

Proclivitas

SUMMER 2020

WAGGONER CENTER FOR ALCOHOL & ADDICTION RESEARCH *Newsletter*

Above (left to right):

Luis A. Natividad,
and Caitlin Orsini

Photo Credit:
Eddie Gaspar

Waggoner Center Welcomes New Affiliated Faculty Members

The Waggoner Center for Alcohol and Addiction Research welcomed two University of Texas at Austin scientists to its affiliated faculty last Fall: **Luis A. Natividad**, assistant professor in the College of Pharmacy, Division of Pharmacology and Toxicology, and **Caitlin Orsini**, assistant professor in the College of Liberal Arts, Department of Psychology.

Natividad, who received his B.S. in Psychology from UT Austin, seeks to understand how protein signaling in the brain contributes to behavioral dysfunction in addiction. Natividad combines mass spectrometry and behavioral approaches to identify signaling pathways that regulate symptoms of “the ‘dark side’ of addiction,” which involves maladaptive changes in mood and cognition that help perpetuate drug use. These symptoms, Natividad says, are “one of the factors that we know can have a profound impact on addiction behavior.” He is especially interested in cognitive impairments, such as impulsivity and compulsivity, that emerge during alcohol withdrawal. He plans to examine proteomic changes in cortical brain areas to determine mechanisms behind disrupted cognitive function in addiction. “By understanding the molecular changes that are driven by substance abuse, it may be possible to stall or reverse these changes with novel therapeutics.” Natividad also looks forward to collaboration and mentorship opportunities afforded by the Waggoner Center. “The reality is that science is not done in isolation and each of us contributes information that promotes the basic understanding and correction of a significant problem.”

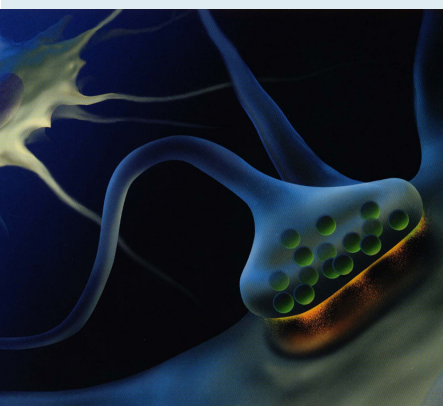
Orsini received her B.S. in Psychology with a Behavioral Neuroscience concentration from Washington College in Chestertown, MD, and did her graduate training in the Biopsychology area of the Department of Psychology at the University of Michigan. She investigates the effects of chronic stimulant and opioid use on decision-making.

Increased risk taking and impulsivity are behavioral consequences of long-term substance abuse that contribute to continued drug use and relapse after abstinence. Using rodent models of drug use and decision-making along with “techniques allowing for monitoring and manipulating brain activity in real time,” Orsini aims to develop “strategies to treat this behavioral deficit and, ultimately, drug use itself.” Orsini, who also has appointments in Neurology and Psychiatry at Dell Medical School, notes that the interaction between decision-making and substance use differs between males and females. Studying these differences is an important component of her work. “We are only beginning to understand how complex cognitive functions become compromised after substance abuse, and how these alterations may be sex-dependent.”

At the Waggoner Center, Orsini hopes to make an impact towards eradicating substance abuse and cultivate passion in the next generation of neuroscientists. She’s motivated to “train young scientists to think critically, conduct rigorous scientific experiments and communicate their findings effectively.”

Our Mission

To advance knowledge of alcohol and substance use disorders and develop solutions for their prevention and treatment.



COVID-19 UPDATES

The 2020 Waggoner Center Advance featuring keynote speaker Dr. Marina Picciotto is postponed until 2021.

Wednesday research seminars continue to be held virtually until further notice.

To view our full collection of COVID-19 resources, visit: <https://waggonercenter.utexas.edu/covid-19-resources>



(scan code to visit link)

FUNDING NEWS

Johann Eberhart, associate professor of Molecular Biosciences, received a Sustaining Outstanding Achievement in Research (SOAR) award from the National Institute of Dental and Craniofacial Research. This is an eight-year, \$7.6 million grant to study the genetic and environmental causes of human birth defects of the head and face, which now occur in up to 5% of all births.

Laura Ferguson, postdoctoral fellow in the Messing Lab, received the Ruth L. Kirschstein National Research Service Award Individual Postdoctoral Fellowship for her project, "Transcriptome-guided diagnosis and therapy for alcohol use disorder." The award includes \$79,341 for 15 months of support. Dr. Ferguson will investigate the extent to which blood acts as a surrogate for brain tissue and predicts alcohol dependence status and drug treatments. This information will help develop molecular-based diagnosis and treatment options and gain insights into biological mechanisms that may contribute to the transition from recreational alcohol use to excessive drinking.

Elizabeth Lippard, assistant professor of Psychiatry, received the NIH Mentored Research Scientist Development Award which supports the transition from supervised training to research independence, for her proposal, "Subjective response to alcohol and associated neural systems in bipolar disorder." Dr. Lippard intends to investigate mechanisms contributing to individual differences in psychiatric disease progression. This work utilizes advanced structural fMRI and behavioral testing to study biomarkers that may predict risk of alcohol use problems in people with bipolar disorder, findings that could help pinpoint new targets for early detection of risk.

Regina Mangieri, research assistant professor in the Division of Pharmacology and Toxicology in the College of Pharmacy, and **Heather Aziz**,

Former Waggoner Center graduate student **Emma Erickson** was selected as the inaugural intern for the journal *Alcoholism: Clinical and Experimental Research* (ACER). We interviewed Emma about this unique award. Interview edited for length and clarity.

What is the ACER internship? The internship is a new opportunity for graduate students in alcohol research with an interest in scientific editing, publishing and communication to learn more about how a scientific journal is managed and to gain work experience useful for a career at a journal or publishing company.

What are your duties for this internship, and what is the duration? The internship was for one year. I helped manage the journal's social media pages and plan content for special issues. As part of the internship, I was included in much of the day-to-day communication surrounding issues like open access publication, revenue, promotional campaigns, and impact analyses of published papers.

How were you selected? I expressed interest in a career in scientific editing to Dr. R. Adron Harris, WCAAR associate director. At the Research Society on Alcoholism meeting this summer he introduced me to the editor of ACER, Henry Kranzler.

Dr. Kranzler invited me to the editorial board lunch meeting. Later, Dr. Kranzler came up with the idea of a graduate student internship, and asked me to be the first intern.

How does the internship impact you and your research goals, and those of the WCAAR? This internship allowed me to gain insight into a career path that is not considered the traditional path of a science PhD. Disseminating research findings is an integral part of scientific progress, especially when it involves a major public health concern like alcohol use disorder. The internship opens doors for students to understand the importance and the challenges associated with peer-reviewed scientific publication and the relationship between scientists, editors, readers, and the public.

research staff in the Mangieri Lab, raised funds through UT Austin's crowdfunding platform HornRaiser for a project investigating green tea as a potential therapy for alcohol use disorder. They plan to study L-theanine, a compound found in green tea that may help correct molecular imbalances arising in the brain during cycles of intoxication and withdrawal. The Mangieri Lab's campaign surpassed the initial fundraising goal of \$3,500, raising over \$6,000, which will help cover open access publication costs

NEWS

Associate Professor **Michela Marinelli**, Department of Neuroscience, was selected as one of *The Alcade's* Texas 10 for 2020. The Texas 10 is a select list of ten of the most inspiring University of Texas professors, chosen each year from a pool of impactful educators nominated by former students.

Kimberly Nixon, James T. Doluisio Centennial Fellowship associate professor, and **Regina Mangieri**, research assistant professor, both in the College of Pharmacy, provided commentary in the November 22, 2019 issue of *Science*. In their article "Compelled to drink: Why some cannot stop," they explored how individual differences in aversive stimulus processing may explain compulsive alcohol drinking.

DOCTORAL DEGREES AWARDED

Alfire Sidik | Aug. 2019

Eberhart Lab

"Genetic and bioinformatic approaches to characterize ethanol teratogenesis"

Adam Gordon | Nov. 2019

Marinelli Lab

"The lateral preoptic area regulates the ventral tegmental area and drives reinforcement and complex reward behaviors"

Dawn Guzman | Nov. 2019

Pierce Lab

"Using *C. elegans* to investigate the transgenerational effects of EtOH and to genetically repair a gait transition impairment in dopamine-deficient animals"

Anna Warden | Jan. 2020

Harris Lab

"Neuroimmune signaling in alcohol abuse"

Emma Erickson | Apr. 2020

Harris Lab

"Astrocytes in alcohol use disorder"

PUBLICATIONS

Bajo M, Patel RR, Hedges DM, Varodayan FP, Vlkolinsky R, Davis TD, Burkart MD, **Blednov YA**, Roberto M. Role of MyD88 in IL-1 β and ethanol modulation of GABAergic transmission in the central amygdala. *Brain Sci*, 2019;9(12), 361.

Bocarsly ME, da Silva E Silva D, Kolb V, Luderman KD, Shashikiran S, Rubinstein M, Sibley DR, **Dobbs LK**, Alvarez VA. A mechanism linking two known vulnerability factors for alcohol abuse: Heightened alcohol stimulation and low striatal dopamine D2 receptors. *Cell Rep*, 2019;29(5), 1147–1163.e5.

Brenner E, Tiwari GR, Kapoor M, Liu Y, Brock A, **Mayfield RD**. Single cell transcriptome profiling of the human alcohol-dependent brain. *Hum Mol Genet*, 2020;ddaa038.

Caslin B, Maguire C, Karmakar A, Mohler K, Wylie D, **Melamed E**. Alcohol shifts gut microbial networks and ameliorates a murine model of neuroinflammation in a sex-specific pattern. *Proc Natl Acad Sci*, 2019;116 (51):25808–25815.

Cofresí RU, Bartholow BD, **Fromme K**. Female drinkers are more sensitive than male drinkers to alcohol-induced heart rate increase. *Exp Clin Psychopharmacol*, 2019;10.1037/pha0000338.

Cofresí RU, Monfils MH, Chaudhri N, **Gonzales RA**, Lee HJ. Cue-alcohol associative learning in female rats. *Alcohol*, 2019;81:1–9.

Corbin WR, Ong TQ, Champion C, **Fromme K**. Relations among religiosity, age of self-identification as gay, lesbian, or bisexual, and alcohol use among college students. *Psychol Addict Behav*, 2020;10.1037/adb0000559.

Erickson EK, **Blednov YA**, **Harris RA**, **Mayfield RD**. Glial gene networks associated with alcohol dependence. *Sci Rep*, 2019;9(1):10949.

Erickson EK, DaCosta AJ, Mason SC, **Blednov YA**, **Harris RA**, **Mayfield RD**. Cortical astrocytes regulate ethanol consumption and intoxication in mice. *Neuropsychopharmacology*, 2020; 10.1038/s41386-020-0721-0.

Ferguson LB, Patil S, Moskowitz BA, Ponomarev I, **Harris RA**, **Mayfield RD**, **Messing RO**. A pathway-based genomic approach to identify medications: Application to alcohol use disorder. *Brain Sci*, 2019;9(12):381.

Field CA, Von Sternberg K, **Velasquez MM**. Randomized trial of screening and brief

intervention to reduce injury and substance abuse in an urban level I trauma center. *Drug Alcohol Depend*, 2020;208:107792.

Gordon-Fennell AG, Will RG, Ramachandra V, Gordon-Fennell L, **Dominguez JM**, Zahm DS, **Marinelli M**. The lateral preoptic area: A novel regulator of reward seeking and neuronal activity in the ventral tegmental area. *Front Neurosci*, 2020;13:1433.

Hai AH, Hammock K, **Velasquez MM**. The efficacy of technology-based interventions for alcohol and illicit drug use among women of childbearing age: A systematic review and meta-analysis. *Alcohol Clin Exp Res*, 2019;43(12):2464–2 479.

Hernandez M, von Sternberg KL, Castro Y, **Velasquez MM**. The role of acculturation and alcohol problems on frequency of cannabis use among Latinas at risk of an alcohol-exposed pregnancy. *Subst Use Misuse*, 2019;54(12):1980–1990.

Lai D, Wetherill L, Kapoor M, Johnson EC, Schwandt M, Ramchandani VA, Goldman D, Joslyn G, Rao X, Liu Y, Farris S, **Mayfield RD**, ... Schuckit, M. Genome-wide association studies of the self-rating of effects of ethanol (SRE). *Addict Biol*, 2020;25(2):e12800.

Maiya R, Pomrenze MB, Tran T, Tiwari GR, Beckham A, Paul MT, **Mayfield RD**, **Messing RO**. Differential regulation of alcohol consumption and reward by the transcriptional cofactor LMO4. *Mol Psychiatry*, 2020;10.1038/s41380-020-0706-8.

Meng W, Sjöholm LK, Kononenko O, ... **Mayfield RD**, Dang Y, Karpyak VM, Schumann G, IMAGEN Consortium, ... Liu Y. Genotype-dependent epigenetic regulation of DLGAP2 in alcohol use and dependence. *Mol Psychiatry*, 2019;10.1038/s41380-019-0588-9.

Michopoulos V, Beurel E, Gould F, Dhabhar FS, Schultebraucks K, Galatzer-Levy I, Rothbaum BO, Ressler KJ, **Nemeroff CB**. Association of prospective risk for chronic PTSD symptoms with low TNF α and IFN γ concentrations in the immediate aftermath of trauma exposure. *Am J Psychiatry*, 2020;177(1):58–65.

Mittal N, Fleming SM, Martinez A, Thakore N, Bell RL, Maddox WT, Schallert T, **Duvauchelle CL**. Sex differences in cognitive performance and alcohol consumption in High Alcohol-Drinking (HAD-1) rats. *Behav Brain Res*, 2020;381:112456.

Ozburn AR, Metten P, Potretzke S, Townsley KG, **Blednov YA**, Crabbe JC. Effects of

(Publications continued next page.)

BUILDING A PARTNERSHIP

Individual, foundation and corporate support is essential to the continued growth and success of this world-class research center.

To support the Waggoner Center for Alcohol and Addiction Research, please visit: <http://links.utexas.edu/crcykdo>



(scan code to visit link)

or call: 512-471-3299

College of Natural Sciences
Dean's Office
The University of Texas
at Austin
120 Inner Campus Drive
Stop G2500
Austin, TX 78712

USEFUL WEBSITES

Addiction Science Research and Education Center
sites.utexas.edu/asrec/

National Institute on Alcohol Abuse and Alcoholism (NIAAA), niaaa.nih.gov

National Institute on Drug Abuse (NIDA), nida.nih.gov

Research Society on Alcoholism (RSA), rsoa.org

International Society for Biomedical Research on Alcoholism (ISBRA)
isbra.com

Integrative Neuroscience Initiative on Alcoholism-Neuroimmune (INIA-N)
sites.cns.utexas.edu/inia-neuroimmune/about-inia-n



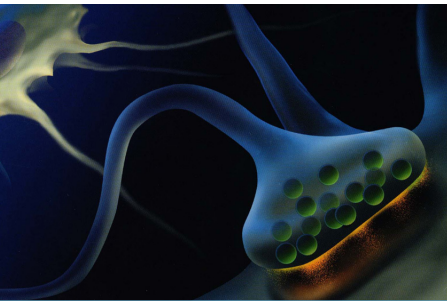
The University of Texas at Austin

Waggoner Center for Alcohol & Addiction Research

1601-B Trinity St, Z0700
HDB 5.322
Austin, Texas 78712
USA

Tel: 512-471-7473
Fax: 512-471-9272

waggonercenter.utexas.edu



Proclivitas

The Waggoner Center for Alcohol and Addiction Research was established in 1999 at The University of Texas at Austin. The center was made possible by a donation from M. June and J. Virgil Waggoner and matching funds from the university. The mission of the center is to advance knowledge of alcohol and substance use disorders and develop solutions for their prevention and treatment.

Director:

Robert O. Messing, M.D.

Associate Director:

R. Adron Harris, Ph.D.

Newsletter Production:

Niki (Katherine) Garcia-Holmes, Emma Erickson, Jody Mayfield and Marsha Berkman

WAGGONER CENTER FOR ALCOHOL & ADDICTION RESEARCH *Newsletter*

PUBLICATIONS *continued*

pharmacologically targeting neuroimmune pathways on alcohol drinking in mice selectively bred to drink to intoxication. *Alcohol Clin Exp Res*, 2020;44(2):553–566.

Parrish DE, von Sternberg K, Benjamins LJ, Duron JF, **Velasquez MM**. CHOICES-TEEN: Reducing substance-exposed pregnancy and HIV among juvenile justice adolescent females. *Res Soc Work Pract*, 2019;29(6):618–627.

Pflanz NC, Daszkowski AW, James KA, **Mihic SJ**. Ketone body modulation of ligand-gated ion channels. *Neuropharmacology*, 2019;148:21–30.

Pomrenze MB, Giovanetti SM, Maiya R, Gordon AG, Kreeger LJ, **Messing RO**. Dissecting the roles of GABA and neuropeptides from rat central amygdala CRF neurons in anxiety and fear learning. *Cell Rep*, 2019;29(1):13–21.e4.

Rao X, Thapa KS, Chen AB, ... **Mayfield RD**, Edenberg HJ, Liu Y. Allele-specific expression and high-throughput reporter assay reveal functional genetic variants associated with alcohol use disorders. *Mol Psychiatry*, 2019;10.1038/s41380-019-0508-z.

Swartz ME, Lovely CB, McCarthy N, Kuka T, **Eberhart JK**. Novel ethanol-sensitive

mutants identified in an F3 forward genetic screen. *Alcohol Clin Exp Res*, 2020;44(1):56–65.

Troutwine B, Park A, **Velez-Hernandez ME**, Lew L, **Mihic SJ**, **Atkinson NS**. F654A and K558Q mutations in NMDA receptor 1 affect ethanol-induced behaviors in *Drosophila*. *Alcohol Clin Exp Res*, 2019;43(12):2480–2493.

Venniuro M, Russell TI, Ramsey LA, Richie CT, Lesscher HMB, Giovanetti SM, **Messing RO**, Shaham Y. Abstinence-dependent dissociable central amygdala microcircuits control drug craving. *Proc Natl Acad Sci USA*, 2020;117(14):8126–8134.

Wang J, Blasio A, Chapman HL, Doebelin C, Liaw V, Kuryatov A, Giovanetti SM, Lindstrom J, Lin L, Cameron MD, Kamenecka TM, Pomrenze MB, **Messing RO**. Promoting activity of $(\alpha 4)\beta 2$ nicotinic cholinergic receptors reduces ethanol consumption. *Neuropsychopharmacology*, 2020;45(2):301–308.

Warden AS, Triplett TA, Lyu A, Grantham EK, Azzam MM, DaCosta A, Mason S, **Blednov YA**, Ehrlich LIR, **Mayfield RD**, **Harris RA**. Microglia depletion and alcohol: Transcriptome and behavioral profiles. *Addict Biol*, 2020;Mar 16:e12889.