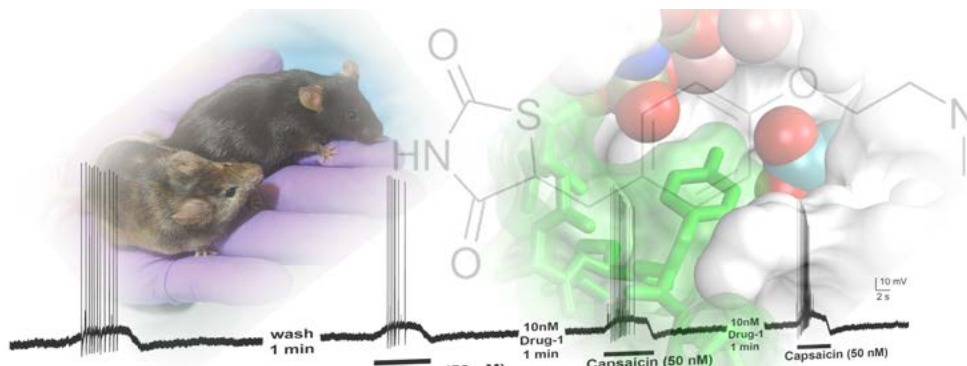


Iowa Pharmacology NEWS

FOR ALUMNI AND FRIENDS OF THE UNIVERSITY OF IOWA DEPARTMENT OF PHARMACOLOGY

VOLUME 2 ISSUE 2

FALL 2014



Greetings from the Chair!



The year in progress has been an active and productive one in Pharmacology! Our faculty continue to excel in their research efforts and so far in 2014 have collectively published 28 papers, most in top-tier journals and on subjects ranging from neuroscience, to obesity and hypertension, to cancer biology. They have continued their hard-won success in obtaining extramural funding, with several faculty renewing existing research grants

or receiving new grants. The Department is particularly proud of the great success many of our trainees and staff have had in procuring extramural funding for their research, an effort that we highlight in this issue of *Iowa Pharmacology News*. The strong portfolio of research in the Department and its affiliated Pharmacological Sciences Training Program as well as our new growth in numbers were on display this past May at our first Pharmacology Retreat, a very spirited event also featured in this newsletter! Another noteworthy event was the visit of our friend and colleague Jerry Gebhart, who traveled here this June to receive the Carver College of Medicine Distinguished Alumni Award!

We hope that alumni and friends of the Department will enjoy this installment of *Iowa Pharmacology News*. We continue to take pleasure in hearing from you, so please do stay in touch!

IN THIS ISSUE

Greetings from the Chair	Page 1
Milestones	Page 2
Events	Page 3
Items	Pages 4-5
Faculty Spotlight	Page 5
Funding	Page 6
Of Special Note	Page 7
Giving Opportunities	Page 7
Upcoming Events	Page 8

Contact Information:

Phone: (319) 335-7965
FAX: (319) 335-8930
E-mail: pharmacology@uiowa.edu

<http://www.medicine.uiowa.edu/pharmacology/>

Department of Pharmacology
University of Iowa
Roy J. and Lucille A.
Carver College of Medicine
51 Newton Road, 2-471 BSB
Iowa City, IA 52242-1109

Iowa Pharmacology MILESTONES

Art installation tops-off Pharmacology renovation!



The complete renovation of Pharmacology laboratory and office space begun with the appointment of Dr. Curt Sigmund as Chair and DEO of Pharmacology in July 2010 was finally finished this spring! This momentous achievement was celebrated at the Annual Pharmacology Employee Recognition Event held on June 5, 2014 in the 2nd floor atrium of Bowen Science Building. At the close of the ceremony, Dr. Sigmund christened the last pieces of the renovation puzzle, works by renowned Iowa artists that are now brightening our workplace. "Orb in Cradle," a sculpture by Dr. Chunghee Choo, was installed in the atrium, and two Margaret Stratton photographs of rural Iowa scenes were placed in our new conference room. The new artwork was installed under the auspices of Iowa's Art in State Buildings program.

New Pharmacology Grads!

In 2014 *three students* completed PhDs in Pharmacology. We extend *our congratulations* to:

Adele Stewart (Fisher Lab) "Regulator of G Protein Signaling 6 (RGS6), a Multifarious and Pleiotropic Modulator of G Protein Coupled Receptor Signaling in Brain"

*Jeffrey Coble** (Sigmund Lab) "Molecular mechanisms of brain RAS hyperactivity upon fluid balance: sufficiency of angiotensin production from the subfornical organ to affect fluid balance"

*Sara Reed** (D. Quelle Lab)
"NIAM, a novel activator of p53 and potential tumor suppressor"

*PhD to be awarded at completion of MSTP

In 2014 *one student* received an MS in Pharmacology. *Congratulations:*

Ko-Ting Lu (Sigmund Lab)
"Identification of nuclear receptors that regulate renin gene expression"

The Face of Pharmacology



CONGRATULATIONS!!!

THE DEPARTMENT WISHES TO CONGRATULATE
DRS. DURGA "DP" MOHAPATRA AND SONGHAI
CHEN ON THEIR PROMOTION TO ASSOCIATE
PROFESSOR WITH TENURE IN JULY 2014.

Iowa Pharmacology EVENTS

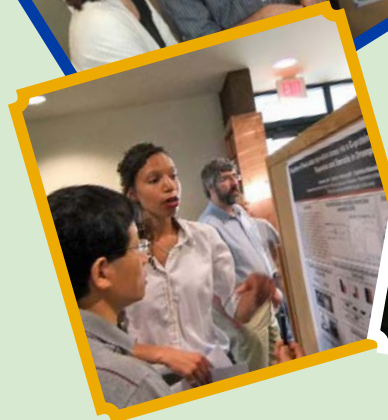
Pharmacology Research Retreat 2014

On May 8, 2014, faculty, students and postdocs of the Department of Pharmacology and the Pharmacological Sciences Training Program all convened at the Terry Trueblood Park Lodge, Iowa City for a day-long Pharmacology Research Retreat, a first-time event intended to showcase the diversity and quality of research ongoing in the Department and its affiliated training program, as well as to inspire collaborative interactions.

Among highlights of the retreat were oral presentations by faculty, including Yuriy Usachev, Kamal Rahmouni and Anne Kwitek, postdocs Andrew Shepherd (Mohapatra lab) and Kathleen Markan (Potthoff lab), and graduate students Adele Stewart (Fisher lab), Arianna Lark (Kitamoto lab), Emily Petruccelli (Kitamoto lab), Kyle Flippo (Strack lab), Jacqueline Reilly (Hohl lab), Amy Young (Dupuy and Goodhart labs), Colin Burnett (Grobe lab), and Madeliene Stump (Sigmund lab). The work of numerous other Pharmacology researchers was on display in a lively poster session.

The retreat was capped off by a Keynote Address, “Mitochondrial Uncoupling and Thermogenesis,” given by our distinguished guest, Dr. Yuriy Kirichok, Associate Professor, Department of Pharmacology, University of California, San Francisco, a talk stimulating much discussion among the participants. The event closed with the announcement of awards for best posters given to Emily Petruccelli and Aaron Mickle (graduate student category), and Andrew Shepherd (postdoctoral category).

We congratulate all Departmental faculty, students and postdoctoral scientists for their excellent presentations of their work! We also wish to particularly thank event organizer Dr. Stefan Strack and the Pharmacology office staff for their many efforts in orchestrating a very successful event. Because of the great success of our retreat, we hope to make it an annual or biennial event!



Sigmund named founding director of new Center for Hypertension Research

Dr. Curt Sigmund, Chair and DEO of the Department of Pharmacology, was named as the founding director of the new University of Iowa Center for Hypertension Research on July 2014. The new center builds upon the history of excellence in cardiovascular research established through the Francois M. Abboud Cardiovascular Research Center, a center with which Pharmacology has long been associated. The Center for Hypertension Research will promote basic, clinical, and translational research specifically in hypertension, and support the commercialization of newly developed technologies, treatments, and clinical tests. The new center will also help unite university departments and centers that share a common interest in promoting hypertension research, and foster collaboration among more than 40 faculty researchers in four different colleges and the Iowa City VA.



As the inaugural director of the center, Dr. Sigmund brings over 25 years of expertise in hypertension research. He is the principal investigator of a National Heart, Lung, and Blood Institute-funded program project grant on genetic and signaling mechanisms in the central regulation of blood pressure, and was the recipient of the Novartis Award in Hypertension Research from the American Heart Association Council for High Blood Pressure Research. Congratulations to Dr. Sigmund on this great honor!

The original UI press release about the new research center can be found here: http://www.medicine.uiowa.edu/Pharmacology/Pharm_newsarticle.aspx?id=26795.

UI researchers find early predictor for preeclampsia

A team of UI researchers including **Dr. Justin Grobe** of Pharmacology have discovered a biomarker that could give expecting mothers and their doctors the first simple blood test to reliably predict that a pregnant woman may develop preeclampsia. Preeclampsia is a cardiovascular disorder generally occurring late in pregnancy and often resulting in an early delivery, creating immediate and potentially

lifelong risks to mother and baby. It causes high blood pressure and protein in the urine, and is typically diagnosed in the late second or third trimester of pregnancy. Between 5 and 7 percent of all pregnancies in the United States are affected with preeclampsia. More than 100,000 women worldwide die from the disease each year.



In their paper, “Vasopressin in Preeclampsia: A Novel Very-Early Human Pregnancy Biomarker and Clinically-Relevant Mouse Model,” study authors Mark Santillan, Assistant Professor of Obstetrics and Gynecology and a Maternal Fetal Medicine specialist, Justin Grobe, Assistant Professor of Pharmacology and a Fellow of the American Heart Association, and Donna Santillan, Research Assistant Professor of Obstetrics and Gynecology, demonstrate that elevated secretion of arginine vasopressin (AVP) can be a very early biomarker of a preeclamptic pregnancy. The paper was published online July 9, 2014 in the American Heart Association’s journal, *Hypertension*.

“We’ve broken the circle of ‘no test, no model, no cure’ which has plagued the preeclampsia field for centuries,” notes Grobe. “Suddenly we have identified a hormone that is elevated well ahead of the disorder, and have demonstrated that this hormone can cause the symptoms. It is only a matter of time before we can therapeutically target this system as a preventative or curative intervention.”

The full UI press release describing this work can be found at: <http://www.medicine.uiowa.edu/Newsarticle.aspx?id=26601>.

Gupte inspires Steamboat Springs students

Raeesa Gupte, a Pharmacology graduate student in the Mohapatra laboratory, addressed a class of budding scientists at The Lowell Whiteman School in February 2014. Gupte was in Steamboat Springs for the Winter Conference on Brain Research and volunteered to reach out to the schools in Steamboat Springs and speak about her studies and research to area students. Her talk was highlighted in the Steam Boat Today newspaper: http://www.medicine.uiowa.edu/Pharmacology/Pharm_newsarticle.aspx?id=24563.



Faculty Spotlight

Who: Dr. Anne Kwitek, Associate Professor of Pharmacology and Internal Medicine, and Associate Director of the Iowa Institute of Human Genetics (IIHG).

Bio: Anne received her Ph.D. in Genetics at the UI, and did postdoctoral work at the Medical College of Wisconsin, where she rose through the ranks to become an Associate Professor in 2004. In 2007, she was recruited to the UI Department of Internal Medicine and since 2010 has had her primary appointment in Pharmacology. Dr. Kwitek is an animal and human geneticist whose research revolves around dissecting the genetic components of complex disease, with an emphasis on hypertension, diabetes, and the metabolic syndrome. Her current work combines traditional positional cloning with functional genomics and in silico mapping strategies to identify genes and pathways involved in the metabolic syndrome.



Contribution: In the IIHG, Kwitek is leading an initiative to use genetics to personalize patient treatment. Established in 2012, the IIHG is a state-wide resource dedicated to promoting clinical care, research and education focused on the significance of variation in the human genome. A key area of clinical importance in human genetics is that of gene-drug interactions or Pharmacogenetics (PGx). Drugs do not work in almost 50% of people taking them, determined in part by their genetic makeup. Identifying a patient's DNA profile can help determine which drugs at what dose are the most effective and cause the fewest side-effects.

The IIHG now offers a genetic screen for variants in CYP2C19 in people taking clopidogrel (Plavix®) that identify patients who may not respond to the drug and be at higher risk of heart attacks or strokes. Dr. Kwitek and her colleagues are expanding their screen to a panel of over 200 genes that can affect the action of many drugs including pain medications, antidepressants, and cancer drugs.

Quote: "Our dream would be that every patient who comes through our hospital would have this test." (See recent Cedar Rapids Gazette story: <http://www.thegazette.com/article/20140429/NEWS/140429679>.)

For additional information, visit: <http://www.medicine.uiowa.edu/humangenetics/>.

Usachev talk highlighted

A presentation by Dr. Yuriy Usachev, Associate Professor of Pharmacology, at the annual American Pain Society meeting in May 2014 was among a select group highlighted by the Pain Research Forum of the Harvard University Neurodiscovery Center. Entitled "Complement C5a-mediated Mechanisms of Inflammatory Pain," the presentation described studies of the role of the complement system, a key component of innate immunity, in inflammatory pain, and the use of a C5a receptor knock-out mouse to elucidate the role of the proinflammatory complement fragment C5a. Key research findings included the implication of macrophages, nerve growth factor and the TRPV1 ion channel in inflammatory pain mediation by C5a. The full text of the recognition of Dr. Usachev's talk by the Pain Research Forum can be accessed at: http://www.medicine.uiowa.edu/Pharmacology/Pharm_newsarticle.aspx?id=26962.



Pharmacology home to Levitt Visiting Professor Dampney

Pharmacology has been happy to provide a home away from home for Helen C. Levitt Endowed Annual Visiting Professor Roger Dampney, Ph.D., D.Sc. of the Department of Physiology, University of Sydney from May through September 2014. While Dr. Dampney's visit is officially hosted by Neurology, he has been provided office space in Pharmacology. Dr. Dampney is a renowned researcher of central nervous system control of the cardiovascular system. He received his Ph.D. from the University of Sydney, did postdoctoral studies in what was then Cornell Medical College in New York City, and is Professor Emeritus at the University of Sydney. His expertise in integrative/systems physiology nicely complements that of investigators here applying molecular approaches to the neural control of cardiovascular function. In an interview, Dr. Dampney shared his appraisal of science at Iowa, saying the UI is quite unique in the quality of the collaborative interactions between clinical and basic science researchers. He also expressed his sincere appreciation for the Levitt award, and his gratitude to his colleagues here who supported his nomination.



Iowa Pharmacology FUNDING

Pharmacology trainees and staff excel in obtaining grant funding

Despite a challenging funding climate, Pharmacology students, postdoctoral scholars and staff researchers have been quite successful in procuring extramural support for their research and training. Since January 2014, three undergraduate and ten graduate students and three postdoctoral/staff scientists working in the Department have been supported by institutional training grants, or grants or fellowships procured from agencies such as the NIH, American Heart Association, and Pharmaceutical Research and Manufacturers of America (see list below of individual trainee/staff-initiated awards that were active in 2014). The conglomerate impact of this funding is huge, as it leverages the research funding of our faculty investigators. The Department wishes to acknowledge all of the hard work of our trainees to help further our research mission!

Predoctoral Student Awards

Kristin Claflin (Grobe lab)

American Heart Association Predoctoral Fellowship, The Indispensable Role for AT1A Receptors on Leptin-Sensitive Cells for the Metabolic Effects of Leptin

Stella-Rita Ibeawuchi (Sigmund lab)

American Heart Association Predoctoral Fellowship, Molecular Mechanism Underlying Vascular Function Regulation by Smooth Muscle PPAR gamma via RhoA/Rho Kinase Signaling

Nicole Littlejohn (Grobe lab)

American Heart Association Predoctoral Fellowship, Adipocyte AT2R Activation Leads to a Decrease in Thermogenic Capacity via Suppression of EGF and COX/PG Signaling

Aaron Mickle (Mohapatra lab)

NIH Predoctoral National Research Service Award, PTHrP Modulation of TRPV1 in Pain Associated with Breast Cancer Bone

Kenjiro Muta (Rahmouni lab)

American Heart Association Predoctoral Fellowship, The Role of mTOR Pathway in Hypothalamic Insulin Receptor Signaling

Sara Reed (D. Quelle lab)

NIH Predoctoral National Research Service Award, Role of NIAM, a Putative Cancer Gene, in Chromosomal Instability and Glioblastoma

Adele Stewart (Fisher lab)

Pharmaceutical Research and Manufacturers of America Foundation Predoctoral Fellowship, Molecular Mechanisms of RGS6 Modulation of GIRK Channel Activity in Heart

New extramural grant awards to Pharmacology faculty (Jan-Aug 2014)

Rory Fisher (Professor)

American Heart Association, \$143,000, RGS6 as a Master Mediator of Oxidative Heart Damage

Justin Grobe (Assistant Professor)

American Society for Hypertension, \$3,000, Young Scholar Award

American Heart Association, \$150,000, Vasopressin as an Early-pregnancy Initiator of Preeclampsia

American Diabetes Association, \$333,500, Required Interaction of Leptin with Angiotensin in Metabolic Control

Anne Kwitek (Associate Professor)

American Heart Association, \$143,000, Novel Transcriptome Regulation in the LH Rat Model of the Metabolic Syndrome

Kamal Rahmouni (Associate Professor)

American Heart Association, \$400,000, mTORC1 Signaling in the Hypothalamus and Cardiovascular Regulation

Stefan Strack (Professor)

NIH, \$415,250, Outer Mitochondrial PKA and PP2A in Neurodevelopment and Plasticity

Yuriy Usachev (Associate Professor)

NIH, \$1,321,252, Mitochondria Fission and Fusion (MFF)-Dependent Mechanisms in Neuronal Toxicity

Undergraduate Students Awards

Mohamed Rouabhi (Rahmouni lab)

American Physiological Society Undergraduate Research Excellence Fellowship, Effects of mTORC1 Inhibition by Raptor Protein Deletion

Susan Voong (Grobe lab)

American Physiological Society Undergraduate Research Excellence Fellowship, Localizing the Site of a Novel Leptin-angiotensin Interaction within the Brain

Benjamin Weidemann (Grobe lab)

American Heart Association Summer Research Fellowship, Homeostasis of Glucose Levels Through the Brain Renin-angiotensin System

American Physiological Society Undergraduate Research Excellence Fellowship, Glycemic Control by the Brain Renin-Angiotensin System:

Role for Peripheral AT2 Receptors

Postdoctoral/Staff Researcher Awards

Aswini Gnanasekaran (Postdoctoral Scholar, Usachev lab)

American Heart Association Postdoctoral Fellowship, The Role of Mitochondrial Fission and Fusion (MFF) in Glutamate-Induced Ca²⁺ Deregulation and Toxicity in Hippocampal Neurons

Biswanath Maity (Postdoctoral Scholar, Fisher lab)

American Heart Association Postdoctoral Fellowship, Mechanisms of RGS6-mediated, Alcohol-induced Cardiomyopathy

Jianqi Yang (Associate Research Scientist, Fisher lab)

American Heart Association Scientist Development Grant, Role of Regulator of G-protein Signaling 6 (RGS6) in Doxorubicin-induced Cardiotoxicity

Iowa Pharmacology OF SPECIAL NOTE

2013 Amanda Hope Skolnick Undergraduate Award



The Amanda Hope Skolnick Undergraduate Award is given annually to honor the memory of Amanda Skolnick, who worked as a Laboratory Assistant in the Department of Pharmacology while an undergraduate at The University of Iowa. In her junior year of study, Amanda's life tragically ended after being struck by a motor vehicle in Iowa City. The Skolnick family made a generous donation to the Department of Pharmacology to establish an award in memory of Amanda. Our 2013 award recipient was Benjamin J. Weidemann. Ben has been a Laboratory Assistant in Dr. Justin Grobe's laboratory since the spring of 2011. He is an outstanding student who graduated with honors this past May with a double major in Biology and Chemistry, and was just one course short of a third major in Biochemistry – all in addition to his substantial time spent working in the lab. Ben was also chosen to represent the UI at Research in the Capitol 2014 and hopes to enter an MD/PhD program. Our Congratulations and good luck wishes to Benjamin!



The Skolnick Award is presented annually to a Department of Pharmacology undergraduate employee who best exemplifies the dedication and spirit that Amanda demonstrated daily in her work as a Laboratory Assistant.

DR. GERALD F. GEBHART RECEIVES DISTINGUISHED ALUMNI AWARD

Gerald F. Gebhart ('69 M.S., '71 Ph.D. Pharmacology), a former graduate student in the laboratory of Dr. Clifford L. Mitchell, received the University of Iowa Carver College of Medicine Distinguished Alumni Award on June 5, 2014. Jerry is the founding director of the Pittsburgh Center for Pain Research and professor of anesthesiology, medicine, neurobiology, and pharmacology and chemical biology at the University of Pittsburgh. He is internationally recognized for his research on mechanisms and modulation of pain, principally visceral pain arising from the internal organs. He is a leading authority in his field, contributing to more than 400 publications and earning him numerous awards and distinctions. Gebhart's multidisciplinary approach to conducting research has also allowed him to serve as a mentor to countless medical and graduate students, postdoctoral scholars, and colleagues. Jerry was the Chair of Pharmacology at the University of Iowa from 1996 to 2006. "Jerry's success as a scientist is matched only by his success as a mentor," says Mario Ascoli, Professor in Pharmacology. Please join us in congratulating Jerry!



GIVING OPPORTUNITIES

The research and teaching missions of Iowa Pharmacology receive critical support in the form of generous gifts from friends and alumni.

Contributions to Iowa Pharmacology can be made to either the

Department of Pharmacology Development Fund:

www.givetoiowa.org/pharmacology

or

John Paul Long Chair in Pharmacology Fund:

www.givetoiowa.org/jplong

CONTACT US

To mail in a gift or receive more information about giving please contact:

University of Iowa Foundation
P.O. Box 4550
Iowa City, Iowa 52244-4550
(800) 648-6973 | (319) 335-3305

OUR APPRECIATION

We thank those of you who have already made generous contributions to Iowa Pharmacology!

UPCOMING EVENTS

Pharmacology Seminar Sept 11

Dianqing Wu, Ph.D.
Professor, Pharmacology
Yale University

Pharmacology Seminar Sept 23

JoAnn Trejo, Ph.D.
Professor, Pharmacology
UCSD

Pharmacology Faculty Oct 9

Forum - Brad A. Amendt, Ph.D.
Department of Anatomy and Cell
Biology, University of Iowa

Michael J. Brody Oct 16 Memorial Lecture

Ardem Patapoutian, Ph.D.
Professor, Molecular and Cellular
Neuroscience, The Scripps
Research Institute

Pharmacology Seminar Oct 23

Michael Frohman, M.D., Ph.D.
Professor and Chair, Pharmacology
Stony Brook University

Pharmacology Seminar Nov 4

Robert H. LaMotte, Ph.D.
Professor, Anesthesiology and
Neurobiology, Yale University
School of Medicine

Pharmacology Faculty Nov 13 Forum

David K. Meyerholz, D.V.M., Ph.D.,
Director
Division of Comparative Pathology
University of Iowa

Pharmacology Seminar Nov 18

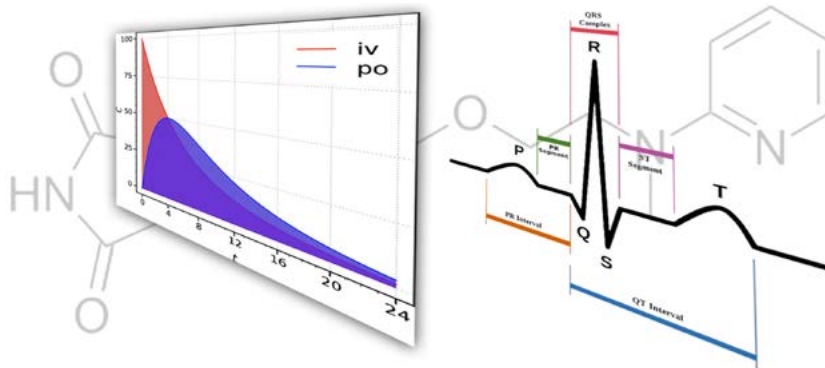
Yibin Kang, Ph.D.
Warner-Lambert Parke-Davis
Professor, Molecular Biology
Princeton University

Pharmacology Seminar Dec 2

Michael M. Tamkun, Ph.D.
Professor, Department of
Biomedical Sciences
Colorado State University



Department of Pharmacology
2-471 Bowen Science Building
51 Newton Road
Iowa City, IA 52242-1109



Contact us:

Department of Pharmacology
University of Iowa
Roy J. and Lucille A.
Carver College of Medicine
51 Newton Road, 2-471 BSB
Iowa City, IA 52242-1109

Phone: (319) 335-7965
FAX: (319) 335-8930
E-mail: pharmacology@uiowa.edu

<http://www.medicine.uiowa.edu/pharmacology/>

Please direct comments and inquiries to:
John Koland, Editor
Iowa Pharmacology News
319-335-6508
john-koland@uiowa.edu

To receive this or future editions of Iowa
Pharmacology News electronically or to be
removed from the mailing list, please express
your desire to pharmacology@uiowa.edu