Acclaimed Researcher joins Waggoner Center as Associate Director

We are pleased to welcome distinguished addiction researcher, Robert O. Messing, MD, as associate director. He recently joined The University of Texas at Austin as vice provost for biomedical sciences and holds the Henry M. Burlage Centennial Professorship in Pharmacy. Messing previously served as a long-time faculty member in Neurology at the University of California, San Francisco.

Messing’s research concerns the molecular mechanisms involved in addiction, anxiety, and pain. Of particular interest is signal transduction – the activation or inhibition of signals outside and/or within a cell that affects cell function – in response to drugs of abuse.

Messing’s laboratory has uncovered significant regulatory roles of protein kinase C (PKC), a family of enzymes found in signal transduction pathways. For example, one form of PKC, PKC-ε, promotes ethanol and nicotine consumption, increases anxiety, and mediates inflammatory and neuropathic pain. A short form of this enzyme, known as PKM-ζ, has previously been implicated in maintenance of long-term memory, since a drug that inhibits PKM-ζ causes memory loss. The Messing lab recently published results in the journal Nature\(^1\) that challenge that notion. They found that genetically engineered mice lacking PKM-ζ showed no memory disruption compared to wild-type mice, and that the PKM-ζ inhibitor still caused memory loss even in the mutant mice.

Other important findings include physiological roles of the N-type voltage-dependent calcium channel, a cell surface protein, and ENT1, a protein that transports nucleosides like adenosine into cells. Preventing calcium transmission by blocking the neuronal calcium channel reduced ethanol intoxication and the reinforcing and rewarding properties of ethanol consumption in rodents. In another study, the absence of ENT1 in mouse models indicated a decrease in A1 adenosine receptor function, leading to a promotion in alcohol consumption.

These research projects have led to ongoing efforts to develop treatments for pain, anxiety, and alcohol and nicotine addition.

The first annual showcase of research by our principal investigators, trainees, students, and collaborators took place March 22, 2013, at the Etter-Harbin Alumni Center on the university campus. Attended by approximately 90 participants, the conference featured 15 talks, covering topics in genomics/neuroimmunology, the brain addiction circuit, diverse genetics, and medication development, and included a poster session. Robert Messing, our new associate director, gave the keynote address.

**NEWS**

Marion and Laurence Frayne of Flower Mound, Texas, generously donated funds to the Waggoner Center in memory of their son, Gregory Frayne. The funds will help support a fellowship for a graduate student working in addiction research. The first recipient of the fellowship will be named in our next newsletter.

Former graduate student Leslie Whitaker, postdoctoral fellow Mickaël Degoulet, and principal investigator Hitoshi Morikawa (left) published a study on social deprivation and brain plasticity in the journal *Neuron* in January. Whitaker is a fellow in Bruce Hope’s lab at the National Institute on Drug Abuse in Baltimore, Maryland.


R. Adron Harris, director of the Waggoner Center, addressed the San Angelo chapter of the Texas Exes on March 7, 2013. He spoke about the medical and social impact of addiction and discussed potential treatments.

Sean Farris, postdoctoral fellow in the Harris Lab, spoke at the First Annual Symposium on Big Data in Biology, hosted by the university’s Center for Computational Biology and Bioinformatics, on May 10, 2013. The research discussed in his presentation, entitled *The Bits and Pieces of Alcohol Dependence*, relies on high-throughput screening, complex data, and high-performance computing.

**HONORS & AWARDS**

Johann Eberhart and Jon Pierce-Shimomura were two of five professors selected by the student-led Natural Sciences Council (NSC) to receive Faculty Service Awards on March 6, 2013. The awards recognize outstanding efforts by faculty members in the College of Natural Sciences (CNS) to enrich undergraduate education.

Doctoral candidate Laura Ferguson (Harris Lab) won a travel award to the 19th annual scientific conference of the Society on Neurommune Pharmacology in San Juan, Puerto Rico, April 3-6, 2013. She presented a paper entitled *Genomic Signature of PPAR Agonists in Brain and Liver: Role in Alcohol Consumption.*

**HONORS (continued)**

Lindsay Brettmann and Rose Stewart (Pierce-Shimomura Lab) won 2013 Undergraduate Research Fellowships from the Office of the Vice President for Research to help fund their research projects. Lindsay and fellow lab mate Kevin Hu presented posters during the CNS Undergraduate Research Forum on April 12, 2013, and received innovative research awards.

Judges at the Longhorn Research Bazaar, hosted by the Office of Undergraduate Research, gave three “Best Presentation” awards to participants of a poster session held April 17, 2013. Lindsay Becker (Pierce-Shimomura Lab) won in the Sciences, Engineering, and Communications category.

Recipients of the National Research Service Award from The National Institutes of Health:

Neil McCarthy (Eberhart Lab), *Gene/Environment Interactions underlying Fetal Alcohol Spectrum Disorder*

Ben Troutwine (Atkinson Lab), *The Role of Drosophila CrebA in Ethanol Tolerance*

Doctoral degrees awarded:

Ashley Crisp, PhD (Pierce-Shimomura Lab), Apr. 26, 2013 *Induction and Prevention of Patterned Neurodegeneration by Amyloid Precursor Protein*

Brooks Robinson, PhD (Atkinson Lab), May 8, 2013 *Ethanol Dependence in Drosophila Larvae*

Roseanna Robles, PhD (Atkinson Lab), Aug. 27, 2012 *Diazepam Binding Inhibitor and Tolerance to Ethanol in Drosophila melanogaster*

Christy Schier, PhD (Gonzales Lab), Nov. 19, 2012 *Medial Prefrontal Cortical Extracellular Dopamine Responses after Acute Experimenter-Administered or Oral Self-Administered Ethanol*
Joshua Russell (Pierce-Shimomura Lab) received the 2013 Michael H. Granoff Outstanding Student Award for Excellence in Graduate Education. The $6,000 award is supported by the Graduate School and University Co-op and recognizes and rewards exceptional students distinguished by scholarship, research, writing, service, and teaching.

Lindsay Becker (Pierce-Shimomura Lab) was selected by the College of Natural Sciences as a Dean’s Honored Graduate for 2013. The honor is given to no more than one percent of the college’s graduating class and recognizes significant achievements in academics, research, leadership, and service. Lindsay will begin graduate studies in Neuroscience at Stanford University this fall.

Lindsay Brettmann (Pierce-Shimomura Lab) received a 2013-14 Fulbright U.S. Student Award to Spain. She’ll assist with English instruction and complete a community project developing book clubs in hospital or hospice settings. She’ll defer her acceptance to University of Texas Southwestern Medical School for a year to participate in the program.

PUBLICATIONS


**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: utdirect.utexas.edu/apps/utgiving/online/nlogon/?menu1=NSWC or call: 512-471-3299 or contact: College of Natural Sciences Dean’s Office The University of Texas at Austin 120 Inner Campus Drive Stop G2500 Austin, TX 78712

Photos above by Joshua Russell and Lindsay Brettmann

(Publications continued next page.)
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 create a premier research center for alcohol and addiction research, thereby developing
solutions for the prevention and cure of these diseases.

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PUBLICATIONS (continued)

McCracken LM, Blednov YA, Trudell JR, Benavidez JM, Betz H, Harris RA (2013) Mutation of a zinc-bind-
ing residue in the glycine receptor alpha1 subunit changes ethanol sensitivity in vitro and alcohol consumption

Osterndorff-Kahanek E, Ponomarev I, Blednov YA, Harris RA (2013) Gene expression in brain and liver
produced by three different regimens of alcohol consumption in mice: comparison with immune activation.
PLoS One 8:e59870. doi:10.1371/journal.pone.0059870

Ozburn AR, Mayfield RD, Ponomarev I, Jones TA, Blednov YA, Harris RA (2012) Chronic self-admin-
istration of alcohol results in elevated DeltaFosB: comparison of hybrid mice with distinct drinking patterns.
BMC Neurosci 13:130.

motes exit from quiescence by suppressing the interferon response and cell-cycle arrest genes. Nucleic Acids Res
41:2239-2254.

http://dx.doi.org/10.1016/j.conb.2013.01.016

potentiation by alcohols and anaesthetics in a ligand-gated ion channel. Nat Commun. 4:1697. doi: 10.1038/
ncomms2682

Schier CJ, Dilly GA, Gonzales RA (2013) Intravenous Ethanol Increases Extracellular Dopamine in the Medial


Valenta JP, Job MO, Mangieri RA, Schier CJ, Howard EC, Gonzales RA (2013) mu-Opioid receptors in the
stimulation of mesolimbic dopamine activity by ethanol and morphine in Long-Evans rats: a delayed effect of