotropic Glutamate Receptors, 34(8): 939-952.
- Lovinger, D.M.** and Choi, S. (1995) Activation of adenosine A<sub>1</sub> receptors is necessary for initiation of short-term synaptic depression in striatum. Neurosci. Lett., 199: 9-12.
- Choi, S. and **Lovinger, D.M.** (1996) Metabotropic glutamate receptor modulation of voltage-gated Ca<sup>2+</sup> channels involves multiple receptor subtypes in cortical neurons. J. Neurosci., 16(1): 36-45.
- Zhou, Q. and **Lovinger, D.M.** (1996) Pharmacologic characteristics of potentiation of 5-HT<sub>3</sub> receptors by alcohols and diethyl ether in NCB-20 neuroblastoma cells. J. Pharmacol. Exper. Therap., 278: 732-740.
- Lakhlani, P.P., **Lovinger, D.M.** and Limbird, L.E. (1996) Genetic evidence for involvement of multiple effector systems in alpha<sub>2A</sub> adrenergic receptor inhibition of stimulus-secretion coupling. Mol. Pharm., 50: 96-103.

- McCool, B.A., Pin, J-P., Brust, P.F., Harpold, M.M. and **Lovinger, D.M.** (1996) Heterologous expression of rat group II metabotropic glutamate receptors (mGluR2&3) in HEK 293 cells: Functional coupling to a stably expressed  $\Omega$ -conotoxin GVIA-sensitive calcium channel. Mol. Pharm., 50: 912-922.
- Choi, S. and **Lovinger, D.M.** (1997) Decreased probability of neurotransmitter release underlies striatal LTD and postnatal development of corticostriatal synapses. Proc. Natl. Acad. Sci., 94: 2665-2670.
- Strack, S., Choi, S., **Lovinger, D.M.** and Colbran, R.J. (1997) Translocation of autophosphorylated calcium/calmodulin-dependent protein kinase II to the postsynaptic density. J. Biol. Chem., 272(21): 13467-13470.
- Lakhlani, P.P., McCool, B.A., **Lovinger, D.M.** and Limbird, L.E. (1997) Loss of electrophysiological responses to  $\alpha$ 2-adrenoreceptor agonists in D79N  $\alpha$ 2a-adrenoreceptor mutant mice. Proc. Natl. Acad. Sci., 94: 9950-9955.
- Choi, S. and **Lovinger, D.M.** (1997) Decreased frequency but not amplitude of quantal synaptic responses associated with expression of corticostriatal long-term depression. J. Neurosci., 17(21): 8613-8620.
- Peoples, R.W., White, G., **Lovinger, D.M.** and Weight, F.F. (1997) Ethanol inhibition of N-methyl-D-aspartate-activated current in mouse hippocampal neurones: whole-cell patch-clamp analysis. Br. J. Pharmacol. 122: 1035-1042.
- Smothers, C.T., Mrotek, J. and **Lovinger, D.M.** (1997) Enhancement of NMDA receptor function following chronic ethanol exposure in cultured hippocampal neurons. J. Pharmacol Exper. Therap., 283: 1214-1222.
- McCool, B.A., Harpold, M.M., Stauderman, K.A. and **Lovinger, D.M.** (1997) Relative contributions of G protein, channel and receptor to modulation of voltage-gated calcium channels. Neurosci. Lett., 239: 89-92.
- McCool, B.A., Brust, P.F., Harpold, M.M. and **Lovinger, D.M.** (1998) Group I metabotropic glutamate receptors modulate voltage-gated calcium channels via multiple, convergent signaling pathways. J. Neurophysiol., 79: 379-391.
- Zhou, Q., Verdoorn, T.A. and **Lovinger, D.M.** (1998) Alcohols potentiate the function of 5-HT3 receptor-channels on NCB-20 neuroblastoma cells by favouring and stabilizing the open channel state. J. Physiol. (London), 507.2: 335-352.

- Popp, R.L., Lickteig, R., Browning, M.D. and **Lovinger, D.M.** (1998) Ethanol sensitivity and subunit composition of NMDA receptors in cultured striatal neurons. Neuropharm., 37: 45-56.
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- Blackwell, K.T., Salinas, A.G., Tewatia, P., English, B., Hellgren Kotaleski, J., **Lovinger, D.M.** (2018) Molecular mechanisms underlying striatal synaptic plasticity: relevance to chronic alcohol consumption and seeking. Eur J Neurosci., 49(6):768-783.
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### **Book Chapters, Review Articles, Commentaries and Meeting Reports**

**Lovinger, D.** and Routtenberg, A. (1987) Protein F1 and protein kinase C may regulate the persistence, not the initiation, of synaptic potentiation in the hippocampus, in: Y.H. Ehrlich, W. Berry and R. Lennox (Eds.), *Molecular Mechanisms of Neuronal Responsiveness*, Adv. Exper. Biol. Med. vol. 221, Plenum Press, New York, 313-330.

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Participated in writing *Alcohol and Health*, the Eighth Special Report to Congress from NIAAA, 1992.

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**Lovinger, D.M.** and Roberto, M. (2012) Synaptic Effects Induced by Alcohol. In: Behavioural Neurobiology of Alcohol Addiction, Current Topics in Behavioral Neurosciences, Sommer, W.H. and Spanagel, R. (Eds.), Springer, pp. 31-87.

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**Lovinger, D.M.** and Mathur, B.N. (2012) Endocannabinoids in striatal plasticity. Parkinsonism Relat Disord. 18 Suppl 1:S132-4.

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selective cannabinoid circuit control in epilepsy. Nature Reviews Neuroscience, 16(5): 264-277.

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Johnson, K.A. and **Lovinger, D.M.** (2015) Metabotropic glutamate receptor 2 positive allosteric modulators: Closing the gate on drug abuse? Biological Psychiatry, 78(7):436-438.

**Lovinger, D.M.**, and Morgan, D. (2016) Aryeh Routtenberg (December 1, 1939-February 27, 2016). Neurobiology of Learning and Memory (In Memoriam), e-publication available online.

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Johnson, K.A., and **Lovinger, D.M.** (2016) Presynaptic G protein-coupled receptors: Gatekeepers of addiction. Frontiers in Cellular Neuroscience, 10:264.

Gremel, C.M., and **Lovinger, D.M.** (2017) Associative and Sensorimotor Cortico-Basal Ganglia Circuit Roles in Effects of Abused Drugs. Genes Brain Behav., 16(1):71-85.

**Lovinger, D.M.**, and Alvarez, V.A. (2017) Alcohol and basal ganglia circuitry: Animal models. Neuropharmacology, 122:46-55.

**Lovinger, D.M.** (2017) An indirect route to repetitive actions. J. Clinical Investigation, 127(5):1618-1621.

Covey, D.P., Mateo, Y., Sulzer, D., Cheer, J. **Lovinger, D.M.** (2017) Endocannabinoid modulation of dopamine neurotransmission. Neuropharmacology 124:52-61.

Abraham, K.P., Salinas, and **Lovinger, D.M.** (2017) Alcohol and the brain: Neuronal molecular targets, synapses and circuits. Neuron, 96(6):1223-1238.

**Lovinger, D.M.** (2017) Presynaptic ethanol actions: Potential roles in ethanol seeking. Handbook of Experimental Pharmacology, 248:29-54.

Augustin, S.M., and **Lovinger, D.M.** (2018) Functional relevance of endocannabinoid-dependent synaptic plasticity in the CNS. ACS Chemical Neuroscience, 9(9):2146-2161.

**Lovinger, D.M.** and Abrahao, K.P. (2018) Synaptic plasticity mechanisms common to learning and alcohol use disorder. Learning and Memory, 25(9):425-434.

**Lovinger, D.M.** (2018) Neurobiological Basis of Drug Reward and Reinforcement. In: Addiction Medicine, Science and Practice, Johnson, B.A. (Ed.), Springer, in press.

### **Editorial Experience**

Ad hoc editorial review of manuscripts for journals including Addiction Biology, Alcohol, Alcoholism: Clinical and Experimental Research, American Journal of Physiology, Biological Psychiatry, Brain Research, British Journal of Pharmacology, Cerebral Cortex, Journal of Comparative Neurology, eLife, eNeuro, European Journal of Pharmacology, European Journal of Neuroscience, Experimental Brain Research, FASEB Journal, Frontiers in Neuroscience, Frontiers in Pharmacology, Hippocampus, Journal of Biological Chemistry, Journal of Neurochemistry, Journal of Neurophysiology, Journal of Neuroscience, Journal of Pharmacology and Experimental Therapeutics, Journal of Physiology, Learning and Memory, Molecular Pharmacology, Molecular Psychiatry, Nature, Nature Communications, Nature Neuroscience, Neuron, Neuropharmacology, Neuropsychopharmacology, Neuroscience, Neuroscience Letters, Pflugers Archives of Physiology, Psychopharmacology, Synapse, Science, and Trends in Neurosciences.

Co-editor with Dr. Thomas Dunwiddie of the book Presynaptic Receptors in the Mammalian Brain, 1993, Birkhäuser, Boston.

Member of Editorial Advisory Board for Alcohol Research & Health, 2000-2002.

Co-editor with Dr. Yuan Liu of the book Methods in Alcohol-Related Neuroscience Research, CRC Press, 2002.

Member, Editorial Board of the journal Pharmacology and Therapeutics, summer 2003 - 2007.

Associate Editor of the journal Alcohol, January 2005 - 2012.

Member, Editorial Board, Frontiers in Neuroscience, October 2007 - present.

Reviewing Editor, Neuropharmacology, June 2008 - April 2010, Section/Senior Editor April 2010 - January 2013.

Review Editor, Journal of Physiology (London), January 2010 - December 2013.

Editorial Board member, Neuropsychopharmacology, January 2011 - present.

Editorial Board member, Basal Ganglia, January 2011 - present.

Editor-in-Chief, Alcohol, 2013 - present.

Associate Editor, Journal of Neuroscience, appointed 2017.

## **Presentations**

### National/International Meetings

Participated in specialized panel entitled "Receptor-operated ion channels: key factors in the CNS response to ethanol?", at the 1989 Winter Conference on Brain Research.

Participated in a symposium entitled "Ethanol and the NMDA receptor", at the 1989 meeting of the Research Society on Alcoholism.

Main speaker in a symposium entitled "Long-term potentiation and plasticity" at the 1989 International Congress of Physiological Sciences.

Chaired a workshop entitled "Cellular and molecular mechanisms contributing to long-term synaptic plasticity in hippocampus" at the 1990 Winter Conference on Brain Research.

Participated in a scientific symposium on "Alcohol and Brain" sponsored by ALKO, the Finnish alcohol monopoly, during the Medicine 90 meeting of the Finnish Medical Association in January 1990.

Presented a talk on "Mechanisms of Alcohol Intoxication" at the NIH Clinical Grand Rounds in March 1990.

Participated in a symposium entitled "Changing Trends in Maternal and Fetal Health" at Howard University in April 1990.

Selected to deliver a brief oral presentation at the RSA/ISBRA meeting June 1990.

Participated as a panel discussant in a symposium entitled "Pharmacological Aspects of Ion Channel Function" November 1990.

Co-organized and participated in a symposium on 5-HT<sub>3</sub> receptors and alcohol at the Research Society on Alcoholism meeting June 1991.

Speaker in a panel entitled "Receptive systems for ethanol: The changing view of alcohol's actions" at the annual meeting of the American College of Neuropsychopharmacology in December 1991.

Co-organized and participated in a Workshop entitled "Neurotransmitter receptors as molecular targets for general anesthetics" at the Winter Conference on Brain Research in January 1992.

Speaker in the Marcus Wallenberg Symposium on Alcohol, Cell Membranes and Signal Transduction in Brain, Lund, Sweden, July 1992.

Speaker in a symposium on "Ligand-gated ion channels" at the annual meeting of the American Society of Pharmacology and Experimental Therapeutics, August, 1992.

Speaker in a Workshop on Ligand-gated ion channels and the actions of alcohol at the Winter Conference on Brain Research in January 1993.

Speaker in a Symposium on alcohol actions on ligand-gated ion channels at the Research Society on Alcoholism Annual meeting, June 1993.

Speaker in the electrophysiology section of the 1st International Symposium on Metabotropic Glutamate Receptors, Taormina, Sicily, September 1993.

Participated in two workshops at the 1994 Winter Conference on Brain Research, January, 1994. Co-organizer of one of the workshops.

Participated in a symposium on Alcohol and Neurotransmitter receptors at the 1994 meeting of the Research Society on Alcoholism.

Participated in a workshop on Alcohol and Neuronal Development: NMDA Receptors, at the 1995 meeting of the Research Society on Alcoholism.

Participated as an overview speaker in the "Campral Symposium" satellite to the 1995 ESBRA meeting in Stuttgart, Germany September 1995.

Participated as a speaker in the 2nd International Symposium on Metabotropic Glutamate Receptors, Taormina, Sicily, September, 1996.

Participated as a speaker in the Fifth International Conference on Molecular and Cellular Mechanisms of Anesthesia, Calgary, Canada, June, 1997.

Participated as a speaker in the Basal Ganglia Workshop at Emory University, Atlanta, September, 1997.

Participant in a Society for Neuroscience satellite meeting entitled "The Drunken Synapse", New Orleans, October, 1997.

Participated as a speaker in a symposium entitled "Alcohol and Neuronal Degeneration" at the 1998 meeting of the American Society for Neurochemistry, Denver, March 1998.

Co-organized and participated as a speaker in a symposium entitled "5-HT<sub>3</sub> Receptors and Alcohol: From Molecules to Monkeys" at the 1998 meeting of the Research Society on Alcoholism, Hilton Head, SC, June 1998.

Participated as a speaker in a symposium on serotonin receptors and alcoholism at the ISBRA meeting, Copenhagen, Denmark, June 1998.

Participated as a speaker in a session on ligand-gated ion channels at the Southeastern Pharmacology Society meeting, Nashville, TN, September 1998.

Participated as a speaker in a satellite symposium on the use of knockout mice in alcohol research, Society for Neuroscience annual meeting, Los Angeles, CA, November 1998.

Participated as a speaker in a symposium on metabotropic glutamate receptors in the basal ganglia, Winter Conference on Brain Research, Snowmass, CO, January 1999.

Participated as a speaker in the 3rd International Symposium on Metabotropic Glutamate Receptors, Taormina, Sicily, September, 1999.

Participated as a discussant in a satellite symposium on the role of the Cerebellum in alcohol actions, Society for Neuroscience annual meeting, Miami, FL, October 1999.

Participated as a speaker in a State of the Art in Addiction Medicine Research Symposium for the American College of Addiction Medicine, Washington, DC, November 1999.

Participated as a speaker at the Winter Conference on Neurobiology of Learning and Memory in Olympia Park, Utah, January 2000.

Participated as a speaker in two symposia at the ISBRA 2000 meeting in Yokohama, Japan, July 2000.

Participated in the Hereditary Disease Foundation Symposium focusing on Huntington's Disease. Boston, MA, August 2000.

Participated as a speaker at the 3rd Nordic-Baltic Symposium on Molecular Pharmacology of 7<sup>TM</sup> Receptors. Turku, Finland, August 2000.

Participated as a speaker at a symposium on Basal Ganglia Physiology in Mexico City, Mexico, December 2000.

Organizer and participant in a symposium entitled "Rodent Models and Alcohol Effects on the Brain", Research Society on Alcoholism, Montreal, Canada, June 2001.

Participated in a symposium on striatal NMDA receptors in the 2002 Winter Conference on Brain Research.

Speaker and co-organizer of Memorial symposium for Benedict Latteri, NIAAA, May 3, 2002.

Participated as a speaker at Dopamine 2002 conference in Portland, Oregon, July 2002.

Participated as a speaker at the 3rd International Symposium on Metabotropic Glutamate Receptors, Taormina, Sicily, September, 2002.

Participated as a speaker at New York Academy of Sciences Conference entitled "Glutamate and Disorders of Cognition and Motivation", April, 2003.

Participated as a speaker in symposium on alcohol and 5-HT<sub>3</sub> receptors, Research Society on Alcoholism, 2003 annual meeting, June 2003, Ft. Lauderdale Fl.

Participated as a speaker in symposium on Neural Actions of Drugs of Abuse at The 9<sup>th</sup> Southeast Asian-Western Pacific Regional Meeting of Pharmacologists, August 2003, Busan, ROK.

Participated in a workshop entitled "Electrophysiological Phenotype of HD: Impact of the NMDA Receptor", September 2003, Los Angeles, California.

Participated as a speaker in a State of the Art in Addiction Medicine Research Symposium for the American College of Addiction Medicine, October, 2003, Washington, DC.

Participated in a workshop on the pathophysiology of Dystonias, January 2004, Atlanta, Georgia.

Participated in a symposium on endocannabinoid roles in synaptic modulation and plasticity at the 2004 Winter Conference on Brain Research, January 2004, Copper Mountain, Colorado.

Participated as a speaker at NIH symposium on Synaptic Transmission: Molecular Mechanisms of Plasticity, February 2004, Bethesda, Maryland.

Participated as a speaker in a symposium on neurotransmitters, alcohol and drugs of abuse at the International Society on Addiction Medicine meeting, June 2004, Helsinki, Finland.

Participated as a speaker in a symposium on NMDA receptors and alcoholism at the 2004 meeting of the International Society for Biomedical Research on Alcoholism, October 2004, Mannheim, Germany.

Chaired a session of selected talks on the neural actions of alcohol at the annual meeting of the Research Society on Alcoholism, June 2005, Santa Barbara, California.

Participated as a speaker in a symposium on endocannabinoid-dependent synaptic plasticity at the 1<sup>st</sup> Gordon Research Conference on Cannabinoid Function in the CNS, July 2005, Bates College, Maine.

Participated as a speaker in the NIAAA-sponsored workshop Healthy People 2020, Shanghai, PRC, October 2005.

Co-organized and chaired sessions in "The 5-HT<sub>3</sub> Receptor: A model Cys-Loop Ligand-Gated Ion Channel", a satellite symposium for the 2005 Society for Neuroscience meeting, Washington, DC, November 2005.

Chaired a session in an NINDS workshop on Dystonias, Bethesda, MD, June 2006.

Organizer and chair of a symposium on Alcohol and Cannabinoid Interactions for the 2006 meeting of the International Society for Biomedical Research on Alcoholism, September 2006.

Oral presentation in a symposium on striatal synaptic plasticity at Dopamine: The First 50 Years, Gothenburg, Sweden, June 2007.

Organizer and chair of symposium entitled "The Role of Dorsal Striatum in Ethanol Actions, Habit Formation and Addiction" to be presented at the annual meeting of the Research Society on Alcoholism, July 2007.

Oral presentation at the Gordon Conference on Cannabinoid Function in the CNS, Les Diablerets, Switzerland, September 2007

Oral presentation in the 17<sup>th</sup> Neuropharmacology Conference, entitled "Cannabinoid Signaling in the Nervous System", San Diego, California, October 2007

Participated in a symposium on dopamine/endocannabinoid interactions at the 2008 Winter Conference on Brain Research, Snowbird, Utah, January 2008

Participated in a symposium on alcohol and ligand-gated ion channels, as well as a symposium on stress-alcohol interactions, Research Society on Alcoholism annual meeting, Washington, DC, June 2008

Participated in a conference entitled: "International Symposium on Drug Addiction: Mechanisms and Therapeutic Approaches, Kunming, China, October 2008

Participated in a symposium entitled: "How would we Perceive the World without Endocannabinoids?" at the 2009 Winter Conference on Brain Research, January 2009

Chaired a session at the NIH meeting entitled "Synapses: Postsynaptic Mechanisms of Plasticity", Warrenton, VA, March, 2009

Presented a Plenary Lecture at the 2009 meeting of the European Society for Biomedical Research on Alcoholism, Helsinki, Finland, June 2009

Participated in a symposium on presynaptic actions of ethanol, Research Society on Alcoholism annual meeting, San Diego, CA, June 2009

Gave an oral presentation and chaired a session at the 2009 Gordon Conference on Cannabinoid Function in the CNS, College of New England, August 2009

Lectured in a course for students and at the annual meeting of the neuroscience societies of Argentina, Cordoba, Argentina, September 2009

Chaired a symposium on the role of dorsal striatum in reward, reinforcement and addiction, Society for Neuroscience annual meeting, Chicago, IL, October 2009

Participated in a satellite symposium to the 2010 IBNS meeting, Cagliari, Sardinia, Italy, June 2010

Chaired a symposium entitled "Atypical Neuromodulators in the Basal Ganglia - Beyond ACh and Dopamine" at the 2010 meeting of the International Basal Ganglia Society, Long Branch, New Jersey, June 2010

Co-chaired a session entitled "Subregions of the striatum mediate distinct roles in alcohol-related behaviors: Analyses from neurons to brain imaging" at the annual meeting of the Research Society on Alcoholism, San Antonio, TX, June 2010

Participated in a symposium on ethanol effects on ligand-gated ion channels and the role of desensitization at the 2010 meeting of the International Society for Biomedical Research on Alcoholism, Paris, France, September 2010

Lectured in the Neuroscience summer course at the University of Concepcion, Chile, January 2011



Speaker in a symposium on Endocannabinoids at the Winter Eicosanoid Conference, Baltimore Maryland, March 2011

Chaired a symposium on Alcohol, Stress and the Dorsal Striatum at a meeting entitled Alcoholism and Stress: A Framework for Future Treatment Strategies, Volterra, Italy, May 2011

Served as Vice-Chair of the Gordon Conference on Cannabinoid Function in the CNS, May 2011, Les Diablerets, Switzerland. Elected as Co-Chair for the 2013 conference

Co-chaired and presented introduction to a seminar on dorsal striatum and alcohol effects on habitual behavior at the 2011 annual meeting of the Research Society on Alcoholism, June 2011, Atlanta, GA

Participated as an invited speaker in the XIX World Congress on Parkinson's Disease and Related Disorders, December 2011, Shanghai, China

Chair and participated in a symposium on adolescent alcohol exposure effects on brain function and behavior at the 2012 meeting of the International Society for Biomedical Research on Alcoholism, September 2012, Sapporo, Japan

Speaker at conference entitled "Plasticity in the Basal Ganglia: Dopamine and Beyond", November 2012, Beijing, China

Speaker at conference entitled "Dopamine 2013", May 2013, Alghero, Italy

Moderator for workshop entitled "Cell Specific Function Analysis", June 2013, Rockville, MD, USA

Participated in workshops entitled: "Alcohol Consumption, Seizure and Epilepsy: Molecular, Cellular and Genetic Mechanisms", and "Revealing Molecular Interactions Underlying Ethanol Modulation of Brain Proteins" annual meeting of the Research Society on Alcoholism, June 2013, Orlando, FL, USA

Co-Chair of the Gordon Conference on Cannabinoid Function in the CNS, August 2013, Waterville Valley Resort, NH, USA

Presented keynote address at the Neurosciences and Mental Health Symposium, September 2013, Sydney, Australia

Participated in a symposium entitled "Behavioral, Endocrine, and Neural Plasticity Changes Reflecting Stress Associated with Mouse and Monkey Models of Heavy Alcohol Drinking" at the annual meeting of the American College of Neuropsychopharmacology, December 2013, Hollywood, FL, USA

Discussion leader at the 2014 Gordon Research Conference on the Basal Ganglia, February 2014, Ventura, CA, USA

Co-Chair of the Gordon Conference on Alcohol and the Nervous System, February 2014, Galveston, TX, USA. Co-developed application for this new Gordon Conference, 2013

Speaker in a workshop on alcohol and habit formation, Research Society on Alcoholism annual meeting, June 2014 Bellevue, WA, USA

Speaker in a symposium on regional diversity of endocannabinoid signaling in action control at the 2014 FENS Forum, July 2014, Milan, Italy

Speaker in a symposium on mGluRs and drug addiction at the 8th International Meeting on Metabotropic Glutamate Receptors, September, 2014, Taormina, Italy

Speaker in a symposium on alcohol, nicotine and ion channels at the International Ion Channel Retreat, November 2014, Guangzhou, China

Lecturer in the Summer Course, Department of Pharmacology, University of Concepcion, January 2015, Concepcion, Chile

Speaker in a symposium entitled "Should I stay, should I go: role of basal ganglia in control of drug addiction and food intake" at the 9<sup>th</sup> World Congress of the International Brain Research Organization, July, 2015, Rio de Janeiro, Brazil. Also participated in a satellite symposium prior to the meeting, in Sao Paulo, Brazil

Delivered the keynote lecture at the 6<sup>th</sup> Institut du Fer a Moulin colloquium "The Basal Ganglia in Health and Disease", October 2015, Paris, France

Chaired and spoke in a symposium on Addiction Mechanisms: Cannabinoids, at the International Society on Addiction Medicine Congress, Dundee, Scotland, October 2015

Co-organized the 2015 meeting of the Carolina Cannabinoid Collaborative, Rockville, MD, Autumn 2016

Speaker in a session at the Gordon Conference on Alcohol and the Nervous System, February, 2016, Galveston, TX

Speaker in a session at the Gordon Research Conference on the Basal Ganglia, March, 2016, Ventura, CA

Speaker in a Minisymposium on cholinergic mechanisms in the striatum, Okinawa Institute of Science and Technology, April, 2016, Okinawa, Japan

Speaker at a New York Academy of Sciences conference entitled "6<sup>th</sup> Annual Aspen Brain Forum: The Addicted Brain and New Treatment Frontiers", May, 2016, New York, NY

Speaker in a symposium at the Monitoring Molecules In Vivo conference, May 2016, Gothenburg Sweden

Speaker in a symposium at the 2016 meeting of the International Behavioral Neuroscience Society, June, 2016, Budapest, Hungary

Chaired a session on chronic alcohol effects on brain circuitry in rodents and primates, and spoke in a symposium on regulation of ethanol seeking by corticostriatal circuits at the 2016 annual meeting of the Research Society on Alcoholism, New Orleans, LA, June, 2016

Keynote speaker, 2<sup>nd</sup> Annual Meeting of the Society for Neuroscience Hudson-Berkshire Chapter, Rensselaerville, NY, September, 2016

Speaker in a symposium on alcohol, stress and endocannabinoids, American College of Neuropsychopharmacology, Hollywood, FL, December, 2016

Moderator in a session on Molecular, Cellular and Synaptic Determinants of Huntington's Disease at a CHDI symposium, New York, NY, February, 2017

Organizer, Chair and Speaker in a symposium on Basal Ganglia roles in addiction at the International Basal Ganglia Society meeting, Merida, Mexico, March, 2017

Speaker in and chair of symposia at the annual meeting of the Research Society on Alcoholism, Denver, CO, June, 2017

Participated as a speaker in the 2017 Workshop on Time-Correlated Single Photon Counting, Bethesda, MD, October, 2017.

Participated as a session chair/discussion leader at the Gordon Research Conference on Alcohol and the Nervous System, Galveston, TX, March, 2018.

Participated as a keynote speaker at the 2018 meeting of the International Society for the Study of Fatty Acids and Lipids, Las Vegas, NV, May, 2018.

Participated as a keynote speaker at the 2018 retreat of the University of Maryland School of Medicine Neuroscience Program, Baltimore, MD, May, 2018.

Participated as a discussant at a joint Research Society on Alcoholism/College on Problems of Drug Dependence/International

Narcotics Research Conference satellite meeting on alcohol-nicotine interactions, San Diego, CA, June, 2018.

Chaired a symposium and participated as a discussant in another symposium in the 2018 annual meeting of the Research Society on Alcoholism, San Diego, CA, June, 2018.

Speaker in a panel on medical marijuana in a workshop organized by the Parkinson's Disease Foundation, Denver, CO, March, 2019.

Participated as a speaker in a seminar at the 2019 meeting of the International Basal Ganglia Society, Biarritz, France, April/May, 2019.

Participated as a speaker in the 2019 Gordon Research Conference on Cannabinoid Function in the Nervous System, Barcelona, Spain, July, 2019.

Participated as a discussion leader in the 2019 Gordon Research Conference on Catecholamines, Sunday River, Maine, August, 2019.

Participated as a speaker in the 2019 Workshop on Time-Correlated Single Photon Counting, Bethesda, MD, October, 2019.

Invited to speak in a session entitled "Emerging Drug Development for Cannabis" at the Drug Discovery conference, Boston, MA, November 2019.

Invited to speak in a Panel entitled "Cholinergic Modulation Shapes Striatal Microcircuitry: Roles in Reinforcement Learning and Reward-Seeking Behavior" at the 2020 Winter Conference on Brain Research, Big Sky, MN, January, 2020.

Invited to be a Discussion Leader at the Gordon Research Conference on Alcohol and the Nervous System, Galveston, TX, March, 2020.

#### Invited seminars

Spring-Summer 1991 - Duke University School of Medicine, University of Chicago School of Medicine

Fall 1991 - Ohio State University School of Medicine

Spring 1992 - Meharry Medical College

Spring 1993 - Bowman Gray School of Medicine

Fall 1993 - University of Cagliari (Sardinia, Italy), Tulane School of Medicine

Spring 1994 - Texas A&M University, University of Texas at Austin

Fall 1994 - Johns Hopkins School of Medicine, University of Illinois

Spring 1995 - Pfizer Pharmaceutical Corporation, University of California at San Francisco

Fall 1995 - Bowman Gray School of Medicine, University of Texas Medical School at San Antonio

Spring 1996 - University of Tennessee Medical School at Memphis

Fall 1996 - Medical College of Virginia

Spring 1997 - Scripps Research Institute

Fall 1997 - University of Massachusetts Medical School, Dept. of Psychiatry Substance Abuse Rounds VUMC

Spring 1998 - University of Kansas, Texas Tech University Medical School, University of New Mexico School of Medicine

Fall 1998 - University of Vermont, Colorado State University

Spring 1999 - Michigan State University

Summer 1999 - University of Kuopio Finland, Kansaan Terveystieteidenlaitos (Public Health Institute) of Finland, University of Turku Finland

Fall 1999- Vanderbilt University (Membrane Biology Group Conference)

Summer 2000 - Catholic University of Korea Medical School

Winter 2001 - Addiction Rounds, Department of Psychiatry, Vanderbilt University

Summer 2001 - National University of Singapore

Fall 2001 - Medical University of South Carolina, University of Tennessee Health Sciences Center

Winter 2002 - Southern Mississippi University.

Spring 2002 - Gallo Center at the University of California San Francisco, George Washington University School of Medicine.

Fall 2002 - Università degli Studi di Roma, Rome Italy, National Institute on Drug Abuse, Uniformed Services University of Health Sciences.

Winter 2003 - NIAAA Advisory Council, University of Alabama Birmingham School of Medicine.

Summer 2003 - Seoul National University, Seoul, ROK, Junjoo University, ROK.

Winter 2004 - Howard University School of Medicine

Fall 2004 - University of Texas at San Antonio Health Sciences Center

Winter-Spring 2005 - UT Southwestern School of Medicine, Indiana University School of Medicine, Scripps Research Institute

Fall 2005 - Peking University

Winter-Spring 2006 - University of Maryland School of Medicine, University of Wisconsin Madison

Summer 2006 - Oregon Health Sciences University

Fall 2006 - University of Arizona

Winter-Spring 2007 - Rochester University School of Medicine, University of Helsinki

Fall 2007 - INSERM (Bordeaux, France), Penn State Medical School.

Winter-Spring 2008 - University of Colorado Health Science Center, University of Connecticut Medical School, Texas Tech University Health Science Center (Alexander D. Kenny Memorial Lecture)

Fall 2008 - Catholic University of Korea

Winter-Spring 2009 - George Mason University, Texas A&M University

Fall 2009 - University of Buenos Aires, Howard University Medical School, Uniformed Services University of Health Sciences

Winter-Spring 2010 - Louisiana State University Medical School, Emory University Medical School, University of Texas, Champalimaud Institute for the Unknown (Lisbon, Portugal)

Fall 2010 - University of Chicago School of Medicine, Washington State University

Winter-Spring 2011 - University of Washington, SUNY Stony Brook, Rosalind Franklin Medical School, University of New Mexico

Fall 2011 - National Institute on Drug Abuse intramural program, University of North Carolina/Bowles Alcohol Center, Indiana University, Medical College of South Carolina

Winter 2012 - Vanderbilt University School of Medicine

Summer 2012 - Northwestern University School of Medicine

Fall 2012 - Seoul National University, Republic of Korea

Winter-Spring 2013 - National Institute on Drug Abuse Intramural Research Program. Tufts University, Uniformed Services University of Health Sciences, Georgetown University

Fall 2013 - Florey Institute University of Melbourne. University of Calgary School of Medicine

Winter-Spring 2014 - Vanderbilt University School of Medicine, University of Massachusetts School of Medicine, Albert Einstein College of Medicine, University of North Carolina School of Medicine

Fall 2014 - Gallo Research Institute/UCSF, University of North Carolina School of Medicine Bowles Award Lecture, University of Tennessee Medical School Memphis, Rutgers University Medical School, New Jersey College of Medicine and Dentistry, Fudan University (Shanghai China), Soochow University (Suzhou China), University of Science and Technology of China, Sun Yat-Sen School of Medicine (Guangzhou China), University of Texas San Antonio

Winter-Spring 2015 - Barrow Neurological Institute, Texas Tech University, University of Helsinki Viiki Technological Institute, Italian Institute of Technology

Fall 2015 - Dartmouth University

Winter-Spring 2016 - Texas A&M University, Vollum Research Institute, University of North Carolina, Hungarian Academy of Sciences KOKI institute

Winter-Spring 2017 - Columbia University, Stephen and Mary Kropp Lecture at Georgetown University, Yale University, University of Maryland School of Medicine

Summer 2017 - University of Minas Gerais Belo Horizonte Brazil, University of Auro Preto, Brazil.

Winter-Spring 2018 - Netherlands Institute for Neuroscience, Amsterdam, Netherlands; Johns Hopkins Medical School at Bayview campus.

Fall 2018 - National Institute of Environmental Health Science, Research Triangle, NC.

Winter-Spring 2019 - Wake Forest School of Medicine, Rutgers University School of Medicine, Indiana University School of Medicine, LSU School of Medicine.

Fall 2019 - University of Iowa School of Medicine, University of California Davis

Winter-Spring 2020 - Uniformed Services University of Health Science (Frontier Lecture)

## **Research Support**

### ONGOING

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Unpaid collaborator on U01 AA025932 (Dr. Jun Wang, Texas A&M University, PI), Supports collaborative research on striatal synaptic plasticity and alcohol use disorder