

Medical Pharmacology

FALL 2011

Graduate Program Newsletter

MESSAGE FROM INTERIM DEPARTMENT HEAD, DR. TODD VANDERAH

I want to welcome our students back for the Fall semester and hope they had a little time to vacation over the summer. Also, I want to welcome the new students joining our program. We have three new Ph.D. candidates, two M.S. candidates and four Perfusion/M.S. candidates. Let's make sure that we make them feel at home.

There have been a number of changes within the department over the summer with the retirement of three faculty and one staff member. Drs. Halonen, Lai and Sipes have all retired in 2011 and have been granted Professors of Emeritus within the Department of Pharmacology, College of Medicine.

Dr. Halonen earned her PhD. from the University of Arizona in 1973 and has been with the department since July, 1995. Dr. Halonen has made great advances in our knowledge about asthma and respiratory physiology/pharmacology.

Dr. Lai earned her Ph.D. degree from the Imperial College, University of London and has been with the department since February, 1988. Dr. Lai has been instrumental in discovering novel mechanisms that underlie and maintain chronic pain.

Dr. Sipes earned his PhD. degree from the University of Pittsburgh in 1969 and has been part of the university since July, 1973. Dr. Sipes has been the Department Head in Pharmacology for 20 years. Dr. Sipes has made great advances in understanding the metabolism of xenobiotics and liver functions.

All three will continue to be active faculty emeritus in the department guiding current students and strengthening the mission of the department.

One of our star staff members, Jane Ageton, also retired this June, after 30 years of service to the University. Jane was with the department for 21 years adding great strength and consistency to the graduate program and the department.

Another change that will occur this fall, is the departing of Dr. Dan Stamer who has accepted a position at Duke University. Dr. Stamer has been a solid participant in our graduate program and our department and will be dearly missed. Dan earned his Ph.D. degree in Pharmacology and Toxicology at the University of Arizona in 1996.

As we move into the Fall semester, we will have some changes within the graduate program curriculum. Dr. Patrick Mantyh will be the course director for the Scientific Writing, Strategy Skills and Ethics Course, PHCL (595B) previously directed by Dr. Stamer. In addition, Dr. Frank Porreca will be the new director of Principles of Pharmacology (PHCL 420/520) taught this Fall, as I have assumed directorship of the Human Neuroscience Course for the Medical School. Our new required course will be offered this Fall, Pharmacological Basis of Therapeutics II, PHCL 502 (aka 501B), directed by Dr. Edward French. The course will offer understandings in immunology, endocrine, ocular, bacterial and cancer pharmacology.

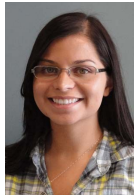
Have a great semester!

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INCOMING CLASS OF 2011

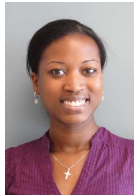
The Department of Pharmacology would like to welcome the following students to the program.

PhD.

Carolina Burgos-Vega received her undergraduate degree from New Mexico State University —Las Cruces. Some of you may know Carolina, as she worked in Dr. Porreca's lab in the Summer of 2010. Caroline is also the recipient of an IMSD award.

MS Perfusion

Seana Hall received her undergraduate degree from the University of Arizona.



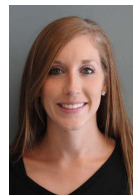
Shaness Grenald received her undergraduate degree from Saint Johns University, New York. Shaness is also the recipient of an IMSD award and Yamamura Fellowship.



Benjamin Mills received his undergraduate degree from Arizona State University.



Lauren Slosky received her undergraduate degree from the University of Arizona. Lauren is also the recipient of the Yamamura Fellowship.



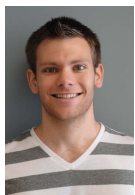
Heather Nitka received her undergraduate degree from the University of Arizona.

MS

Aaron Bloom received his undergraduate degree from Ithaca College. Aaron will be working in Dr. Mantyh's Lab.



Joshua Wright received his undergraduate degree from the University of Arizona.



Alex Sandweiss received his undergraduate degree from the University of Arizona. Alex will be working in Dr. Vanderah's Lab.

2011 YAMAMURA FELLOWSHIP RECIPIENTS

Dr. Yamamura, a Regents Professor at the University of Arizona, was a distinguished researcher, teacher and mentor. Fellowships as a tribute to his contributions to pharmacology are awarded to one or two first year students in the Graduate Program in Medical Pharmacology.

This year's recipients are:

Shaness Grenald — Ms. Grenald majored in Psychology

Lauren Slosky - Ms. Slosky majored in Molecular and Cellular Biology, and Psychology.

2011 GRADUATE STUDENT REPS

Each Spring, graduate students nominate and vote for two fellow 3rd/4th year students to serve as Representatives of the Graduate Program in Medical Pharmacology.

This year Katherine Hanlon and Gabriel Knudsen were elected as the Graduate Reps.

This year and in the future, we will be calling for nominations in December, so start thinking now for who you would like to nominate.

2012 GRADUATE RECRUITMENT

Graduate Recruitment will be held February 9–11. Please mark your calendars. We expect all current students and faculty to participate in recruiting future graduate students.

GRADUATE STUDENT REMINDERS

Please see Vickie Healey, Graduate Coordinator, to reserve a room. Students can either email Vickie at vhealey@email.arizona.edu or she is located in LSN room 646.

Graduate student mailboxes are located in front of the Admin Office located on the 5th Floor. Please check at least once a week.

COMPREHENSIVE EXAMS

Congratulations to the following students for moving on to the next stage of their academic work and becoming ABD (all but dissertation).

Fall 2010

Lucy Sanchez Covarrubias

Spring 2010

Dipti Tillu

**CONGRATULATIONS TO OUR
FALL 2010 AND SPRING 2011 GRADUATES****Fall 2010****Tally Largent-Milnes (PHD)**

"Neurokinin 1 Receptors and Their Role in Opioid-Induced Hyperalgesia, Antinociceptive Tolerance and Reward"

**Spring 2011****Jorge Garcia (MS—Perfusion)**

"Cardiac Power Output, Its Role in Defining Heart Failure for Future Mechanical Circulatory Support"

Crista Lickteig (MS—Perfusion)

"Probiotics: Healthy Bacteria Used in Heart Surgery Patients"

Sheyda Seyedan (MS—Perfusion)

"Pediatric Heart Transplants and Compliance"

PHARMACOLOGY STUDENT ROTATIONS

Beginning Fall 2011 student rotation schedule is as follows:

Begin search for Rotation 1: August 15-August 31
Begin search for Rotation 2: October 15-October 31
Begin search for Rotation 3: January 15-January 31

Rotation 1: September 1 – October 30
Rotation 2: November 1 – January 15
Rotation 3: February 1 – April 15

Once your rotation is finished, please complete and return "Lab Rotation Evaluation" form. The form can be found at <http://www.pharmacology.arizona.edu/graduateforms.cfm>

EXPECTED GRADUATE DATE CHANGE

For complicated systems reasons, the Graduate College will handle expected Graduation Date a little differently. The Graduate College will continue to use the Master's Program of Study and the Committee Appointment Form for master's and doctoral students respectively to record expected graduation date.

Prior to receiving these forms, the Graduate College will use the standard length of study. This is five years from first enrollment for doctoral students and two years from first enrollment for master's students. This tentative date will avoid having a blank in the expected graduation field which can be problematic for students wanting to defer loans. As long as master's students submit their POS before the end of two years and doctoral students submit their Committee Appointment Form within five years. And, of course, all students should be doing this anyway! When the Grad College receives the form, they will update the expected graduation date. (This has nothing to do with time to degree—that is still 6 years for master's, 5 years from comps for doctoral.)

PILOT PROGRAM: PARENTAL LEAVE FOR GRADUATE ASSISTANTS

In recognition of the demands on parents of newborns* or newly adopted* children, continuing Graduate Assistants anticipating the arrival of a new baby or child may apply for a paid Graduate College Parental Leave for up to six weeks of new parenthood. The applicant must attest that he or she will be the primary caregiver for a newborn or a newly adopted child. If both parents are graduate assistants, only one leave will be available per family, which may be allocated between the parents, but not to exceed 6 weeks total leave. *Please note that hiring units may impose restrictions during which 6-week period works best to accommodate the hiring unit's general course of business.*

Eligibility:

1. Previously hired as a GA for at least one semester (this program is not available to those who are hired as a GA for the first semester of matriculation)
2. Attest to being the primary caregiver for the newborn or newly adopted child
3. If requesting summer coverage, the GA must have been hired as a GA for the previous spring term.

For more information or to apply go to <http://grad.arizona.edu/parentalleave>

GRADUATION EXAM DEADLINES**Masters**

- 2nd Semester in Residence Submit **Masters/Specialist Plan of Study** form
- December 16, 2011 Degree Requirements (All degree requirements must be met by this date (including defense/revision of thesis, coursework etc.)
- December 16, 2011 Archiving the thesis submitted on or before this date.
- December 23, 2011 Submit **Completion of Degree Requirements** form.

Doctoral

- 3rd Semester in Residence Submit **Doctoral Plan of Study** form
- As soon as course work is completed. Schedule the Oral Comprehensive Examination. The Results of Oral Comprehensive Exam for Doctoral Candidacy form must e returned to the Grad College. There are fees associated with this form
- As soon as Comps Passed Submit **Committee Appointment** Form
- November 14, 2011 Last day to **TAKE** the Final Oral Examination/Defense. The Announcement of Final Oral Defense form, is due at least seven (7) working days prior to the date of the examination.
- December 5, 2011 Deadline to submit dissertation to Degree Certification.

PHRMA FOUNDATION DEADLINE

PhRMA Foundation (Pharmaceutical Research and Manufacturers of American Foundation is accepting applications for Pre Doctoral Fellowships, Post Doctoral Fellowships Sabbatical Fellowships and Research Starter Grants. DEADLINE: September 1.

For more information and criteria can be found on the Graduate Bulletin Board or see Vickie Healey (LSN, Rom 646) for a brochure.

NATIONAL RESEARCH DEADLINES

The National Research Council of the National Academies sponsors a number of awards for **graduate, postdoctoral and senior researchers at federal laboratories and affiliated institutions**. These awards include generous **stipends** ranging from \$42,000 - \$75,000 per year for recent Ph.D. recipients, and higher for additional experience. Graduate entry level stipends begin at \$30,000. These awards provide the opportunity for recipients to do independent research in some of the best-equipped and staffed laboratories in the U.S. Research opportunities are open to U.S. citizens, permanent residents, and for some of the laboratories, foreign nationals.

Detailed program information, including online applications, instructions on how to apply and a list of participating laboratories, is available on the NRC Research Associateship Programs website.

Questions should be directed to the NRC at (202)3342760 (phone) or rap@nas.edu.

There are four review cycles annually. Upcoming deadlines are:

November 1 2011

February 1, 2012

May 1, 2012

Applicants should contact prospective Adviser(s) at the lab(s) prior to the application deadline to discuss their research interests and funding opportunities.

More detailed information and an online application can be found at www.nationalacademies.org/rap

Activity Codes	Program Description	Application Form	Cycle I Due Date	Cycle II Due Date	Cycle III Due Date
F Series Fellowships <i>new, renewal, resubmission</i>	Individual National Research Service Awards (Standard) (see NRSA Training Page — http://grants.nih.gov/training/nrsa.htm)	SF424 (R&R)	April 8	August 8	December 8
F31 Diversity Fellowships <i>new, renewal, resubmission</i>	Individual Predoctoral Fellowships (F31) to Promote Diversity in Health-Related Research (see NRSA Training Page — http://grants.nih.gov/training/nrsa.htm)	SF424 (R&R)	April 13	August 13	December 13

For more information, please go to <http://grants.nih.gov/training/index.htm> or <http://grants.nih.gov/training/nrsa.htm>

GRADUATE STUDENT AWARDS**Aguilar, David**

- 2011, Society of Toxicology Travel Award (\$1,000)

Asiedu, Marina

- 2011, American Pain Society Young Investigator Travel Award (\$750).

Hanlon, Katherine

- 2011, Arizona Cancer Center Spring Symposium, Best Poster (\$100),

Kong, Weixi

- 2010, Society of Toxicology 50th Annual Meeting, Graduate Student Travel Award (\$1000)
- 2011, Graduate and Professional Student Council, University of Arizona, Travel Grant Fund (\$500)

Ondoua, Alysia

- 2011-2012, Biodiversity from Molecules to Ecosystems Graduate Fellowship, funded by National Science Foundation (\$30,000)

Shy, Adia

- 2011, Received NIH supplement funding to cover graduate studies

Skinner, David

- 2010, NIH Medical Student Research Program Fellowship, (PI) Marlys H. Wittie. "Cutaneous Allodynia in a Model of Cortical Spreading Depression in Freely Moving Rats." (\$3,864)
- 2010, University of Arizona, Graduate and Professional Student Council Travel Grant (\$500).
- 2010, University of Arizona, College of Medicine Student Council Grant, Poster Presentation: "Cutaneous Allodynia in a Model of Cortical Spreading Depression in Freely Moving Rats." Neuroscience, San Diego, CA, (\$280).

Tawinwung, Supannikar

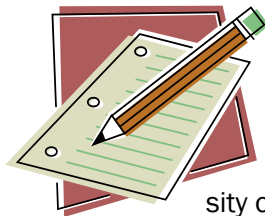
- 2010, A Keystone Symposia Scholarship

Tillu, Dipti

- 2011, APS Young Investigator Travel Award Program

Please contact Vickie Healy (vhealey@email.arizona.edu) if you need help finding information on funding.

GRADUATE STUDENT PUBLICATIONS



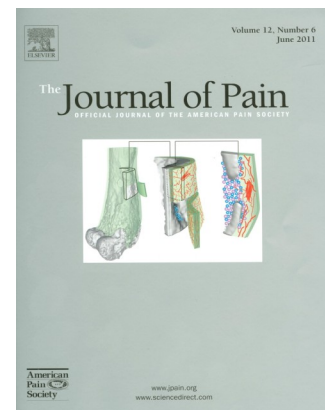
Morrissey S., Xu B., **Aguilar D.**, Chen Qin. "Inhibition of Apoptosis by Progesterone in Cardiomyocytes." *Aging Cell*, July 2010, 95(5):799-809

Juan M Jimenez-Andrade, William G. Mantyh, **Aaron P. Bloom**, Katie T. Freeman, Joseph R. Ghilardi, Michael A. Kuskowski, Patrick W. Mantyh. "The Effect of Aging on the Density of the Sensory Nerve Fiber Innervations of Bone and Acute Skeletal Pain." *Neurobiology of Aging*, 2010.

W.G. Mantyh, J.M. Jimenez-Andrade, J.I. Stake, **A.P. Bloom**, M.J. Kaczmarek, R.N. Taylor, K.T. Freeman, J.R. Ghilardi, M.A. Kuskowski, and P.W. Mantyh. "Blockade of Nerve Sprouting and Neuroma Formation Markedly Attenuates the Development of Late Stage Cancer Pain." *Neuroscience*, 2010, pgs. 588-598.

Juan M. Jimenez-Andrade, **Aaron P. Bloom**, James I. Stake, William G. Mantyh, Reid N. Taylor, Katie T. Freeman, Joseph R. Ghilardi, Michael A. Kuskowski, and Patrick W. Mantyh. "Pathological Sprouting of Adult Nociceptors in Chronic Prostate Cancer-Induced Bone Pain." *The Journal of Neuroscience*, 2010, 30(44):14649-14656.

***Aaron P. Bloom**, Juan M. Jimenez-Andrade, Reid N. Taylor, Gabriela Casteñeda-Corral, Magdalena J. Kaczmarek, Katie T. Freeman, Kathleen Coughlin, Joseph Ghilardi, Michael A. Kuskowski, and Patrick W. Mantyh. "Breast Cancer-Induced Bone Remodeling, Skeletal Pain and Sprouting of Sensory Nerve Fibers." *The Journal of Pain*, 2011, pp 1-14. *Cover illustration.



Asiedu MN, Tillu DV, Melemedjian OK, Shy A, Bodell B, Sanoja R, Ghosh S, Porreca F, Price TJ. "Spinal PKM Underlies the Maintenance Mechanism of Persistent Nociceptive Sensitization." *Journal of Neuroscience*, 2011, 31(18), pp 6646-6653.

Melemedjian OK, **Asiedu MN, Tillu DV**, Peebles K, **Yan J**, Ertz N, Dussor G, Price TJ. "IL-6 and NGF-Induced Rapid Control of Protein Synthesis and Nociceptive Plasticity Via Convergent Signaling to the eIF4F Complex." *Journal of Neuroscience*, 2010, 30(45):15113-23.

Katherine Hanlon, Dave Herman, Richard Agnes, Tally Largent-Milnes, Isuru Kumarasinghe, Sho WuMa, Wenhong Guo, YeonSun Lee, Michael Ossipov, Victor Hruby, Josephine Lai, Frank Porreca and Todd Vanderah. "Novel Peptide Ligands With Dual Acting Pharmacophores Designed for the Pathophysiology of Neuropathic Pain." *Brain Research*, April 2011.

GRADUATE STUDENT PUBLICATIONS (CONT'D)

Katherine Hanlon and Todd Vanderah. "Constitutive Activity at the Cannabinoid CB1 Receptor and Behavioral Responses." *Methods in Enzymology*, December 2010.

Yeon Sun Lee, Vinod Kulkarani, Scott M. Cowell, Shou-wu Ma, Peg Davis, **Katherine Hanlon**, Todd W. Vanderah, Josephine Lai, Frank Porreca, Ruben Vardanyan, and Victor J. Hruby. "Development of Potent μ and δ Opioid Agonists With High Lipophilicity." December 2010.

Kong W, Kuester R, Gallegos A, Sipes IG. "Induction of DNA damage by 2, 2-Bis (bromomethyl)-1, 3-Propanediol in Human Urinary Bladder Epithelium Cells." *The Toxicologist*, 2010, Vol 114, 26.

Kong W, Kuester R, Gallegos A, Sipes IG. "Oxidative DNA damage and DNA binding induced by 2, 2-Bis (bromomethyl)-1, 3-Propanediol in Human Bladder Cells: Possible Dual Mechanisms Implicated in its Carcinogenicity." *The Toxicologist*, 2011, Vol 120, 566.

Liu P, **Okun A**, Ren J, Guo RC, Ossipov MH, Xie J, King T, Porreca F. "Ongoing Pain in the MIA Model of Osteoarthritis." *Neuroscience Letters*, April 15, 2011, 73:72-75.

Qu C, King T, **Okun A**, Lai J, Fields HL, Porreca F. "Lesion of the Rostral Anterior Cingulate Cortex Eliminates the Aversiveness of Spontaneous Neuropathic Pain Following Partial or Complete Axotomy." *Pain*, April, 2011.

Tiffany M Robb, Michael J. Rogers, Suann S Woodward, Simon S Wong and Mark L. Witten. "Toxicol Ind Health, 2010, 26:367.

Beatriz Fioravanti, Aimen Kasasbeh, Rebecca Edelmayer, **David P. Skinner, Jr.**, Jed A. Hartings¹, Ryan D. Burklund, Milena De Felice, Edward D. French, Greg O Dussor, David W. Dodick², Frank Porreca and Todd W. Vanderah. Evaluation of cutaneous allodynia following induction of cortical spreading depression in freely moving rats, *Cephalalgia*, accepted with revisions, 2010.

Flynn AN, **Tillu DT**, **Asiedu MN**, Hoffman J, Vagner J, Price TJ, Boitano S. "The protease-activated receptor-2 specific agonists, 2-aminothiazol-4-yl-LIGRL and 6-aminonicotinyl-LIGRL stimulate multiple Signaling Pathways to Induce Physiological Responses in Vitro and In Vivo." *Journal of Biological Chemistry*, 2011, 27:286(21):19076-8.

Yan J, Edelmayer RM, **Wei X**, DeFelice M, Porreca F, and Dussor G. "Dural Afferents Express Acid-Sensing Ion Channels: A Role for Decreased Meningeal pH in Migraine Headache." *Pain*, 2011, 152(1):106-113..

CONFERENCES ATTENDED BY GRADUATE STUDENTS

Asiedu, Marina

- American Pain Society's 30th Annual Scientific Meeting, May 19-21, 2011

Hanlon, Katherine

- San Antonio Breast Cancer Symposium, San Antonio, Texas, December 2010. Presented: "Cannabinoid Receptor 2 Compounds in the Attenuation of Breast Cancer Cell Proliferation: Mechanisms of Action."

Knudsen, Gabriel

- Society of Toxicology Annual Meeting, 3/6-10/2011

Kong, Weixi

- 28th Annual Meeting of the Mountain West Society of Toxicology, Tucson, AZ, Sept 9-10, 2010. Poster presented.
- 50th Annual Meeting of Society of Toxicology and ToxExPo, Washington, DC, March 6-10, 2011. Poster presented.

Okun, Alec

- Neuroscience, November 13-17, 2010. Presented: "Nerve-Injury Induced Spontaneous Pain is Driven by TRPV1 Sensitive Afferents."

Ondoua, Alysia

- The American Pain Society 30th Annual Meeting, Austin, TX, May 2011.

Shy, Adia

- American Pain Society Annual Conference, May 18-21, 2011.

Tawinwung, Supanikar

- The American Physiological Society (APS) Conference: Inflammation, Immunity, and Cardiovascular Diseases, Westin Westminster, CO, 2010. Poster Presentation: "Suppression of Angiotensin II Induced Hypertension with Adoptive Transfer of Regulatory T Cells."
- Keystone Symposia on Molecular and Cellular Biology, Extracellular Matrix and Cardiovascular Remodeling, Tahoe City, CA, 2011. Poster Presentation: "Blocking Hypertension with Regulatory T Lymphocytes."
- Frontiers in Immunobiology & Immunopathogenesis Symposium, University of Arizona, Tucson, AZ, 2011. Poster Presentation: "Blocking Hypertension with Regulatory T Lymphocytes."

Tillu, Dipti

- American Pain Society Conference, May, 2011.

Xu, Haili

- Arizona Mass Spectrometer Users Meeting, Tucson, AZ, March 17, 2011. Poster Presentation: "Development of an Internal Standard for Studies of Human Plasma by Label Free Quantitative Analysis."

Yan, Jin

- IASP 13th World Congress on Pain, Montreal, Canada, 2010. Poster: "Dural Afferents Respond to Decreased pH Via Activation of Acid sensing Ion Channels."

**PHARMACOLOGY FACULTY
HONORS / AWARDS****Tom Davis**

Dr. Davis was invited to give a talk at the "Membrane Rafts in Endothelial Function of the Cerebral Circulation" symposium, to be held in San Diego, CA., April 12-25, 2012.

In addition Dr. Davis was invited to speak at the FASEB-American Physiology Society, entitled "Transcellular versus Paracellular Pathways to the CNS," chaired by David Lominadze, Ph.D. and also the Symposium of the FASEB-AFMR conference on "Neurovascular Stroke Session," chaired by Ming Ming Ning, MD.

Frank Porreca Honored at Johns Hopkins

Dr. Porreca recently gave two prestigious talks at Johns Hopkins University School of Medicine. On June 9, he delivered the Ninth Donald W. Benson Lecture on Pain Medicine, presenting his lecture, "Descending Control Mechanisms in Acute and Chronic Pain." The following day he delivered "Measurement and Mechanisms of Stimulus-Independent Pains" as part of the Blaustein Pain Lecture Series.

The Benson Lectureship is in honor of the comprehensive contributions made by Donald W. Benson, MD, PhD, during his career as an associate professor of anesthesiology at Johns Hopkins and anesthesiologist-in-charge at John Hopkins Hospital.

Dr. Porreca is widely regarded for his work as a principal investigator with the UA Pain Research Group, one of the world's foremost pain research programs. His current research focuses on the mechanisms of chronic pain states including neuropathic, inflammatory, visceral, headache and cancer pain and mechanisms of opioid-induced hyperalgesia, a clinical phenomenon characterized by worsening pain despite increasing doses of opioids.

He is editor-in-chief of Life Sciences and Pharmacology Section, editor for Pain and has authored more than 400 peer-reviewed papers. He heads a number of societies and conferences and is the founder and scientific organizer of the Spring Pain Research Conference, a biennial conference that attracts world-renowned members of pain laboratories in both academia and industry.

John Bloom

Congratulations to Dr. John Bloom who has taken on the duties of Co-director of the CBI cases for the medical school COM. Although John is very busy with clinical and teaching duties, he and Dr. Paul St. John have taken the lead on helping develop new clinical/basic science case based instructions for the medical students.

Ted Price

Dr. Price has been named the 2011 recipient of the John C. Liebeskind Early Career Scholar Award from the American Pain Society. The award recognizes early career achievements that have made outstanding contributions to pain scholarship. The John C. Liebeskind Early Career Scholar Award was named in 1998 to honor the memory of John C. Liebeskind, PhD, a past president of the American Pain Society, who was a noted pain researcher, scientist and teacher.

PHARMACOLOGY FACULTY HONORS / AWARDS

Ted Price

Dr. Price has been appointed as Chair of the Space Committee.

Todd Vanderah

2011— Appointed as Neuroscience Block Director for the College of Medicine

Dr. Vanderah was inducted into the Academy of Medical Education Scholars , 2011

PHARMACOLOGY FACULTY GRANTS

NIH funded grants/research contracts or a high priority score:

Greg Dussor

- Received five (5) years funding from NIH/NINDS on his first R01

Pat Mantyh

- Awarded two grants totaling \$3.8 million over 5 years by the NIH National Cancer Institute.
Preventive Analgesia for Bone Cancer Pain
Metastatic Prostate Cancer-Induced Pain

Frank Porreca

- Receive an R25 with co-PIs Marlys Witte
- Research contracts with Genzyme Inc. and Ferring Research Inc

Ted Price

- Received a 3rd percentile priority score on an R01 with coPIs Scott Boitano and Josef Vagner
- Received NIH supplement funding to cover his graduate student, Adia Shy.

Patrick Ronaldson

- Received the 2011 AAPS New Investigator Grant Award in Pharmacokinetics, Pharmacodynamics and Drug Metabolism. The award provides research funds of \$10,000 and travel to the AAPS annual meeting in Washington D.C. in October.

PHARMACOLOGY FACULTY PUBLICATIONS

Ronaldson PT, Finch JD, Demarco KM, Quigley CE, **Davis TP**. Inflammatory pain signals an increase in functional expression of organic anion transporting polypeptide 1a4 at the blood-brain barrier. *J Pharmacol Exp Ther*. 2011 Mar;336(3):827-39.

Protein kinase C activation modulates reversible increase in cortical blood-brain barrier permeability and tight junction protein expression during hypoxia and posthypoxic reoxygenation. Willis CL, Meske DS, **Davis TP**. *J Cereb Blood Flow Metab*. 2010 Nov;30(11):1847-59.

Oxidative stress increases blood-brain barrier permeability and induces alterations in occludin during hypoxia-reoxygenation. Lochhead JJ, McCaffrey G, Quigley CE, Finch J, DeMarco KM, Nametz N, **Davis TP**. *J Cereb Blood Flow Metab*. 2010 Sep;30(9):1625-36

Dural afferents express acid-sensing ion channels: a role for decreased meningeal pH in migraine headache. Yan J, Edelmayer RM, Wei X, De Felice M, Porreca F, **Dussor G**. *Pain*. 2011 Jan;152(1):106-13. Epub 2010 Oct 23.

Changes in undamaged fibers following peripheral nerve injury: a role for TNF- α . **Dussor G**. *Pain*. 2010 Nov;151(2):237-8. Epub 2010 Jul 31.

Central modulation of pain. Ossipov MH, **Dussor GO**, Porreca F. *J Clin Invest*. 2010 Nov 1;120(11):3779-87.

Contribution of afferent pathways to nerve injury-induced spontaneous pain and evoked hypersensitivity. **King T**, Qu C, Okun A, Mercado R, Ren J, Brion T, Lai J, Porreca F. *Pain*. 2011 Sep;152(9):1997-2005.

Lesion of the rostral anterior cingulate cortex eliminates the aversiveness of spontaneous neuropathic pain following partial or complete axotomy. Qu C, **King T**, Okun A, Lai J, Fields HL, Porreca F. *Pain*. 2011 Jul;152(7):1641-8.

Descending facilitatory pathways from the rostroventromedial medulla mediate naloxone-precipitated withdrawal in morphine-dependent rats. Vera-Portocarrero LP, Ossipov MH, Lai J, **King T**, Porreca F. *J Pain*. 2011 Jun;12(6):667-76.

Bloom AP, **Jimenez-Andrade JM**, Taylor RN, Castañeda-Corral G, Kaczmarska MJ, Freeman KT, Coughlin KA, Ghilardi JR, Kuskowski MA, **Mantyh PW**. Breast cancer-induced bone remodeling, skeletal pain, and sprouting of sensory nerve fibers. *J Pain*. 2011 Jun;12(6):698-711.

The majority of myelinated and unmyelinated sensory nerve fibers that innervate bone express the tropomyosin receptor kinase A. Castañeda-Corral G, **Jimenez-Andrade JM**, Bloom AP, Taylor RN, Mantyh WG, Kaczmarska MJ, Ghilardi JR, **Mantyh PW**. *Neuroscience*. 2011 Mar 31;178:196-207.

Administration of a tropomyosin receptor kinase inhibitor attenuates sarcoma-induced nerve sprouting, neuroma formation and bone cancer pain. Ghilardi JR, Freeman KT, **Jimenez-Andrade JM**, Mantyh WG, Bloom AP, Kuskowski MA, **Mantyh PW**. *Mol Pain*. 2010

**PHARMACOLOGY FACULTY PUBLICATIONS
CONT'D**

Pathological sprouting of adult nociceptors in chronic prostate cancer-induced bone pain.

Jimenez-Andrade JM, Bloom AP, Stake JI, Mantyh WG, Taylor RN, Freeman KT, Ghilardi JR, Kuskowski MA, **Mantyh PW**. J Neurosci. 2010 Nov 3;30(44):14649-56.

The effect of aging on the density of the sensory nerve fiber innervation of bone and acute skeletal pain.

Jimenez-Andrade JM, Mantyh WG, Bloom AP, Freeman KT, Ghilardi JR, Kuskowski MA, **Mantyh PW**.

Engagement of descending inhibition from the rostral ventromedial medulla protects against chronic neuropathic pain. De Felice M, Sanoja R, Wang R, Vera-Portocarrero L, Oyarzo J, King T, **Ossipov MH**, Vanderah TW, Lai J, Dussor GO, Fields HL, Price TJ, Porreca F. Pain. 2011 Jul 9. [Epub ahead of print]

Growth factors and neuropathic pain. **Ossipov MH**. Curr Pain Headache Rep. 2011

Ongoing pain in the MIA model of osteoarthritis. Liu P, Okun A, Ren J, Guo RC, **Ossipov MH**, Xie J, King T, Porreca F. Neurosci Lett. 2011 Apr 15;493(3):72-5.

Central modulation of pain. **Ossipov MH**, Dussor GO, Porreca F. J Clin Invest. 2010 Nov 1;120(11):3779-87.

Contribution of afferent pathways to nerve injury-induced spontaneous pain and evoked hypersensitivity. King T, Qu C, Okun A, Mercado R, Ren J, Brion T, Lai J, **Porreca F**.

Pain. 2011 Sep;152(9):1997-2005.

Lesion of the rostral anterior cingulate cortex eliminates the aversiveness of spontaneous neuropathic pain following partial or complete axotomy. Qu C, King T, Okun A, Lai J, Fields HL, **Porreca F**. Pain. 2011 Jul;152(7):1641-8.

Persistent medication-induced neural adaptations, descending facilitation, and medication overuse headache. De Felice M, Ossipov MH, **Porreca F**. Curr Opin Neurol. 2011 Jun;24(3):193-6. Review.

Pathophysiology of medication overuse headache: insights and hypotheses from preclinical studies. Meng ID, Dodick D, Ossipov MH, **Porreca F**. Cephalalgia. 2011 May;31(7):851-60.

Transforaminal blood patch for the treatment of chronic headache from intracranial hypotension: a case report and review. Bowden K, Wuollet A, Patwardhan A, **Price TJ**, Lawall J, Annabi J, Barker S, Annabi E. Anesthesiol Res Pract. 2012;2012:923904. Epub 2011 Jul 18. 2011 .

Spinal protein kinase M ζ underlies the maintenance mechanism of persistent nociceptive sensitization. Asiedu MN, Tillu DV, Melemedjian OK, Shy A, Sanoja R, Bodell B, Ghosh S, Porreca F, **Price TJ**. J Neurosci.

The protease-activated receptor-2-specific agonists 2-aminothiazol-4-yl-LIGRL-NH2 and 6-aminonicotinyl-LIGRL-NH2 stimulate multiple signaling pathways to induce physiological responses in vitro and in vivo. Flynn AN, Tillu DV, Asiedu MN, Hoffman J, Vagner J, **Price TJ**, Boitano S. J Biol Chem. 2011 May 27;286(21):19076-88. Epub 2011 Apr 5.

**PHARMACOLOGY FACULTY PUBLICATIONS
CONT'D**

Potent agonists of the protease activated receptor 2 (PAR2). Boitano S, Flynn AN, Schulz SM, Hoffman J, **Price TJ**, Vagner J. J Med Chem. 2011 Mar 10;54(5):1308-13.

Characterization of the inhibitory effects of N-butylpyridinium chloride and structurally related ionic liquids on kidney organic cation transporters. Cheng, Y., Wright, S.H, Kuester, R.K., Hooth, M.J., Martinez-Guerrero, L.J., **Sipes, I.G.** In Press, Tox. Drug Metab Dispos, 2011.

Progress on the issue of excitotoxic injury modification vs. real neuroprotection; implications for post-traumatic epilepsy. **Sloviter RS**. Neuropharmacology. 2011 Oct-Nov;61(5-6):1048-50.

Electrical stimulation-induced seizures in rats: A "dose-response" study on resultant neurodegeneration. Norwood BA, Bauer S, Wegner S, Hamer HM, Oertel WH, **Sloviter RS**, Rosenow F. Epilepsia. 2011 Jul 8. doi: 10.1111/j.1528-1167.2011.03159.x. [Epub ahead of print]

Mechanisms of ATP release by human trabecular meshwork cells, the enabling step in purinergic regulation of aqueous humor outflow. Li A, Leung CT, Peterson-Yantorno K, **Stamer WD**, Mitchell CH, Civan MM. J Cell Physiol. 2011 Mar 4. doi: 10.1002/jcp.22715. [Epub ahead of print]

Protein profile of exosomes from trabecular meshwork cells. **Stamer WD**, Hoffman EA, Luther JM, Hachey DL, Schey KL. J Proteomics. 2011 May 16;74(6):796-804.

S1P₂ receptor regulation of sphingosine-1-phosphate effects on conventional outflow physiology. Sumida GM, **Stamer WD**. Am J Physiol Cell Physiol. 2011 May;300(5):C1164-71. Epub 2011 Feb 2.

Structural basement membrane components and corresponding integrins in Schlemm's canal endothelia. VanderWyst SS, Perkumas KM, Read AT, Overby DR, **Stamer WD**. Mol Vis. 2011 Jan 19;17:199-209.

The role of the prostaglandin EP4 receptor in the regulation of human outflow facility. Millard LH, Woodward DF, **Stamer WD**. Invest Ophthalmol Vis Sci. 2011 Jun 1;52(6):3506-13. Print 2011 May.

Evaluation of cutaneous allodynia following induction of cortical spreading depression in freely moving rats. Fioravanti B, Kasasbeh A, Edelmayer R, Skinner DP Jr, Hartings JA, Burklund RD, De Felice M, French ED, Dussor GO, Dodick DW, Porreca F and **Vanderah TW**. *Cephalalgia* 31(10):1090-1100, 2011. PMID: 21700643.

Peptide ligands with dual acting pharmacophores designed for the pathophysiology of neuropathic pain. Katherine E. Hanlon, Dave S. Herman, Tally M. Largent-Milnes, Peg Davis, Show-Wu Ma, Wenhong Guo, Richard S. Agnes, Isuru R. Kumarasinghe, Yeon Sun Lee, Michael H. Ossipov, Victor J. Hruby, Josephine Lai, Frank Porreca, and **Todd W. Vanderah**, Novel Brain Research, 1395:1-11, 2011, PMID: 21550594.

Regular exercise reverses sensory hypersensitivity in a rat neuropathic pain model: role of endogenous opioids Stagg NJ, Mata HP, Ibrahim MM, Henriksen EJ, Porreca F, **Vanderah TW**, Philip Malan T Jr. Anesthesiology. 114(4):940-8 2011. PMID: 21386701

ON THE PERSONAL SIDE

*Lorenzo Federico*

Congratulations to Milena and Giovanni. They welcomed their 1st child, a beautiful baby boy, born March 5, 2011. Lorenzo weighed in at 7 lbs 2 oz.

Congratulations Chaoling and Hongzhang. They welcomed their beautiful baby boy, May 5, 2011. Andrew weighed in at 9 lbs 12 oz.

*Andrew Ma*

POSITIONS ACCEPTED

Tally Largent-Milnes accepted a Post-Doc position at Oregon Health Sciences Center.



WE'RE ON THE WEB
WWW.PHARMACOLOGY.ARIZONA.EDU

Calendar of Events



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 Life Sciences North Bldg

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**The Journal Club meets on Wednesday,
 11:00-11:50, SHC 4137.**

August

24 Adia Shy / Gabe Knudsen
 31 Beenish Majeed (AHSC 2500C)

September

7 Josh Strom
 14 Kevin Xu
 21 Alec Okun / Dipti Tillu
 28 Xiaome Wei/Jin Yan

October

5 Alex Sandweiss
 12 Ashley Symons
 19 Alysia Lozano-Ondoua
 26 Hamid Badghisi/Lauren Slosky

November

2 Marina Asiedu
 9 Ji-Young Kim/Fai Tawinwung

August 2011

22
 24 12:00-1:00 AHSC 8403 Fall Session Begins
 Yamamura Recipient
 Presentation

September 2011

5 No Classes (Labor Day)

October 2011

November 2011

3-5 Homecoming Weekend
 11 No Classes (Veterans Day)
 12-16 Society for Neuroscience Conf.
 Washington, DC
 24-25 No Classes (Happy Thanksgiving)

December 2011

7 Last Day of Classes
 9-16 Finals
 26-27 Christmas Break
 28-30 University Closure

January 2012

12 Spring Session Begins
 16 No Classes (MLK Day)

February 2012

9-11 Graduate Recruitment

March 2012

11-15 Toxicology Conference
 San Francisco, CA
 14-18 UA Spring Break

April 2012

21-25 ASPET Conference
 San Diego, CA