

CURRICULUM VITAE
Lance Richard McMahon, PhD

EDUCATION

<u>Year</u>	<u>Degree</u>	<u>Discipline</u>	<u>Institution/Location</u>
1997	PhD	Behavioral and Cellular Neuroscience	Texas A&M University, College Station, TX
1994	MS	Behavioral and Cellular Neuroscience	Texas A&M University, College Station, TX
1992	BA	Psychology	University of Pennsylvania, Philadelphia, PA <i>Penn psychology department is the oldest continuously functioning psychology department in North America; as an undergraduate major I was privileged to be taught by some of the world's premier psychology scholars including Drs. Martin Seligman, Robert Rescorla, Robert Seyfarth, Dorothy Cheney, Saul Sternberg, Paul Rozin, and Lila Gleitman</i>

TRAINING

Postdoctoral training in the laboratory of Kathryn Cunningham, PhD, Chauncey Leake Distinguished Professor of Pharmacology and Vice Chairman

<u>Years</u>	<u>Department</u>	<u>Institution/Location</u>
01/1998-05/2000	Pharmacology and Toxicology	University of Texas Medical Branch Galveston, TX

ACADEMIC APPOINTMENTS

<u>Years</u>	<u>Academic Rank</u>	<u>Department/Institution/Location</u>
08/2017-present	Professor and Chair Tenured	Department of Pharmacodynamics University of Florida
09/2012-08/2017	Associate Professor Tenured	Department of Pharmacology University of Texas Health San Antonio
01/2006-08/2012	Assistant Professor Tenure track	Department of Pharmacology University of Texas Health San Antonio
09/2002-12/2005	Assistant Professor	Department of Pharmacology

	Research track	University of Texas Health San Antonio
06/2000 - 08/2002	Instructor Research track	Department of Pharmacology University of Texas Health San Antonio
08/1997 - 05/2000	Adjunct Professor	Department of Psychology University of Houston of Clear Lake Clear Lake, TX

CURRENT LEADERSHIP POSITIONS UNIVERSITY OF FLORIDA

Internal Scientific Advisory Committee, Center for Addiction Research and Education

CARE is the oldest continuing University-wide Center at UF. Membership includes faculty from six colleges and 14 departments across both the main and health science center campuses. Investigators have active research programs in molecular neuroscience and drug discovery through epidemiology and clinical trials.

Executive Committee, McKnight Brain Institute

The MBI is a nexus for neuroscience at the University of Florida. Across the UF campus, more than 300 faculty members work in multidisciplinary teams to better understand how the brain works and how various diseases alter brain function. Ultimately these researchers and physician-scientists hope to help broaden the understanding of many neurological and psychiatric disorders and change them from untreatable to treatable, incurable to curable and inevitable to preventable.

Director, Basic Pharmaceutical Sciences Core, Center for Research into Substance Use and Pain

UF-CRISP promotes translational research at the intersection of pain and substance use, and provides discoveries that will culminate in new strategies and therapies for treating substance use and pain. The goal is to create innovative directions of research focused around the complex interactions of chronic pain and substance use, employing a bi-directional basic and clinical translational approach: from community-to-bench and then back-to-community.

RESEARCH

Research Grants

Active

Project #: UG3DA048353

Funding Agency: NIH/National Institute on Drug Abuse

Opioid use disorders: UF Pharmacy medications discovery and development

12/15/2018 – 11/30/2020

Role: Principal Investigator (MPI: Dr. Chris McCurdy)

Total Costs: \$3,574,538

Grant detail: The major goals of this project are to determine the in vitro and in vivo pharmacological mechanisms of alkaloids contained in the plant Mitragyna speciosa, to include binding, efficacy, stability,

ADME, and behavioral/physiological effects (drug discrimination, self-administration, respiratory depression, and dependence).

Project #: DA047855-A1

Funding Agency: NIH/National Institute on Drug Abuse

Kratom alkaloids: *in vitro* and *in vivo* pharmacological mechanisms

04/01/2019 – 03/31/2024

Role: Principal Investigator (MPI: Dr. Chris McCurdy)

Total Costs: \$3,626,856

*Grant detail: The major goals of this project are to determine the *in vitro* and *in vivo* pharmacological interactions among kratom alkaloids to include ADME and behavioral/physiological effects (drug discrimination, self-administration).*

Project #: UH3DA048353

Funding Agency: NIH/National Institute on Drug Abuse

Opioid use disorders: UF Pharmacy medications discovery and development

12/15/2020 – 11/30/2023

Role: Principal Investigator (MPI: Dr. Chris McCurdy)

Total Costs: \$4,754,180

*Grant detail: The major goals of this project are to initiate a drug discovery and development effort aimed at kratom alkaloid derivatives as new medications for pain and opioid dependence pharmacotherapy. New chemical entities will be derived from a mitragynine scaffold, and *in vitro* and *in vivo* pharmacological mechanisms will be explored, to include binding, efficacy, stability, ADME, and behavioral/physiological effects (drug discrimination, self-administration, respiratory depression, and dependence).*

Completed

Project #: R01 DA025267

Funding Agency: NIH/National Institute on Drug Abuse

Title: Nicotine dependence: neuropharmacology in monkeys

Period: 04/2014 - 06/2019

Role: Principal Investigator

Total Costs: \$1,801,138

Project #: R01 DA025267 Supplement

Funding Agency: NIH/National Institute on Drug Abuse

Title: Research supplements to promote diversity in health-related research, Fernando Moura

Period: 04/2014 - 06/2017

Role: Principal Investigator

Costs: \$42,000/year

Project #: R01 DA019222

Funding Agency: NIH/National Institute on Drug Abuse

Title: Treatment of cannabinoid withdrawal in Rhesus monkeys

Period: 07/2009 - 06/2016

Role: Principal Investigator

Total Costs: \$1,794,061

Project #: R01 DA025267

Funding Agency: NIH/National Institute on Drug Abuse

Title: Nicotine dependence: neuropharmacology in monkeys

Period: 04/2009 - 01/2014

Role: Principal Investigator

Total Costs: \$1,614,189

Project #: R01 DA026781

Funding Agency: NIH/National Institute on Drug Abuse

Title: Pharmacotherapy of cannabinoid withdrawal: pre-clinical studies

Period: 07/2009 - 06/2012

Role: Principal Investigator

Total Costs: \$718,083

Project #: R01 DA19222

Funding Agency: NIH/NIDA

Title: Treatment of cannabinoid withdrawal in rhesus monkeys

Period: 09/2004 - 09/2009

Role: Principal Investigator

Total Costs: \$1,774,913

Project #: R21 DA15468

Funding Agency: NIH/NIDA

Title: Drug discrimination and THC withdrawal in monkeys

Period: 09/2003 - 09/2006

Role: Principal Investigator

Total Costs: \$438,000

Funding Agency: UT Health San Antonio - Competitive Research Enhancement Fund

Title: Effects of SR141716A in cannabinoid treated monkeys

Period: 01/2001 - 12/2001

Role: Principal Investigator

Total Costs: \$50,000

Project #: F32 DA05879

Funding Agency: NIH/National Institute on Drug Abuse

Title: Cocaine behaviors: Role of serotonin 5-HT4 and 5-HT6 receptors

Period: 09/1998 - 05/2000

Role: Principal Investigator

Total Costs: \$51,100

Project #: T32 DA031115

Funding Agency: NIH/National Institute on Drug Abuse

Title: Training in drug abuse research: behavior and neurobiology

Period: 07/2011 - 08/2017

Role: Training Faculty

Project #: T32 NS082145

Funding Agency: NIH/National Institute of Neurological Disorders and Stroke

Title: Integrated graduate training in neuroscience, UTHSCSA

Period: 07/2013 - 08/2017

Role: Training Faculty

RESEARCH & ADMINISTRATIVE EXPERIENCE

Professor and Chair, Department of Pharmacodynamics, College of Pharmacy, University of Florida, 2017-present, The Department of Pharmacodynamics (<http://pd.pharmacy.ufl.edu/faculty/>) has 18 faculty members (10 tenure-track or tenured) engaged in multidisciplinary pharmacology and physiology research and teaching. The department research foci include cancer therapeutics, cardiovascular function and disease, metabolic syndromes, neurological and other CNS disorders including drug abuse and pain, stress, and fetal development. All of our faculty members are currently funded by at least one NIH R-type grant, and many have multiple NIH and DoD grants. We have the expertise and laboratory infrastructure to support large-scale drug discovery and development projects. Faculty members in our department are a great resource for collaborations with a focus on the development of novel therapeutics. Our department is closely aligned with the Departments of Medicinal Chemistry and Pharmaceutics at UF College of Pharmacy.

CSR Biobehavioral Regulation, Learning and Ethology Study Section, regular member 2017-2021
<https://public.era.nih.gov/pubroster/roster.era?CID=102247>

Council of Principle Investigators, UT Health San Antonio, elected member 2014-2017, worked side-by-side with the University President, Vice President for Research, Human Resources, Office of Sponsored Programs, Institutional Animal Care Program, Human Research Protection Office, and Deans of Medicine, Dentistry, Nursing, and Allied Health to remove research impediments; streamlined IACUC/IRB/EHS protocol submission, approval, and amendment processes, hiring processes, and technology transfer, commercialization procedures

Director, Cannabinoid and Nicotine Neurobiology Laboratory, UT Health San Antonio, 2007-2017, directed postdoctoral trainees, predoctoral trainees, and research technicians in an internationally recognized research operation resulting approximately \$10 million in external funding, over 40 publications, invited presentations both domestically and internationally, and research honors and awards; coordinated research operations daily, 365 days per year; created SOPs and GLP for running a behavioral pharmacology research laboratory in 40 rhesus monkeys; maintained federal and state DEA licenses; DEA liaison for inspections; directed laboratory security with the University Police Department per DEA policy; developed tracking and monitoring systems for use and storage of Schedule 1-5 drugs;

set policies for TB testing of staff and non-human primates; set guidelines for human emergency response to rhesus monkey tissue exposure; managed USDA site inspections of non-human primate research facilities

Principal Investigator, \$21 million research program continuously funded by NIH 2003-2024, in charge of employing scores of research staff with a minimum bachelor's degree (required); responsible for interviewing, hiring, annual performance reviews, professional development, remediation, promotions, and grievances/termination; upon leaving my lab, my employees have entered or graduated from doctoral research programs, medical schools, dental schools, and nursing schools

Investigator, \$6 million NIH cost-sharing animals housing and laboratory renovation 2006-2007, designed state-of-the-art wet lab facilities, behavioral testing rooms, and animal housing rooms for non-human primates, pigeons, and rodents; resolved architectural design issues and supervised cost overruns; coordinated faculty, facilities management, and contractors to minimize disruption to ongoing research operations

IACUC, UT Health San Antonio, member 2007-2010

INVENTION DISCLOSURES, PATENT APPLICATIONS, LEAD INVENTOR

US Provisional Patent Application 62/501,536 (filed 4 May 2017 and extended 4 May 2018)
Methods of Treating Synthetic Cannabinoid Toxicity or Overdose with Rimonabant

Invention Id: IP-17/0090, Patent application pending
Title: Sustained release mecamylamine for smoking cessation

LICENSES

Drug Enforcement Agency Schedule 1 Registration # RM0350203
Drug Enforcement Agency Schedules 2-5 Registration # 0349729
Florida Business and Professional Registration (DBPR) exemption # 80 3072

Research Profile

Since obtaining my PhD in behavioral neuroscience in 1997, my career has focused extensively on pharmacological and pre-clinical modeling aspects of drug discovery and development. My current research integrates principles of behavior and receptor theory to identify central nervous system mechanisms responsible for therapeutic and adverse effects of a range of drug classes. The goal is to maximize therapeutic potential of drug classes associated with liabilities, including abuse and dependence potential. My laboratory combines behavioral and physiological approaches, receptor-selective ligands, and quantitative analyses of drug interactions. We are interested in several pharmacological classes of abused drugs.

Cannabinoids: we are interested in cannabis-derived tetrahydrocannabinols, numerous synthetic cannabinoids, and endogenous cannabinoid neurotransmitters. We systematically compare the effects of cannabinoids and evaluate underlying receptor mechanisms to better understand therapeutic potential.

Opioids: we are part of a collaborative team spanning medicinal chemistry (McCurdy), pharmaceuticals (Avery), and pharmacodynamics (McLaughlin) to evaluate the *in vitro* and *in vivo* pharmacology of kratom alkaloids which have therapeutic potential for the reduction of pain and opioid dependence.

Cholinergics: Our interests include the FDA-approved smoking cessation aids nicotine, varenicline, and bupropion. We compare these drugs to novel, investigational nicotinic acetylcholine receptor compounds to better understand relationships between nicotinic acetylcholine receptor subtypes, intrinsic activity (i.e., efficacy), and behavioral effects.

Published Peer-Reviewed Journal Articles (113 total)

1. Obeng S, Hiranita T, León F, **McMahon LR**, McCurdy CR. Novel Approaches, Drug Candidates, and Targets in Pain Drug Discovery. *J Med Chem*. 2021 In press
2. Wilkerson JL, Bilbrey JA, Felix JS, Makriyannis A, **McMahon LR**. Untapped endocannabinoid pharmacological targets: Pipe dream or pipeline? *Pharmacol Biochem Behav*. 2021 In press
3. Wilkerson JL, Felix JS, Bilbrey JA, McCurdy CR, **McMahon LR**. Characterization of a mouse neuropathic pain model caused by the highly active antiviral therapy (HAART) Stavudine. *Pharmacol Rep*. 2021 In press
4. Maxwell EA, King TI, Kamble SH, Raju KSR, Berthold EC, León F, Hampson A, **McMahon LR**, McCurdy CR, Sharma A. Oral Pharmacokinetics in Beagle Dogs of the Mitragynine Metabolite, 7-Hydroxymitragynine. *Eur J Drug Metab Pharmacokinet*. 2021 May;46(3):459-463.
5. Chear NJ, León F, Sharma A, Kanumuri SRR, Zwolinski G, Abboud KA, Singh D, Restrepo LF, Patel A, Hiranita T, Ramanathan S, Hampson AJ, **McMahon LR**, McCurdy CR. Exploring the Chemistry of Alkaloids from Malaysian *Mitragyna speciosa* (Kratom) and the Role of Oxindoles on Human Opioid Receptors. *J Nat Prod*. 2021 Apr 23;84(4):1034-1043.
6. Kamble SH, Berthold EC, King TI, Raju Kanumuri SR, Popa R, Herting JR, León F, Sharma A, **McMahon LR**, Avery BA, McCurdy CR. Pharmacokinetics of Eleven Kratom Alkaloids Following an Oral Dose of Either Traditional or Commercial Kratom Products in Rats. *J Nat Prod*. 2021 Apr 23;84(4):1104-1112.
7. Obeng S, Wilkerson JL, León F, Reeves ME, Restrepo LF, Gamez-Jimenez LR, Patel A, Pennington AE, Taylor VA, Ho NP, Braun T, Fortner JD, Crowley ML, Williamson MR, Pallares VLC, Mottinelli M, Lopera-Londoño C, McCurdy CR, **McMahon LR**, Hiranita T. Pharmacological Comparison of Mitragynine and 7-Hydroxymitragynine: In Vitro Affinity and Efficacy for μ -Opioid Receptor and Opioid-Like Behavioral Effects in Rats. *J Pharmacol Exp Ther*. 2021 Mar;376(3):410-427.
8. Berthold EC, Kamble SH, Raju KS, King TI, Popa R, Sharma A, León F, Avery BA, **McMahon LR**, McCurdy CR. Preclinical pharmacokinetic study of speciociliatine, a kratom alkaloid, in rats using an UPLC-MS/MS method. *J Pharm Biomed Anal*. 2021 Feb 5;194:113778.

9. Singh D, Brown PN, Cinosi E, Corazza O, Henningfield JE, Garcia-Romeu A, McCurdy CR, **McMahon LR**, Prozialeck WC, Smith KE, Swogger MT, Veltri C, Walsh Z, Grundmann O. Current and Future Potential Impact of COVID-19 on Kratom (*Mitragyna speciosa* Korth.) Supply and Use. *Front Psychiatry*. 2020 Nov 26;11:574483.
10. Behnood-Rod A, Chellian R, Wilson R, Hiranita T, Sharma A, Leon JF, McCurdy CR, **McMahon LR**, Bruijnzeel AW. Evaluation of the rewarding effects of mitragynine and 7-hydroxymitragynine in an intracranial self-stimulation procedure in male and female rats. *Drug Alcohol Depend*. 2020 Oct 1;215:108235.
11. Kamble SH, Leon JF, King TI, Berthold EC, Lopera-Londono C, Raju KSR, Hampson AJ, Sharma A, Avery BA, **McMahon LR**, McCurdy CR. Metabolism of a kratom alkaloid metabolite in human plasma increases its opioid potency and efficacy. *ACS Pharmacol Transl Sci*. 2020 Jul 31;3(6):1063-1068.
12. Maxwell EA, King TI, Kamble SH, Raju KSR, Berthold EC, León F, Avery BA, **McMahon LR**, McCurdy CR, Sharma A. Pharmacokinetics and Safety of Mitragynine in Beagle Dogs. *Planta Med*. 2020 Nov;86(17):1278-1285.
13. Corrie LW, Stokes C, Wilkerson JL, Carroll FI, **McMahon LR**, Papke RL. Nicotinic Acetylcholine Receptor Accessory Subunits Determine the Activity Profile of Epibatidine Derivatives. *Mol Pharmacol*. 2020 Oct;98(4):328-342.
14. Wilkerson JL, Jiang J, Felix JS, Bray JK, da Silva L, Gharaibeh RZ, **McMahon LR**, Schmittgen TD. Alterations in mouse spinal cord and sciatic nerve microRNAs after the chronic constriction injury (CCI) model of neuropathic pain. *Neurosci Lett*. 2020 Jul 13;731:135029.
15. de Moura FB, Hiranita T, **McMahon LR**. The discriminative stimulus effects of epibatidine in C57BL/6J mice. *Behav Pharmacol*. 2020 Sep;31(6):565-573.
16. Moerke MJ, **McMahon LR**, Wilkerson JL. More than Smoke and Patches: The Quest for Pharmacotherapies to Treat Tobacco Use Disorder. *Pharmacol Rev*. 2020 Apr;72(2):527-557.
17. Wilkerson JL, Deba F, Crowley ML, Hamouda AK, **McMahon LR**. Advances in the *In vitro* and *In vivo* pharmacology of Alpha4beta2 nicotinic receptor positive allosteric modulators. *Neuropharmacology*. 2020 Feb 12;168:108008.
18. de Moura FB, Wilkerson JL, **McMahon LR**. Unexpected loss of sensitivity to the nicotinic acetylcholine receptor antagonist activity of mecamylamine and dihydro- β -erythroidine in nicotine-tolerant mice. *Brain Behav*. 2020 Feb 24:e01581.
19. Navaratne PV, Wilkerson JL, Ranasinghe KD, Semenova E, Felix JS, Ghiviriga I, Roitberg A, **McMahon LR**, Grenning AJ. Axially-Chiral Cannabinols: A New Platform for Cannabinoid-Inspired Drug Discovery. *ChemMedChem*. 2020 May 6;15(9):728-732.

20. **McMahon LR**, Hiranita T, Wilkerson JL, Oyala JFL, McCurdy CR. Pharmacological characterization of mitragynine, the primary constituent in Kratom, as a potential medication for opioid use disorder. *J Pharmacol Toxicol Methods*. 2019 Sep - Oct; 99:106595.
21. King TI, Sharma A, Kamble SH, León F, Berthold EC, Popa R, Cerlati O, Prentice BM, **McMahon LR**, McCurdy CR, Avery BA. Bioanalytical method development and validation of corynantheidine, a kratom alkaloid, using UPLC-MS/MS, and its application to preclinical pharmacokinetic studies. *J Pharm Biomed Anal*. 2020 Feb 20; 180:113019.
22. Obeng S, Kamble SH, Reeves ME, Restrepo LF, Patel A, Behnke M, Chear NJ, Ramanathan S, Sharma A, León F, Hiranita T, Avery BA, **McMahon LR**, McCurdy CR. Investigation of the Adrenergic and Opioid Binding Affinities, Metabolic Stability, Plasma Protein Binding Properties, and Functional Effects of Selected Indole-Based Kratom Alkaloids. *J Med Chem*. 2020 Jan 9; 63(1):433-439.
23. Kamble SH, Sharma A, King TI, Berthold EC, León F, Meyer PKL, Kanumuri SRR, **McMahon LR**, McCurdy CR, Avery BA. Exploration of cytochrome P450 inhibition mediated drug-drug interaction potential of kratom alkaloids. *Toxicol Lett*. 2020 Feb 1; 319:148-154.
24. Wilkerson JL, Felix JS, Restrepo LF, Ansari MI, Coop A, **McMahon LR**. The Effects of Morphine, Baclofen, and Bupirone Alone and in Combination on Schedule-Controlled Responding and Hot Plate Antinociception in Rats. *J Pharmacol Exp Ther*. 2019 Sep;370(3):380-389.
25. Prozialeck WC, Avery BA, Boyer EW, Grundmann O, Henningfield JE, Kruegel AC, **McMahon LR**, McCurdy CR, Swogger MT, Veltri CA, Singh D. Kratom policy: The challenge of balancing therapeutic potential with public safety. *Int J Drug Policy*. 2019 May 16;70:70-77.
26. Hiranita T, Leon F, Felix JS, Restrepo LF, Reeves ME, Pennington AE, Obeng S, Avery BA, McCurdy CR, **McMahon LR**, Wilkerson JL. The effects of mitragynine and morphine on schedule-controlled responding and antinociception in rats. *Psychopharmacology (Berl)*. 2019 Sep;236(9):2725-2734.
27. Wilkerson JL, Schulze DR, **McMahon LR**. Tolerance and dependence to Δ^9 -tetrahydrocannabinol in rhesus monkeys: activity assessments. *PLoS One* 2019 Mar 12;14(3):e0209947.
28. Cunningham CS, Moerke MJ, **McMahon LR**. Discriminative stimulus effects of mecamylamine and nicotine in rhesus monkeys: Central and peripheral mechanisms. *Pharmacol Biochem Behav* 2019 Feb 6; 179:27-33.
29. Moerke MJ, **McMahon LR**. Nicotine-like discriminative stimulus effects of acetylcholinesterase inhibitors and a muscarinic receptor agonist in rhesus monkeys. *Drug Dev Ind Pharm* 2019 May;45(5):861-867.
30. **McMahon LR**. Green tobacco sickness: mecamylamine, varenicline, and nicotine vaccine as clinical research tools and potential therapeutics. *Expert Rev Clin Pharmacol* 2019 Mar;12(3):189-195.
31. De Moura FB, **McMahon LR**. Differential cross-tolerance to the effects of nicotinic acetylcholine receptor drugs in C57BL/6J mice following chronic varenicline. *Behav Pharmacol* 2019 Aug;30(5):412-421.

32. Moerke MJ, **McMahon LR**. Rapid nicotine tolerance and cross-tolerance to varenicline in rhesus monkeys: drug discrimination. *Exp Clin Psychopharmacol* 2018 Dec;26(6):541-548.
33. Hrubá L, **McMahon LR**. Apparent affinity estimates and reversal of the effects of synthetic cannabinoids AM-2201, CP-47,497, JWH-122, and JWH-250 by rimonabant in rhesus monkeys. *J Pharmacol Exp Ther* 2017 Aug;362(2):278-286.
34. De Moura FB, **McMahon LR**. The contribution of $\alpha 4\beta 2$ and non- $\alpha 4\beta 2$ nicotinic acetylcholine receptors to the discriminative stimulus effects of nicotine and varenicline in mice. *Psychopharmacology (Berl)* 2017 Mar;234(5):781-792.
35. Moerke MJ, Zhu AZ, Tyndale RF, Javors MA, **McMahon LR**. The discriminative stimulus effects of i.v. nicotine in rhesus monkeys: Pharmacokinetics and apparent pA₂ analysis with dihydro- β -erythroidine. *Neuropharmacology* 2016 Dec;116:9-17.
36. Cunningham CS, Moerke MJ, Javors MA, Carroll FI, **McMahon LR**. Attenuated nicotine-like effects of varenicline but not other nicotinic ACh receptor agonists in monkeys receiving nicotine daily. *Br J Pharmacol* 2016 Dec;173:3454-3466.
37. **McMahon LR**. Enhanced discriminative stimulus effects of Δ^9 -THC in the presence of cannabidiol and 8-OH-DPAT in rhesus monkeys. *Drug Alcohol Depend* 2016 Aug;165:87-93.
38. Moerke MJ, de Moura FB, Koek W, **McMahon LR**. Effects of nicotine in combination with drugs described as positive allosteric nicotinic acetylcholine receptor modulators in vitro: discriminative stimulus and hypothermic effects in mice. *Eur J Pharmacol* 2016 May;786:169-178.
39. De Moura FB, **McMahon LR**. Differential antagonism and tolerance/cross-tolerance among nicotinic acetylcholine receptor agonists: scheduled-controlled responding and hypothermia in C57BL/6J Mice. *Behav Pharmacol* 2016 Apr;27(2-3 Spec Issue):240-248.
40. **McMahon LR**. The rise (and fall?) of drug discrimination research. *Drug Alcohol Depend* 2015 Jun;151:284-288.

***Invited review:** This review examines the history and current application of drug discrimination in biomedical research and discusses trends in its use over the years.*

41. Ghosh S, Kinsey SG, Liu Q, Hrubá L, **McMahon LR**, Wise LE, Abdulla RA, Selley DE, Sim-Selley L, Cravatt BF, Lichtman AH. Full FAAH inhibition combined with partial monoacylglycerol lipase inhibition: Augmented and sustained antinociceptive effects with negligible cannabimimetic side effects in mice. *J Pharmacol Exp Ther* 2015 Aug;354(2):111-120.

42. Hrubá L, Seillier A, Zaki A, Cravatt BF, Lichtman AH, Giuffrida A, **McMahon LR**. Simultaneous inhibition of fatty acid amide hydrolase (FAAH) and monoacylglycerol lipase (MAGL) shares discriminative stimulus effects with Δ^9 -THC in mice. *J Pharmacol Exp Ther* 2015 May;353(2):261-268.
43. Cunningham CS, Moerke MJ, **McMahon LR**. The discriminative stimulus effects of mecamylamine in nicotine-treated and untreated rhesus monkeys. *Behav Pharmacol* 2014 Aug;25(4):296-305.
44. Rodriguez JS, **McMahon LR**. JWH-018 in rhesus monkeys: differential antagonism of discriminative stimulus, rate-decreasing, and hypothermic effects. *Eur J Pharmacol* 2014 Oct 5;740:151-159.
45. Rodriguez JS, Cunningham CS, Moura FB, Ondachi P, Carroll FI, **McMahon LR**. Discriminative stimulus and hypothermic effects of some derivatives of the nAChR agonist epibatidine in mice. *Psychopharmacology (Berl)* 2014 Dec;231(23):4455-4466.
46. Ginsburg BC, Hrubá L, Zaki A, Javors MA, **McMahon LR**. Blood levels do not predict behavioral or physiological effects of Δ^9 -tetrahydrocannabinol in rhesus monkeys with different patterns of exposure. *Drug Alcohol Depend* 2014 Jun 1;139:1-8.
47. Hrubá L, **McMahon LR**. The cannabinoid agonist HU-210: pseudo-irreversible discriminative stimulus effects in rhesus monkeys. *Eur J Pharmacol* 2014 Mar 15;727:35-42.
48. Cunningham CS, **McMahon LR**. Multiple nicotine training doses in mice as a basis for differentiating the effects of smoking cessation aids. *Psychopharmacology (Berl)* 2013 Jul;228(2):321-333.
49. Hrubá L, Ginsburg BC, **McMahon LR**. Apparent inverse relationship between cannabinoid agonist efficacy and tolerance/cross-tolerance produced by Δ^9 -tetrahydrocannabinol treatment in rhesus monkeys. *J Pharmacol Exp Ther* 2012 Sep;342(3):843-849.
50. Gould GG, Seillier A, Weiss G, Giuffrida A, Burke TF, Hensler JG, Rock C, Tristan A, **McMahon LR**, Salazar A, O'Connor JC, Satsangi N, Satsangi RK, Gu TT, Treat K, Smolik C, Schultz ST. Acetaminophen differentially enhances social behavior and cortical cannabinoid levels in inbred mice. *Prog Neuropsychopharmacol Biol Psychiatry* 2012 Aug 7;38(2):260-269.
51. Cunningham CS, Javors MA, **McMahon LR**. Pharmacologic characterization of a nicotine-discriminative stimulus in rhesus monkeys. *J Pharmacol Exp Ther* 2012 Jun;341(3):840-849.
52. Schulze DR, Carroll FI, **McMahon LR**. Interactions between dopamine transporter and cannabinoid receptor ligands in rhesus monkeys. *Psychopharmacology (Berl)* 2012 Aug;222(3):425-438.
53. Ginsburg BC, **McMahon LR**, Sanchez JJ, Javors MA. Purity of synthetic cannabinoids sold online for recreational use. *J Anal Toxicol* 2012 Jan;36(1):66-68.
54. Ginsburg BC, Schulze DR, Hrubá L, **McMahon LR**. JWH-018 and JWH-073: Δ^9 -tetrahydrocannabinol-like discriminative stimulus effects in monkeys. *J Pharmacol Exp Ther* 2012 Jan;340(1):37-45.

55. Stewart JL, **McMahon LR**. The fatty acid amide hydrolase inhibitor URB 597: interactions with anandamide in rhesus monkeys. *Br J Pharmacol* 2011; Sep;164(2b):655-666.
56. Singh H, Schulze D, **McMahon LR**. Tolerance and cross-tolerance to cannabinoids in mice: schedule-controlled responding and hypothermia. *Psychopharmacology (Berl)* 2011 Jun;215(4):665-675.
57. Cunningham CS, **McMahon LR**. The effects of nicotine, varenicline, and cytisine on schedule-controlled responding in mice: differences in [alpha]4[beta]2 nicotinic receptor activation. *Eur J Pharmacol* 2011;654(1):47-52.
58. **McMahon LR**. Chronic Δ^9 -tetrahydrocannabinol treatment in rhesus monkeys: differential tolerance and cross-tolerance among cannabinoids. *Br J Pharmacol* 2011 Mar; 162(5):1060-1073.
59. Javors MA, Sanchez JJ, **McMahon LR**. Quantification of rimonabant (SR 141716A) in monkey plasma using HPLC with UV detection. *J Chromatogr Sci* 2010 Jul;48(6):491-495.
60. Stewart JL, **McMahon LR**. Rimonabant-induced Δ^9 -tetrahydrocannabinol withdrawal in rhesus monkeys: discriminative stimulus effects and other withdrawal signs. *J Pharmacol Exp Ther* 2010 Jul;334(1):347-356.
61. Giuffrida A, **McMahon L**. In vivo pharmacology of endocannabinoids and their metabolic inhibitors: therapeutic implications in Parkinson's disease and abuse liability. *Prostaglandins Other Lipid Mediat* 2010 Apr;91(3-4):90-103.

***Invited review:** This review examines novel targets within the endogenous cannabinoid system and summarizes pre-clinical studies on the therapeutic utility of endogenous cannabinoids and their metabolic inhibitors for treating movement and substance use disorders.*
62. Beardsley PM, Thomas BF, **McMahon LR**. Cannabinoid CB1 receptor antagonists as potential pharmacotherapies for drug abuse disorders. *Int Rev Psychiatry* 2009 Apr;21(2):134-142.

***Invited review:** This review examines pre-clinical and clinical studies on the therapeutic utility of cannabinoid antagonists for treatment of abuse and dependence to ethanol, nicotine, opioids, and cocaine.*
63. **McMahon LR**, Li J, Carroll FI, France CP. Some effects of dopamine transporter and receptor ligands on discriminative stimulus, physiologic, and directly observable indices of opioid withdrawal in rhesus monkeys. *Psychopharmacology (Berl)* 2009 Apr;203(2):411-420.
64. **McMahon LR**. Apparent affinity estimates of rimonabant in combination with anandamide and chemical analogs of anandamide in rhesus monkeys discriminating Δ^9 -tetrahydrocannabinol. *Psychopharmacology (Berl)* 2009;203(2):219-228.

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71. **McMahon LR**. Discriminative stimulus effects of the cannabinoid CB(1) antagonist SR 141716A in rhesus monkeys pretreated with Δ^9 -tetrahydrocannabinol. *Psychopharmacology (Berl)* 2006 Oct;188(3):306-314.
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73. **McMahon LR**. Characterization of cannabinoid agonists and apparent pA2 analysis of cannabinoid antagonists in rhesus monkeys discriminating Δ^9 -tetrahydrocannabinol. *J Pharmacol Exp Ther* 2006 Aug;319(3):1211-1218.
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111. **McMahon LR**, Morien A, Davies BT, Wellman PJ. Conditioned taste aversion in rats induced by the alpha1-adrenoceptor agonist cirazoline *Pharmacol Biochem Behav* 1994;48:601-604.
112. Wellman PJ, Davies BT, Morien A, **McMahon LR**. Modulation of feeding by hypothalamic paraventricular nucleus alpha1- and alpha2-adrenergic receptors *Life Sciences* 1993;53:669-679.
113. Morien A, **McMahon LR**, Wellman PJ. Effects on food and water intake of the alpha1-adrenoceptor agonists amidephrine and SK&F-89748 *Life Sciences* 1993;53:169-174.

Book Chapters

1. Ramanathan S, Leon JF, Chear NJY, Yusof SR, Murugaiyah V, **McMahon LR**, McCurdy CR. Kratom (*Mitragyna speciosa* Korth.): A description on the ethnobotany, alkaloid chemistry, and neuropharmacology. In: Atta-

Ur-Rahman, FRS. *Studies in Natural Products Chemistry: Bioactive Natural Products*. Amsterdam: Elsevier Science Publishers; 2020.

2. Ginsburg BC, Gerak LR, **McMahon LR**, Roache JD. Neurosteroids in alcohol and substance use In: Ritsner MS, Weizman A. *Neuroactive Steroids in Brain Function, Behavioral and Neuropsychiatric Disorders: Novel Strategies for Research and Treatment*. New York, NY: Springer; 2008. p. 509 - 536.

This book chapter describes a role for neurosteroids in the abuse and dependence liability of ethanol and sedative/hypnotics acting through the GABAA receptor, and examines the utility of targeting brain neurosteroids to treat ethanol, benzodiazepine or barbiturate dependence and withdrawal.

3. Wellman PJ, **McMahon LR**. Basic measures of food intake In: *Current Protocols in Neuroscience*, Editors: J Crawley, C Gerfen, R McKay, M Rogawski, D Sibley & P Skolnick. New York: Wiley; 1997.

This unit describes a method for measuring the consumption of a pellet diet during a 30-min testing session conducted during the late portion of the day and how it can be used to generate reliable and stable baseline measures of feeding. Experimental manipulations that either enhance (e.g., injecting a peptide into the brain) or suppress feeding (e.g., systemic injections of amphetamine) also are described.

4. **McMahon LR**, Wellman PJ. Basic measures of feeding In: *Society for the Study of Ingestive Behavior Protocols*, Editors: PJ Wellman & BG Hoebel. 1997.
5. Green TA, **McMahon LR**, Wellman PJ. Microdialysis procedures in ingestive behavior research In: *Society for the Study of Ingestive Behavior Protocols*, Editors: PJ Wellman & BG Hoebel. 1997.

Books/Monographs

1. CP France, **LR McMahon**, WE Fantegrossi, WL Woolverton, G Winger, JC Winter and JH Woods. Progress Report from the Testing Program for Stimulant and Depressant Drugs (2007) Proceedings, College on Problems of Drug Dependence Washington, DC: US Government Printing Office; 2008.
2. WL Woolverton, WE Fantegrossi, CP France, **LR McMahon**, G Winger and JH Woods. Progress Report from the Testing Program for Stimulant and Depressant Drugs (2005) Proceedings, College on Problems of Drug Dependence Washington, DC: US Government Printing Office; 2006.
3. CP France, **LR McMahon**, WE Fantegrossi, WL Woolverton, JC Winter and JH Woods. Progress Report from the Testing Program for Stimulant and Depressant Drugs (2004) Proceedings, College on Problems of Drug Dependence Washington, DC: US Government Printing Office; 2005.
4. WE Fantegrossi, JH Woods, G Winger, **LR McMahon**, CP France, WL Woolverton, JC Winter and KA Cunningham. Progress Report from the Testing Program for Stimulant and Depressant Drugs (2003) Proceedings, College on Problems of Drug Dependence Washington, DC: US Government Printing Office; 2004.

5. **McMahon LR**, France CP, Winger G, Woolverton WL. Progress Report from the Testing Program for Stimulant and Depressant Drugs (2002) Proceedings, College on Problems of Drug Dependence Washington, DC: US Government Printing Office; 2003.

Invited Research Presentations

- 01/2021 Chemistry and pharmacology of *Mitragyna speciosa* (Kratom), American Society of Pharmacognosy, Virtual Seminar (Invited Speaker, delivered jointly with Dr. Christopher McCurdy)
- 12/2020 Kratom alkaloids: pharmacology and behavioral effects, Department of Pharmacology & Physiology, St. Louis University, Virtual Seminar (Invited Speaker)
- 06/2020 Pharmacological mechanisms of *Mitragyna speciosa* alkaloids, Department of Medical Pharmacology & Physiology, University of Missouri, Virtual Seminar (Invited Speaker)
- 02/2020 Kratom alkaloids: Pharmacology and behavioral effects, Center Substance Abuse Research, Temple University, Philadelphia, PA (Invited Speaker)
- 01/2020 Kratom: Potential drug of abuse or useful analgesic without opioid-like side-effects?, Winter Conference on Brain Research, Big Sky, MT (Invited Speaker)
- 11/2019 Kratom alkaloids: Receptor binding and behavioral pharmacology, University of Buffalo, Department of Pharmacology & Toxicology, Buffalo, NY (Invited Speaker)
- 09/2019 The safety profile of mitragynine, the primary constituent in kratom (*Mitragyna speciosa*), in comparison to morphine in rats at Safety Pharmacology Society, Barcelona, Spain (Invited Speaker)
- 08/2019 Cannabidiol: *In vitro* and *in vivo* pharmacological mechanisms at CBD/THC Summit: A Review of the State of the Art for the Therapeutic Applications, Pensacola, FL (Invited Speaker)
- 08/2019 Kratom alkaloids: Receptor binding and behavioral pharmacology, Chemistry and Pharmacology of Drug Abuse Conference, Boston, MA (Invited Speaker)
- 07/2019 Pharmacological mechanisms of *Mitragyna speciosa* alkaloids, Texas A&M University Irma Lerma Rangel College of Pharmacy, Kingsville, TX (Invited Speaker)
- 06/2019 Kratom research at UF, 12th Global Gators Symposium, Reims, France (Invited Speaker)
- 04/2019 Kratom alkaloids: *In vitro* and *in vivo* pharmacological mechanisms, UF Drug Discovery Symposium, Gainesville, FL (Invited Speaker)
- 04/2019 Pharmacological mechanisms of *Mitragyna speciosa* alkaloids, Symposium entitled Team Science: From Molecules to Test Tubes to Behavior at Experimental Biology/American Society of Pharmacology and Experimental Therapeutics, Orlando, FL (Invited Speaker)

- 04/2019 Kratom alkaloids: *In vitro* and *in vivo* pharmacological mechanisms, The Seventh Annual Neuroscience Symposium at Kent State University: Neuroscience of the Addicted Brain, Kent, OH (Invited Speaker)
- 02/2019 Kratom alkaloids: Pharmacological mechanisms, University of Florida, Department of Pharmacology and Therapeutics, Gainesville, FL (Invited Speaker)
- 02/2019 The future of kratom research, Second International Symposium on Kratom, Orlando, FL (Invited Speaker)
- 09/2018 Endocannabinoid therapeutics: Promises and pitfalls, University of Maryland, School of Pharmacy, Baltimore, MD (Invited Speaker)
- 08/2018 Kratom: Bitter narcotic or sweet medicine for pain and opioid addiction?, Chemistry and Pharmacology of Drug Abuse Conference, Boston, MA (Invited Speaker)
- 06/2018 Evaluating the opioid-like discriminative stimulus effects of kratom alkaloids, College on Problems of Drug Dependence, San Diego, CA (Invited Speaker)
- 06/2018 Endocannabinoid enhancement and cannabinoid receptor blockade: Therapeutic promise and pitfalls, Department of Physiology and Pharmacology, Wake Forest University School of Medicine, Winston-Salem, NC (Invited Speaker)
- 09/2017 The mushroom cure: Using psychedelic drugs to treat obsessive-compulsive and other hard-to-treat psychiatric disorders, Office of the Vice President for Research and Education at University of Florida Health, University of Florida (Invited Panelist)
- 06/2017 Drug abuse, pain, and a vision for research enhancement, Department of Anesthesiology Grand Rounds, Kansas University Medical Center (Invited Speaker)
- 06/2017 Direct- and indirect-acting cannabinoid receptor drugs: Abuse and therapeutic potential, College of Pharmacy, University of Florida (Invited Speaker)
- 05/2017 Synthetic cannabinoid overdose: Symptoms and treatment, Operation AdEPT: Addiction, education, and prevention training Webinar series sponsored by Department of Psychiatry, The University of Texas Health San Antonio (Invited Speaker)
- 10/2016 Advancing pharmacy science and practice: Community and evidenced based research, School of Pharmacy, The University of Texas at El Paso (Invited Speaker)
- 04/2016 Acute tolerance to the discriminative stimulus effects of nicotine in monkeys, Symposium at Experimental Biology/American Society of Pharmacology and Experimental Therapeutics, San Diego, CA (Invited Speaker, presented by my PhD student Megan Moerke)

- 04/2016 Cannabinoid agonist-like effects of endogenous cannabinoid metabolic inhibitors, Behavioral Pharmacology Society Annual Meeting, San Diego, CA (Speaker)
- 02/2016 Up in smoke: Mechanisms of novel cannabinoid- and nicotinic-based therapeutics, Department of Pharmacology, The University of Texas Health San Antonio, TX (Invited Speaker)
- 05/2015 Cannabis-like effects of endogenous cannabinoid metabolic inhibitors, Center for Biomedical Neuroscience, 13th Annual Retreat, San Antonio, TX (Invited Speaker)
- 04/2011 Discriminative stimulus effects of nicotinic receptor agonists in mice, Behavioral Pharmacology Society Annual Meeting, Washington, DC (Speaker)
- 03/2011 Turn it up/turn it down: Varying the magnitude of CB1 receptor stimulation in non-human primates. Conventional and Non-conventional, Endocannabinoid Targets for CNS Disorders, American Society for Neurochemistry, St. Louis, MO (Invited Speaker)

As symposium co-chair, I helped choose the list of speakers and promoted integration among the presentations.

- 01/2011 Enzymes, efficacy, and a new marijuana: So close yet so FAAH away, Addiction Seminar Series, The University of Texas Health San Antonio, TX (Invited Speaker)
- 04/2010 Cannabinoid dependence and withdrawal: Discriminative stimulus effects and other behavioral indices, Center on Substance Abuse Research, Temple University, Philadelphia, PA (Invited Speaker)
- 04/2010 When the smoke clears, there's more to neuronal nicotinic acetylcholine receptors, Symposium at Experimental Biology/American Society of Pharmacology and Experimental Therapeutics, Experimental Biology/American Society of Pharmacology and Experimental Therapeutics, Anaheim, CA (Invited Speaker)

As symposium chair, I chose the list of speakers and promoted integration among the presentations.

- 03/2010 Cannabinoid dependence and withdrawal: discriminative stimulus effects and other behavioral indices, Center for Drug Discovery, Northeastern University, Boston, MA (Invited Speaker)
- 02/2010 Cannabinoid dependence and withdrawal: Discriminative stimulus effects and other behavioral indices, Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond, VA (Invited Speaker)
- 09/2009 Cannabinoid dependence and withdrawal: Drug discrimination and other behavioral indices, Department of Pharmacology and Neuroscience, University of Texas Health Science Center, Fort Worth, TX (Invited Speaker)

- 06/2009 Drug withdrawal, reinforcing effects, and vulnerability to relapse: new methods and insights, College on Problems of Drug Dependence Annual Meeting, Reno, NV (Symposium Chair)
- 04/2009 Direct- and indirect-acting cannabinoid agonists: How FAAH can this go?, Behavioral Pharmacology Society Annual Meeting, Washington, DC (Speaker)
- 08/2008 Behavioral pharmacology of the cannabinoids in rhesus monkeys, Southwest Foundation for Biomedical Research, San Antonio, TX (Invited Speaker)
- 06/2007 Discriminative stimulus effects of Δ^9 -tetrahydrocannabinol (Δ^9 -THC) in rhesus monkeys receiving morphine, heroin, or naltrexone, College on Problems of Drug Dependence, Québec City, Québec (Speaker)
- 06/2007 Effects of methanandamide in combination with Δ^9 -tetrahydrocannabinol (Δ^9 -THC) in C57BL/6J mice discriminating Δ^9 -THC, College on Problems of Drug Dependence, Québec City, Québec (Speaker)
- 04/2007 Discriminative stimulus effects of rimonabant in monkeys treated with Δ^9 -THC, Behavioral Pharmacology Society Annual Meeting, Washington, DC (Speaker)
- 11/2006 Evaluating the acute and chronic effects of cannabinoids with competitive antagonists, Behavioral Pharmacology Research Unit, Johns Hopkins University, Boston, MA (Invited Speaker)
- 08/2006 Pre-clinical assessment of cannabinoids: Mechanism of action and consequences of chronic treatment, Addiction Seminar Series, The University of Texas Health San Antonio, TX (Invited Speaker)
- 11/2005 Behavioral effects of cannabinoids: Involvement of more than one receptor subtype?, Department of Pharmacology, The University of Texas Health San Antonio, TX (Invited Speaker)
- 04/2005 Cannabinoid antagonism in monkeys and mice, Behavioral Pharmacology Society Annual Meeting, San Diego, CA (Speaker)
- 06/2004 Effects of cannabinoid agonists and antagonists in Δ^9 -tetrahydrocannabinol treated monkeys discriminating SR141716A, College on Problems of Drug Dependence, San Juan, PR (Speaker)
- 04/2004 Drug discrimination: Tolerance to benzodiazepines without cross-tolerance to neuroactive steroids or barbiturates, Behavioral Pharmacology Society Annual Meeting, Washington, DC (Speaker)
- 06/2003 Effects of indirect monoamine agonists in morphine-treated monkeys discriminating naltrexone, College on Problems of Drug Dependence, Bal Harbour, FL (Speaker)
- 04/2003 To enhance or not to enhance: GABAA agonists and positive modulators in combination with midazolam in rhesus monkeys, Behavioral Pharmacology Society Annual Meeting, San Diego, CA (Speaker)

- 02/2003 Ethanol enhances the acute effects of benzodiazepines but does not attenuate benzodiazepine withdrawal in rhesus monkeys, Texas Research Society on Alcoholism, San Antonio, TX (Speaker)
- 06/2002 Discriminative stimulus effects of the cannabinoid antagonist SR141716A in Δ^9 -tetrahydrocannabinol treated rhesus monkeys, College on Problems of Drug Dependence, Québec City, Québec (Speaker)
- 11/2001 Behavioral effects of GABAA modulators in nondependent and diazepam dependent rhesus monkeys, Department of Pharmacology, The University of Texas Health San Antonio, TX (Invited Speaker)
- 06/2001 Positive GABAA modulators differentially attenuate the discriminative stimulus effects of the neutral GABAA modulator flumazenil in diazepam treated monkeys, College on Problems of Drug Dependence, Scottsdale, AZ (Speaker)
- 04/2001 Discriminative stimulus effects of GABAA/Benzodiazepine (BZ) modulators in rhesus monkeys: Studies with the BZ1 antagonist beta-CCt. Symposium at Experimental Biology/American Society of Pharmacology and Experimental Therapeutics, Orlando, FL (Invited Speaker)

TEACHING

PhD Students Supervised

2019-present	Julio Zuarth-Gonzalez
2018-present	Yuma Ortiz
2017-present	Morgan Crowley
2012-2017	Fernando Moura, PhD Current Position: Instructor, Preclinical Pharmacology Program, Harvard University
2011-2016	Megan Moerke, PhD Current Position: National Institute on Drug Abuse Intramural Research Program
2008-2013	Colin Cunningham, PhD Current Position: Food & Drug Administration Scientist, Center for Tobacco Products

Master's Students Supervised

2021	Guido Huisman, University of Maastricht
2019	Richard Dragone, University of Florida
2005	Maryse Amin, University of Texas at San Antonio <i>Title: Behavioral effects of cannabinoids in monkeys</i>

Undergraduate Honors Thesis Students Supervised

2012	Matthew Forster (University of Texas San Antonio) <i>Project entitled "Tolerance to nicotine and cross-tolerance to varenicline in mice: hypothermic effects"</i>
2011	Samantha Ketcham (Texas A&M University Honors Program) <i>ASPET Summer Undergraduate Research Program project entitled "Discriminative stimulus effects of varenicline and nicotine in mice: interactions with 5-HT₃ receptors"</i>
2011	Brittany Weems (University of Notre Dame Honors Program) <i>ASPET Summer Undergraduate Research Program project thesis "Pharmacology underlying the behavioral effects of nicotinic agonists in mice"</i>
2010	Christina George (Our Lady of the Lake University Honors Program)

McNair Scholars Research Program project entitled "Chronic nicotine treatment: tolerance and cross-tolerance among nicotinic agonists in C57BL/6J mice?"

- 2009 Amanda Tristan (St. Mary's University Honors Program)
McNair Scholars Research Program project entitled "Chronic effects of nicotine in C57BL/6J mice"
- 2008 Lauren Howe (University of Kentucky Honors Program)
ASPET Summer Undergraduate Research Program project entitled "Effects of nicotine and varenicline, alone and in combination with mecamylamine, in C57BL/6J mice"
- 2007 Yamin Sun (University of Texas at Austin Honors Program)
ASPET Summer Undergraduate Research Program project entitled "Acute effects of mecamylamine and nicotine on fixed ratio responding in C57BL/6J mice"
- 2006 Kimberly Meuth (Texas State University Honors College)
ASPET Summer Undergraduate Research Program project entitled "Acute and chronic effects of $\Delta 9$ -tetrahydrocannabinol on aggression in C57BL/6J mice"
- 2005 Alex Rancier (Huston-Tillotson University W.E.B. DuBois Honors Program)
ASPET Summer Undergraduate Research Program project entitled "Interactions between $\Delta 9$ -tetrahydrocannabinol and CB1 antagonists on directly observable behavior in C57BL/6J mice"
- 2003-2004 Hilari Shae Patyrak (University of Texas San Antonio Honors College)
Project entitled "Involvement of μ opioid receptors in thermal allodynia induced by capsaicin in rhesus monkeys"

High School Honors Thesis Supervised

- 2013-2014 Jeffrey Childers (STEM Academy at Robert E. Lee High School in San Antonio, TX)
UT Health San Antonio Voelcker Academy Scholar project entitled "Tolerance observation through hypothermic effects of nicotine and RTI-102 in mice"

Dissertation Committee Membership

Current

Jing Pei
Wanhui Sheng
Todd Sahagian

Graduated (Year)

2015 Blaine Jacobs

Title: Delta opioid receptor-kappa opioid receptor (DOR-KOR) heteromers in peripheral pain-sensing neurons: novel targets for improved pain pharmacotherapy?

2012 Veronica Hargrove
Title: Postmortem redistribution of morphine and citalopram: The role of vascular transport, tissue reservoirs and volume of distribution

Dissertation Proposal Examination, Committee on Graduate Studies

2011 Jacob Junco
Title: Effects of phytonutrients ursolic acid and resveratrol in skin cancer-relevant systems

2011 Alexandra Soto-Pina
Title: Does the peripheral sympathetic nervous system contribute to hypertension induced by chronic dexamethasone treatment?

2011 Margaret Wey
Title: Deficient aldehyde detoxification in the nigrostriatal pathway: a potential animal model for Parkinson's disease

2010 Ha Truong
Title: Behavioral and neurochemical effects of vagal nerve stimulation in the rat

2009 Matthew Rowan
Title: Estrogen regulation of bradykinin signaling

2009 Michelle Baladi
Title: Impact of feeding condition on sensitivity of rats to dopamine drugs

2009 Jacob Garza
Title: Effects of leptin on adult hippocampal neurogenesis

Qualifying Exam Committees

2010 Xiang Bai
 2011 Veronica Hargrove
 2014 Kelsey Smith
 2017 Ariana Cruz

Postdoctoral Trainees Supervised

2018-2019 Samuel Obeng, PhD
 Current Position: Assistant Scientist, Department of Pharmacodynamics, University of Florida

2011-2013	Jesse Rodriguez, PhD Current Position: Clinical Operations Lead, Pfizer Site, Syneos Health Clinical Solutions
2011-2013	Lenka Hrubá, PhD Current Position: Humboldt Postdoctoral Fellow, Werner Reichardt Centre for Integrative Neuroscience
2009-2010	Jennifer Stewart, PhD Current Position: Chair of Arts and Sciences, Galen College of Nursing

The University of Florida Didactic Teaching

Current	PHA6189, CNS Drug Discovery	Director: 4 students
	PHA6936, Advanced Topics Pharmaceutical Sciences	Lecturer: 13 Students
	PHA5930, Seminar in Pharmacodynamics Research	Director: 3 Students
	PHA5789, Patient Care 7 CNS and Psychiatry	Lecturer: 256 Students

The University of Texas Health San Antonio Didactic Teaching

2015-2017	PHAS6014 Pharmacology, Physician Assistant Students	Lecturer: 45 students
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Description: reviews actions and therapeutic uses of drugs, principles of pharmacology, pharmacokinetics, autonomic and cardiovascular pharmacology, neuropharmacology, endocrine pharmacology, GI and respiratory pharmacology, chemotherapy and toxicology, and basics in prescription writing.

2013-2017	CIRC6007 Mind, Brain and Behavior, Medical Students	Lecturer: 200 students
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Description: the neurology- and psychiatric-based nervous system module taken by 2nd-year medical students. I participate in multiple classes in a multidisciplinary team to provide instruction on the basic science, diagnosis and case management, and therapeutics for anxiety and substance abuse disorders.

2012-2017	INTD5040 Fundamental Neuroscience, MD/PhD Students	Lecturer: 15 students
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Description: broad survey of the basics of molecular, cellular, and developmental neuroscience. I teach a class on the molecular and cellular mechanisms of GABA_A neurotransmission and therapeutic consequences of GABA_A receptor drugs.

2008-2017	PHAR5001 Pharmacology, Dental Students	Lecturer: 100 students
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Description: overview of the general principles of drug action for the treatment and alleviation of symptoms of medical and dental diseases including pharmacodynamics of major drug groups, toxicology, and contemporary prescription writing. My contribution covers the basic anatomy of the CNS and the pharmacology and therapeutics of anti-anxiety and hypnotic drugs, which are the most commonly prescribed by dentists.

2009-2017 PHAR5020 Basics of Research Design, MD/PhD Students Director: 15 students

Description: 2-credit hour course required of 2nd-year pharmacology and neuroscience PhD students divided into two sections: 1) overview of research design and statistics and 2) communicating scientific ideas through grant writing. The course has a heavy writing component.

2011-2017 PHAR5013 Principles of Pharmacology, MD/PhD Students Lecturer: 15 students

Description: surveys principles of drug action. I have two lectures: one reviews receptor mechanisms of drug tolerance and the second reviews pharmacokinetic and pharmacodynamic determinants of drug dependence and withdrawal.

2008-2014 PHAR5091 Therapeutics, MD/PhD Students Director: 10 students

Description: overview of therapeutic considerations of major drug classes for treatment of anxiety, sleep disorders, depression, schizophrenia, and substance use disorders.

2010, 2013 CSBL6021 Animal Models, PhD Students Lecturer: 10 students

Description: overview of animal models used for biomedical research with emphasis on primary scientific literature. I review pre-clinical assays sensitive to psychotherapeutics.

2010 CAINE Program Lectures in Addiction, Teachers Lecturer: 10 students

Description: CAINE (Critical Appraisal to Improve Neuroscience Education) is a grant-funded program for science-certified middle school teachers. I reviewed basics of drug abuse.

2010-2017 Pharmacology Track Journal Club, PhD Students Director: 20 students

Description: required of pharmacology track students. Students choose a paper and present it to students and faculty. Improves critical thinking and develops presentation skills. I coordinate and provide feedback to students on strengths and areas in need of improvement.

2008-2017 Addiction Journal Club, Students and Faculty

Description: biweekly journal club consisting of PhD students, postdoctoral trainees and faculty with mutual interests in pharmacology, behavior, and addiction. Faculty take turns selecting and coordinating 8-10 articles per topic section.

University of Houston Clear Lake Didactic Teaching

1997-2000 Current Perspectives in Psychology I, Undergraduate Director: 60 students

Description: *advanced psychology course; extended overview of several major topic domains including the psychology history, language development, motivation, emotion, social psychology, and abnormal psychology.*

1998 Current Perspectives in Psychology II, Undergraduate Director: 60 students

Description: *advanced psychology course; extended overview of several major topic domains including the biological basis of behavior, sensation and perception, consciousness, learning, memory, cognition, intelligence, and applied fields in contemporary psychology.*

1999 Biological Basis of Behavior, Graduate Director: 10 students

1999 Brain and Behavior, Undergraduate Director: 30 students

Description: *reviewed the CNS (neurons, synapses, action potentials, neurotransmitters, and neuroanatomy) and its modulation of behavior, including sensory perception, motor control, sleep and awareness, drives, emotions, learning, and language, as well as disease including depression, bipolar disorder, schizophrenia, Parkinson's, Alzheimer's, and aphasia.*

1998 Learning and Behavior, Undergraduate Director: 30 students

Description: *basic overview of classical and operant conditioning, including a hands-on project allowing students to shape simple behavior, establish a basic schedule of reinforcement, and interpret cumulative records.*

1997-2000 Behaviorally Active Drugs, Graduate Director: 10 students

1998 Drugs and Behavior, Undergraduate Director: 30 students

Description: *overview of CNS-acting drug effects on mental state and behavior. Several abused drug classes were examined as well as psychotherapeutics for anxiety, depression, and schizophrenia.*

Texas A&M University Didactic Teaching

1996 Introduction to Psychology, Undergraduate Co-Director: 300 students

Description: *Introductory course dealing with elementary principles of human behavior. As a senior PhD student in the Department of Psychology at Texas A&M University I was among a select group in a series of courses on cutting-edge pedagogy in psychology education under the guidance of Ludy T. Benjamin Jr. PhD, Presidential Professor of Teaching Excellence, Professor of Psychology and Educational Psychology.*

SERVICE

NIH Study Section Reviews

2017-2021 (Member) 2006, 2016	Biobehavioral Regulation, Learning and Ethology Study Section
2021	CounterACT-Countermeasures Against Chemical Threats (CounterACT) Research Centers of Excellence
2021	Special Emphasis Panel: CounterACT-Countermeasures against Chemical Threats
2020	Special Emphasis Panel: Targeting Inflammasomes in Substance Abuse and HIV
2015-2017	Special Emphasis Panel: Alcohol, Neurotoxicity and Drugs
2011-2017	NIH Pre-/Post-Doc Fellowship Study Section: Behavioral Neuroscience
2011	NIDA Special Emphasis Panel: Program Projects, New Molecular Entities to Treat Substance Use Disorders
2011	NIDA Special Emphasis Panel: New Molecular Entities to Treat Substance Use Disorders
2006-2007	NIDA Medication Development (NIDA-L)
2006	NIDA Training and Career Development (NIDA-K)

Scientific Journal Reviews and Editorial Boards

2019	Special Guest Editor, Pharmacology, Biochemistry & Behavior
2006-2017	Ad-Hoc Field Editor, International Journal of Neuropsychopharmacology

Ad-Hoc Reviews

American Association of Pharmaceutical Scientists Journal
 Behavioural Pharmacology
 Brain Research
 Brain Research Bulletin
 Drug and Alcohol Dependence
 European Journal of Pharmaceutical Sciences
 Experimental and Clinical Psychopharmacology
 Frontiers in Genetics
 Frontiers in Pharmacology

Frontiers Plant Science
 Journal of Pharmacology and Experimental Therapeutics
 International Review of Psychiatry
 Institute for Laboratory Animal Research (ILAR) Journal
 Neuropharmacology
 Neuropsychopharmacology
 Neurotoxicology
 Pharmacology Biochemistry and Behavior
 Physiology and Behavior
 PLOS One
 Prostaglandins Other Lipid Mediator
 Psychopharmacology
 Science Translational Medicine

National and International Committees

2019-2020 Programming Committee: Discovery & Basic Research Track Chair, American Association of Pharmaceutical Scientists

2008-2011 Programming Committee, College on Problems of Drug Dependence

The flagship scientific organization of the National Institute on Drug Abuse. Programming committee members are responsible for choosing 12-14 symposia from among approximately 60 symposium applications. This committee also judges approximately 1000 research abstracts and programs oral and poster presentations.

2009-2011 Executive Committee, Division of Behavioral Pharmacology
 American Society of Pharmacology and Experimental Therapeutics

Responsibilities included meeting several times per year (via teleconference and during the annual Experimental Biology meeting) to discuss scientific programming, budget, student and post-doctoral research competitions, outreach activities, and other business relevant to the division. In addition, I led fund-raising and organizing efforts for graduate student/post-doc event held in conjunction with the annual Experimental Biology meeting. The purpose of this event was to bring together junior and senior membership in a relaxed environment where valuable career and professional advice could be exchanged.

2002-2009 President, Society for Neuroscience San Antonio Chapter

Led an elected board of scientists from various universities in San Antonio to promote neuroscience research. Solicited travel award applications from the membership, coordinated review, and identified two outstanding neuroscience graduate students and one post-doctoral fellow to represent the Alamo Chapter. Funds were successfully obtained from the Society for Neuroscience for travel to both national (annual meeting of the SFN) and international meetings (IBRO).

2009-2016 Executive Organizing Committee
 Chair, Travel Awards Committee
 Behavior, Biology, and Chemistry: Translational Research in Addiction Conference

Two-day international conference held annually in San Antonio to promote translational research among chemists, biologists, and behavioral scientists in drug addiction. Coordinated and scheduled research presentations (plenary symposium, oral communications, and poster communications) and all meeting-related activities. Coordinated review of student award applications, selected travel awardees, budgeted travel awards, supervised oral and poster presentation judging, selected award winners, and disseminated written feedback to junior presenters after the conference.

2017-2018 Executive Board, Texas Research Society on Alcoholism

Organization that promotes research to understand, prevent, and treat alcoholism and other substance use disorders; to extend scientific knowledge of these disorders; and to promote interaction and communication among research scientists in Texas and surrounding states.

The University Of Texas Health San Antonio Committees

University

2014-2017 Council of Principal Investigators

Elected position from the UT Health San Antonio research community. The CPI's mission is to ensure continued improvement of the research environment for faculty, students and staff at UT Health San Antonio. The CPI, acting as a voice for the PIs it represents, works with administration to optimize the efficiency and effectiveness of the research and training environment, with the goal of increasing the national recognition of UT Health San Antonio as an institution competitive in research and teaching. The CPI meets at least monthly to consider specific issues relevant to research and graduate environments. Recommendations are formulated, then discussed with and implemented through the appropriate organizations or administrative offices.

2007-2010 Institutional Animal Care and Use Committee

Faculty oversight committee appointed by the university President to ensure that all programs concerning the care and use of laboratory animals are following Federal and university rules and regulations. The IACUC is responsible for: 1) Assuring that the use of animals in research, teaching and/or education is in accordance with institutional and Federal guidelines; 2) Assisting the faculty whose research endeavors involve animals; 3) Reviewing the programs for the care and treatment of animals at least semiannually to assess compliance with institutional and Federal standards; 4) Review all protocols advocating the use of animals in research, teaching or education as needed, but at least on a semiannual basis.

2012 Search Committee, Director of Office of Postdoctoral Affairs

Selected the inaugural Director of OPA, a milestone at the university for supporting postdoctoral training and professional development.

School of Medicine

2014-2017 Curriculum Committee

Establishes the requirements for the degree of Doctor of Medicine, evaluates the quality and organization of the current curriculum, and develops and recommends to the Dean of the School of Medicine strategies for implementing changes in the content, scope, and sequence of courses, selectives, and electives. I am also a member of the Design and Integration subcommittee. This subcommittee continually monitors the curriculum design of all four years of medical school to include, but not be restricted to, the following aspects of mandatory and elective courses/rotations: Contact hours, pedagogy, content, assessment, etc., and brings recommendations to the curriculum committee when appropriate. Any changes to standing courses/clerkships/rotations are presented to this subcommittee by the course director. These changes may include contact hours, pedagogy, content, grading, objectives, etc. Any new course proposals will be presented to this subcommittee.

2008-2009 Admissions Committee

Conducted 30-min interviews and provided comprehensive written summaries of the interview for approximately 30 medical school applicants.

2014-2015 Internal Grant Reviewer
Bridge Funds and Pilot Program Projects

Served with other UT Health San Antonio faculty as peer reviewers of applications for bridge and pilot program projects coordinated through the office of the associate dean for research.

Graduate School of Biomedical Sciences

2011-2014 Admissions Committee

A multi-departmental body responsible for evaluating all applications for admission for PhD programs in the graduate school of biomedical sciences. Met as a committee weekly over the course of several months, interviewed domestic and foreign candidates, granted admission, and awarded scholarships to the most qualified candidates.

Department of Pharmacology

2013-2017 Promotions and Tenure Committee

Reviews applications for promotion to associate professor with tenure or full professor and makes recommendations for approval to the department chair.

2009-2012 ASPET Summer Undergraduate Research Program Admissions Committee

Responsible for reviewing application materials and identifying the top candidates to receive offers to participate in the summer undergraduate research program.

2009-2012 Committee on Graduate Studies

Monitors student academic progress, coordinates selection of dissertation supervisor and supervising committees, coordinates and participates in student qualifying exams, and resolves student issues as needed.

2007-2010 Curriculum Committee

Steering committee of pharmacology curriculum in the graduate school of biomedical sciences.

2006-2009 Chair, Adjunct and Cross Appointment Committee

Reviewed adjunct and cross appointment applications and coordinated meetings with committee members to recommend selected candidates to the pharmacology Chair.

Other

2007-2010 Pharmacology Department Seminar Series Coordinator

Coordinate weekly seminars and introduce speakers.

2006-2010 Pharmacology Department Graduate Student Research Forum

Poster judge

2004-2007 Pharmacology Department Graduate Student Interviews

Interviewed graduate student applicants to our Graduate Program in Pharmacology

2007-2017 Graduate School of Biomedical Sciences Student Applicant Interviews

Interviewed and met with graduate student applicants to the Integrated Multidisciplinary Graduate Program

2009-2011 Center for Biomedical Neuroscience Research Forum

Poster judge

2002-2011 Society for Neuroscience Brain Bowl Competition Judge

Prepared questions judged contestants at a quiz bowl style competition among undergraduate teams from Texas universities on their knowledge of various topics in neuroscience.

Promotion and Tenure Reviews

2009 Virginia Commonwealth University

2012 The University of Texas Health San Antonio

2019 Mercer University, Penn State University, University of Hawaii at Hilo

Membership in Professional Affiliations

American Association of Colleges of Pharmacy

American Association of Pharmaceutical Scientists

American Society of Pharmacology and Experimental Therapeutics

American Society of Pharmacognosy

Behavioral Pharmacology Society

College on Problems of Drug Dependence

International Cannabinoid Research Society

Safety Pharmacology Society

Society for Neuroscience

Society for the Study of Ingestive Behavior

Honors and Awards

1999 Federation of American Societies for Experimental Biology Travel Award

1999 College on Problems of Drug Dependence Travel Award Fellowship

1999 National Institute on Drug Abuse Director's Travel Award

1998	Texas A&M University Distinguished Graduate Student Award
1997	Texas A&M University Faculty of Neuroscience Travel Award
1996	Texas A&M University Faculty of Neuroscience Travel Award
1996	Texas A&M University Department of Psychology Travel Award
1995	Texas A&M University Faculty of Neuroscience Travel Award
1995	Texas A&M University Department of Psychology Travel Award
1995	Society for the Study of Ingestive Behavior Young Investigator Award
1994	Texas A&M University Department of Psychology Travel Award

PROFESSIONAL REFERENCES

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WEB PRESENCE AND MEDIA

Faculty page

<https://pharmacy.ufl.edu/faculty/lance-r-mcmahon/>

Laboratory page

<https://pd.pharmacy.ufl.edu/research/laboratory-of-behavioral-and-cell-based-pharmacognosy/>

Center for Addiction Research and Education

<https://addictionresearch.health.ufl.edu/faculty/lance-mcmahon/>

McKnight Brain Institute

<https://mbi.ufl.edu/general-information/executive-committee/>

News Stories

<https://theconversation.com/cbd-the-next-weapon-in-the-war-against-opioid-addiction-117634>

<https://theconversation.com/cbd-rising-star-or-popular-fad-110146>

<https://pharmacy.ufl.edu/2019/04/01/10-10-all-pharmacodynamics-tenure-track-faculty-are-federally-funded/>

<https://pharmacy.ufl.edu/2019/05/13/nida-awards-uf-college-of-pharmacy-additional-3-4-million-kratom-grant/>

<https://pharmacy.ufl.edu/2018/12/10/uf-college-of-pharmacy-receives-3-5-million-nida-grant-to-bolster-kratom-research/>

<https://www.inverse.com/article/51673-nida-grants-uf-millions-for-kratom-research>

<https://www.axios.com/a-novel-drug-to-replace-opioids-for-pain-promising-63c91df6-9bcb-4751-bf31-68290bc1eea8.html>

<https://pharmacy.ufl.edu/2017/09/23/dr-lance-mcmahon-shares-expertise-on-panel-discussing-psychedelic-use-to-treat-psychiatric-conditions/>

<https://pharmacy.ufl.edu/2017/07/27/lance-r-mcmahon-ph-d-appointed-chair-of-the-department-of-pharmacodynamics/>

Podcast

<https://addictionresearch.health.ufl.edu/2020/05/04/uf-care-podcast-episode-7-dr-lance-mcmahon-chair-uf-department-of-pharmacodynamics/>