



Message from the Chair

<mark>Ted</mark> Abel, PhD

Professor, Neuroscience & Pharmacology

Greetings Alumni, Faculty and Friends,

It has been some time since our last newsletter, so we have some catching up to do! I am excited to share our stories of growth and to highlight our research discoveries and education programs.

We now have a new name, Neuroscience and Pharmacology, reflecting the growth in Neuroscience research at lowa, both in the Department and across the University. Mirroring this growth, our Department has been actively recruiting at all levels. With the hiring of several new faculty, we have established three new areas of research emphasis: Neuroscience, Obesity/Metabolism and Cancer. We have also hired new education-emphasis faculty who are working to broaden the Department's impact beyond professional/graduate training to also include undergraduate training.

Our research continues to be highly impactful, with funding increasing to \$14 million last year and breakthrough papers published in top-tier journals, including *Cell Metabolism*, *Nature Neuroscience* and *Pharmacological Research*. Our education programs continue to grow at all levels and are filled with students who drive our creative research advances. In evidence of this, our students have been very successful in obtaining external and internal research funding. Furthermore, we continue to house two NIH-funded training grants which have been instrumental in our ability to train highly successful graduate and postdoctoral students who go on to shape the future of science.

The upcoming pages focus primarily on Department news from the last fiscal year, with notable exceptions for farewell tributes (page 1) and introductions to new faculty and staff (page 2). I am so excited to share our stories of success. But I also want to hear yours. Don't be a stranger. Stay connected and continue to be part of our story!

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Service

LEADERSHIP POSITIONS ______1



PERSONNEL FAREWELLS

You will be missed

Over the last few years, the Department has said farewell to several colleagues. Here we share the departures of colleagues who we recognize for their extensive and notable Department service.

Saying Farewell



Lisα Ringen

Department Administrator
Neuroscience & Pharmacology

After a distinguished 24 years of service, Lisa Ringen left the Department in December 2023.

Lisa earned her BBA at UI and has been a devoted Hawkeye ever since. She was an Accountant in Recreational Services and the Business Office from 1989 - 1992 and then Senior Accountant and Contracts Administrator in the Grant Accounting Office until 1999, following which she became our Department Administrator. Her strengths in business, accounting, and personnel management enabled her to adeptly manage Department operational and fiscal activities. Lisa hired and supervised support staff, prepared detailed budgets for Department reports and grant applications, met routinely with faculty and maintained their grant portfolios, approved all Department financial and HR transactions, ensured compliances with federal / state / UI guidelines were met, and advised the DEO, among many other activities. The Department's research funding and productivity thrived under her stewardship. At her farewell party, Lisa was lauded for her unparalleled leadership, professionalism, dedication, work ethic, and heartfelt support for the Department. Lisa always knew how to solve a problem and get things done. Most importantly, her kindness, friendship, and unwavering commitment to staff wellbeing will be greatly missed. We wish her the best in her new position as Senior Sponsored Research Specialist in the UI Division of Sponsored Programs.



Fredrick Quelle, PhD

Associate Professor & DGS Neuroscience & Pharmacology

After a distinguished 25 years of service at UI, Fred Quelle retired on June 1, 2022.

Fred's scientific career began at Middlebury College, Vermont studying Chemistry. He obtained a BA in 1986 but stayed an additional year to continue his research into steroid receptors and teach Chemistry 101. His interests in receptor biology continued at Penn State, where he explored growth factor receptor crosstalk and signaling in blood cells, earning an MS in Biochemistry in 1989 and PhD in Genetics in 1992. Four and a half years of postdoc work at St. Jude Children's Research Hospital followed, an exciting time of discovery and characterization of the JAK and STAT proteins, which were recognized soon after as central mediators of basic cellular processes and eventually key targets of several FDA approved drugs. Then in 1997, Fred became an Assistant Professor of Pharmacology at UI.

Fred's research focused on cytokine signaling effects on the cell cycle. Those NIH supported studies provided new insight into druggable mechanisms underlying cellular disorders like cancer and shepherded 6 graduate students and a research associate through their early scientific training. Their efforts identified PI3K/AKT signaling, cyclin-dependent kinase 2 (CDK2), and FOXO transcription factors as key regulators of cytokineinduced cell proliferation and survival following DNA damage. They also discovered a novel receptor-associated ubiquitin ligase (RUL), which fed into future studies of other ubiquitin ligases involved in cardiovascular regulation in collaboration with Curt Sigmund's lab.

In addition to his excellence in research, Fred was a dedicated teacher. Outside of his lab, Fred co-mentored several PhD and postdoctoral students in the Sigmund lab. In the classroom, he taught Pharmacology and Immunology to undergraduate, graduate, and health professional students. He rebuilt, directed, and taught Princ. in Mol. Cell Bio., a required course for Biomed. Sci. graduate students. Finally, Fred served as the DGS for the Pharmacology PhD Program (2013-21), and as a member of the Graduate Council for many years.



<mark>John</mark> Koland, PhD

Associate Professor Neuroscience & Pharmaco

After a distinguished 30 years of service at UI, John Koland retired on Feb. 2, 2021.

John's scientific career began at the Univ. of Minnesota studying Chemistry. After obtaining his BS, John pursued his PhD in Chemistry at the Univ. of Illinois, where under the tutelage of Dr. Gennis he investigated the roles of pyruvate and cytochrome C oxidases. Seven papers later, John pursued postdoctoral training at Cornell Univ., first with Dr. Hammes studying the multisubunit integral membrane H+ ATPase, and then with Dr. Cerione, with whom he began his lifelong study of EGF receptors. One of his papers, "Growth factor control of EGFR kinase activity by an intramolecular mechanism" (J. Biol. Chem, 1998), answered the very important question of whether the EGFR was activated by inter or intramolecular mechs. Recognizing his talents, the Department hired him as an Assistant Professor in 1990.

For >30 years John studied ErbB receptor sig. mechs. Of note, he discovered kinase dead ErB3 receptors were competent, demonstrating the kinase domain was critical for signaling following receptor dimerization. Throughout his career, John was highly inventive and approached each problem with novel solutions, for example, creating biotinylated lipid raft reporters for EM imaging of ErbB members tethered to lipid surfaces. Late in his career John also learned protein molecular modeling, resulting in publication of a highly regarded paper describing the molecular simulation of EGFR multi-site phospho., hearkening back to his 1998 paper. He was a superb protein biochemist and experimentalist. His work was supported by NIH, DOD, etc.

Outside of research, John steadfastly served the Department and University. He was the DGS and Sloan Prog. Dir. for Mol. Med. for many years. He also directed the Biochemistry lab course for several years, teaching students how to purify proteins, clone, do PCR, etc. As a true educator, John really strove to create a realistic and memorable research experience for his students. Finally, without complaint, John directed the Department's Resource Committee for 18 years, attending to every piece of equipment with a smile and an unmatched level of patience and grace.

PERSONNEL NEW FACULTY & STAFF

Hiring Initiatives

Since becoming Chair and rebranding the Department as "Neuroscience and Pharmacology," Ted Abel has pursued hiring new faculty with a research emphasis in Neuroscience. He has also supported the hiring of new education faculty following the retirement of several long-term educators within the Department. Finally, Ted has worked to re-establish the office staff, which had been shorthanded since the beginning of the COVID pandemic.

DEPT. HIRES

7 FACULTY

SINCE 2021

4 STAFF

SINCE 2022

Meet Our New Hires

NEW FACULTY



Jon
Resch, PhD
Assistant Professor,
Neuroscience & Pharmacology

Jon Resch, previously an Instructor of Med. at Beth Israel Deaconess Medical Center in the Harvard Medical School, joined the Dept. in 2021. His research interests lie in studying hormones, particularly how they affect behavior.



Seth Tomchik, PhD

Professor, Neuroscience & Pharmacology

Seth Tomchik, previously an Assoc. Prof. at The Scripps Research Institute Dept. of Neuroscience, joined the Dept. in 2022. His research interests lie in dissecting the molecular, cellular, and circuit mechanisms of learning and memory, as well as diseases that impact brain function.



Calvin Carter, PhD

Assistant Professor, Neuroscience & Pharmacology

Calvin Carter, previously a postdoc. in Val Sheffield's lab in the UI Dept. of Pediatrics, joined the Dept. in 2023. His research interests lie in mapping biological effects of electromagnetic fields as well as studying how these fields interact with biology and may be harnessed to control cellular physiology.



Snehajyoti
Chatterjee, PhD
Assistant Professor,

Neuroscience & Pharmacology

Snehajyoti Chatterjee, previously a postdoctoral scholar in Ted Abel's lab, joined the Dept. in 2023. His research interests lie in understanding the molecular mechanisms underlying long-term memory impairments in Alzheimer's disease and related dementias.



Katelin Dannen, PhD

Assistant Professor, Neuroscience & Pharmacology

Katelin Dannen, previously an instructor in the Dept., transitioned to an Assistant Professor in 2023. Her research interests liei n identifying and testing innovative techniques for teaching Pharmacology.



Richard

Vaillancourt, PhD

Clinical Instructor

Clinical Instructor, Neuroscience & Pharmacology

Richard Vaillancourt, previously an Assoc. Prof. at the University of Arizona Dept. of Pharmacy, joined the Dept. in 2023. He is interested in teaching Pharmacology students and getting them interested in Pharmacological Science careers.



<mark>Adele</mark> Stewart, PhD Assistant Professor,

Veuroscience & Pharmacology

Adele Stewart, previously a Research Assist. Prof. of Biomedical Sci. in the College of Med. at Florida Atlantic University and an alum of our Pharmacology Graduate Program, joined the Dept. in 2024. Her research interests lie in elucidating the neural substrates within the monoaminergic neurotransmitter systems that determine sex-biased trajectories of neuropsychiatric disorders.

NEW STAFF



Elyse Myers

Communications Coordinator, Neuroscience & Pharmacology

Elyse Myers, joined the Dept. in 2021. She supports the Dept. through promoting it on multi-media platforms and through her assistance to the Associate Chair for Education in managing the curriculum.



Monica Dreyer Rossi

Administrative Services Coordinator (ASC),

Monica Dreyer Rossi, joined the Dept. in 2024. She supports the daily work of the DEO and Department Administrator and coordinates the Dept.'s various seminar series, as well as special events and lectures.



Kyle Fountain

Human Resources (HR) Generalist, Neuroscience & Pharmacology

Kyle Fountain, joined the Dept. in 2024. He supports the Dept. through hiring, onboarding, and by proactively resolving issues that may be obstacles to employee growth, success, and happiness.



Robert Svetly

Departmental Administrator, Neuroscience & Pharmacolog

Robert Svetely, joined the Dept. in 2024. He supports the Dept. by managing and directing administrative services in operations, finances, human resources, strategic planning, and facilities mgmt.

PERSONNEL PROMOTIONS & AWARDS FY24

Thank you for all you do

Our top-notch faculty, students, and postdocs always make us proud. Their accomplishments speak for themselves. Look at some highlights from the past year...

Promotion



Matthew Potthoff, PhD

Matthew Potthoff was promoted to full Professor. His research interests lie in two areas: 1) Exploring how energy and glucose homeostasis is regulated by novel endocrine pathways; 2) Exploring epigenetics' role in regulating neuronal activity and its impact on metabolism, neurodegeneration, and aging.

Stevens Phi Beta Kappa Scholarship



Jengcheng Guo

ndergraduate Student,

This annual scholarship is awarded to a junior B.S. undergraduate student that shows impressive professional promise and personal integrity as demonstrated through their transcript and letters of recommendation.



This annual American Heart Association (AHA) award and lecture honors a nationally recognized scientist for their contributions in the field of hypertension.

Professor.

Neuroscience & Pharmacology

CCOM Collegiate Teaching Award



Katelin Dannen, PhD

Assistant Professor.

Neuroscience & Pharmacology

This annual CCOM award is presented to faculty who demonstrate significant and meritorious achievements in teaching and who have contributed to students' development through mentoring, advising, and sponsoring creative and/or scholarly achievements.

Dr. Dannen was also recognized by the OVPR as a faculty who ≥5 graduating seniors identified as making a difference in their education in 2023-24.



AHA Arthur C. Corcoran Memorial Lecture

Kamal Rahmouni, PhD

ACER Journal Award for Early Career Investigator **Outstanding Paper**

This annual award recognizes outstanding scientific papers by students published in the Alcohol: Clinical and Experimental Research (ACER) journal



Nagalakshmi Balasubramanian, PhD

ostdoctoral Scholar. Marcinkiewcz Laboratory

ALCOHOL 🖧 🕮

Repeated ethanol exposure & withdrawal alters angiotensinconverting enzyme 2 expression in discrete brain regions: Implications for SARS-CoV-2 neuroinvasion.

Balasubramanian N, James TD, Pushpavathi Selvakumar G, Reinhardt J. Marcinkiewcz C

Alcohol Clin Exp Res. 2023 Feb;47(2):219-239

HCCC Cancer Genes & Pathway Program Paper of the Year



Dawn Quelle, PhD

Professor Neuroscience & Pharmacology

This annual award recognizes the most impactful cancer paper of the year in each program within the Holden Comprehensive Cancer Center (HCCC).



RES CLINICAL CANCER RESEARCH

CDK4/6-MEK Inhibition in MPNSTs causes plasma cell infiltration, sensitization to PD-L1 blockade, and tumor regression

> Kohlmeyer JL, Lingo JJ, Kaemmer CA, Scherer A, Warrier A, Voigt E, Raygoza Garay JA, McGivney GR, Brockman QR, Tang A, Calizo A. Pollard K, Zhang X, Hirbe AC, Pratilas CA, Leidinger M, Breheny P, Chimenti MS, Sieren JC, Monga V, Tanas MR, Meyerholz DK, Darbro BW, Dodd RD,

Clin Cancer Res. 2023 Sep 1;29(17):3484-3497.

Dare to Discover Campaign

This annual banner campaign promotes the research, scholarly, and creative achievements of exceptional UI students.

Two Neuroscience and Pharmacology students were featured in FY24:



Liz Elias Undergraduate Student. **Ouelle Laboratory**

Liz Elias is working to improve Malignant Peripheral Nerve Sheath Tumor (MPNSTs) immunotherapy.



Connor Laule

Atasov & Rahmouni Laboratories

Connor Laule is working to unlock the interplay between stress and appetite.

RESEARCH DEMOGRAPHICS FY24

Department research focuses on three broad areas: Neuroscience, Obesity/Metabolism, and Cancer.

- 7 faculty work in the areas of Neuroscience and Metabolism, investigating neural control of body homeostasis.
- 6 faculty are chiefly Neuroscientists exploring neural mechanisms of pain, addiction, intellectual disabilities, neurodegeneration, and stroke.
- 2 faculty are Cancer researchers investigating mechanisms and innovative therapies.
- 1 faculty bridges the gap between Cancer and Metabolism with research into mitochondrial metabolism in cancer.

Recently, research surrounding Pharmacology education was also added as a fourth focus area.





Jon Resch

Matthew Potthoff

M Obesity/Metabolism







Chatterjee

RESEARCH TRANSLATION

The Department's research MISSION encompasses not only making breakthroughs in the scientific understanding of neurological, metabolic, and cancer-related diseases, but also the development of INNOVATIVE TREATMENTS

Marcinkiewcz



Dawn Quelle, PhD

Professor. Neuroscience & Pharmacology

MPNST IMMUNE THERAPY - PRECLINICAL & CLINICAL STUDIES

The Quelle lab is working to identify improved treatment options for malignant peripheral nerve sheath tumors (MPNSTs) by investigating how inhibition of three tumor-promoting proteins, the CDK4/6 and MEK kinases as well as programed death-ligand 1 (PD-L1), affects tumor development and progression in an MPNST mouse model they developed. PD-L1 expression on MPNSTs promotes immune system evasion. The Quelle lab discovered dual inhibition of CDK4/6 and MEK promotes an immune response dramatically sensitizing MPNSTs to anti-PD-L1 immunotherapy. 10% of animals were even cured of tumor. These exciting results suggest this unique combination therapy may yield sustained antitumor responses & improved patient outcomes.

This study, published in Clincal Cancer Research, supported a new \$1.3M grant from the Gilbert Family Foundation awarded to Drs. Quelle, R. Dodd, B. Darbro, and S. Chatterjee. It also drove the development of an investigator-initiated clinical drug trial led by Drs. M. Milhem & V. Monga at Iowa starting in Jan 2024.

Find out more









Stefan Strack, PhD

Professor. Neuroscience & Pharmacology

JORDAN'S SYNDROME THERAPIES - CLINICAL STUDIES

Jordan's Syndrome is a neurodevelopmental disorder caused by mutations in the protein phosphatase 2A (PP2A) regulatory subunit PPP2R5D. Currently, there are no treatments for Jordan's Syndrome and similar diseases. The Strack lab generated several mouse models of Jordan's Syndrome that recapitulate the cardinal features of the human disorder: intellectual disability, hyperactivity, autism, macrocephaly (enlarged head), and seizures. They tested drugs already in the clinical pipeline for other neurodevelopmental disorders and identified one that corrects learning and memory deficits and hyperactivity in Jordan's Syndrome mice. This drug had both acute as well as long-term effects, persisting for at least 3 months after daily dosing for two weeks.

Based on these encouraging results, patient enrollment for a phase 2 clinical trial is currently ongoing. This trial will take place at three US hospitals (Seattle Childrens, Boston Childrens, and Rush University in Chicago). The trial is sponsored by Jordan's Guardian Angels as well as the drug manufacturer.

Find out more



FACULTY FUNDING HIGHLIGHTS FY24

Research Initiatives

Our **RESEARCH MISSION** is to drive breakthroughs in the scientific understanding of neurological, metabolic, and cancer-related diseases, and develop innovative treatments.

With a history of excellence spanning over 100 years, the Department has established itself at the forefront of research. Our cohort of innovative, collaborative faculty not only publish in high-impact journals but have received international recognition. In testament to this, our research program is supported by \$14 million in funding annually from federal and private agencies, including the National Institutes of Health (NIH), National Science Foundation (NSF), and American Heart Association (AHA)

Funding obtained in FY24

DEPARTMENT **FUNDING STATS**

\$14M

TOTAL GRANT FUNDS

UP 4%

FROM FY23

#3

MOST HIGHLY FUNDED DEPT IN CCOM



Neuroscience & Pharmacolog

- Characterizing the funct. impact of mutations in Nr4a2-related Neurodev. Syndrome, Eagles Autism Foundation
- Invest. Striatal Dysfunct. in a Mouse Model of 16p11.2 Hemideletion, SURFIN, Simons Foundation
- Co-I with Hans-Joachim Lehmler, Env. factors in path. of dementia: the role of PCV exposure, microbiome, and tissue barrier dysfunct., NIH R01
- Co-I with Kim Blackwell, Estradiol sig. paths. mediating sex differences in striatal synaptic plasticity, NIH R01

Songhai

Role of the CTLH E3 ubiquitin ligase

in breast cancer progression, NIH

Unveiling RACK1's crucial role in

breast cancer, HCCC Breast Cancer

MPI - Ron Weigel

Research Pilot Grant

Chen, PhD

Associate Professor,



Snehajyoti Chatterjee, PhD Assistant Professor, Neuroscience & Pharmacology

- Understanding the molecular mechanism of memory from single-cell gene expression to protein folding, NIH R00
- Therapeutic Potential of Lysine Crotonylation in Alzheimer's Disease, Alzheimer's Association Research Grant
- Williams-Cannon Faculty Fellowship



Huxing Cui, PhD

Associate Professor,



- Neural basis of metabolic control by ciliary cAMP signaling, Novo Nordisk Pharmaceuticals, Inc.
- Uncovering the role of hypothalamic ciliary cAMP signaling in sex-specific control of metabolic homeostasis, NIH R01 Co-I - Deniz Atasoy



Stefan Strack, PhD

Dawn

Professor.

MPNSTs, Gilbert Family Foundation

Co-l's - Snehajyoti Chatterjee and

Improving Immunotherapy in

MPI - Rebecca Dodd

Ben Darbro

Quelle, PhD

Neuroscience & Pharmacology

Professor Neuroscience & Pharmacology

- Identifying Temporal and Spatial Origins and Reversibility in Mouse Models of Neurodevelopmental Disorders with Autism, DOD/CDMRP
- Exploring and Treating Cognitive Dysmetria in the Mouse Model of ARSACS, Ataxia Charleovoix-Saguenay Foundation
- Inaugural Hawk-IDDRC Pilot Grant



Seth Tomchik, PhD Professor. Neuroscience & Pharmacology

 Mechanisms of Neuronal Dysregulation Underlying Behavioral Alterations in Neurofibromatosis Type 1, DOD/CDMRP

Kamal

Professor

Co-I with Sanjana Daval, Preventive

mechanisms of Age-associated

Thrombosis, NIH R01

Rahmouni, PhD

Neuroscience & Pharmacology



Jon Resch, PhD Assistant Professor, Neuroscience & Pharmacology

 Hypothalamic Circuitry Underlying Thirst, Brain Research Foundation

Albert Einstein

Catherine Marcinkiewcz, PhD ssociate Professor, Neuroscience & Pharmacology

- Sleep and Affective Disturbances in the Etiology of Alzheimer's Disease, NIH R01 Diversity Supplement
- Serotonergic Involvement in the Interaction Between Alcohol and Pain, VA Merit Award Co-I - Kathleen Sluka



Matthew Potthoff, PhD

Neuroscience & Pharmacology

- Therapeutic Potential of FGF21 for Alzheimer's Disease, NIH R01 Co-l's - Ted Abel, Marco Hefti, and Eric Taylor
- Co-I with Hongshuai Li, Role of FGF21 in DMD, NIH R01
- Subcontract PI with Yi. Zhu, Enhancing metabolic action of FGF21 through adipocyte Connexin43 gap junction channels, Baylor/NIH



Pharmacological Sciences Training Grant

The training grant (T32 GM144636) MISSION emphasizes the education of 12 predoctoral students each year (for up to 2 years) with research interests broadly related to the Pharmacological Sciences (e.g. Biochem., Cancer Bio., Cell & Dev. Bio,. Genetics, Human Tox., Immunology, Microbio., Mol. Med., Mol. Phys. & Biophys., Neuro., Pharmaceutical Sci. & Exp. Ther., and Neuro. & Pharm.) and to promote research collaborations across these disciplines.

LARGEST UI TRAINING GRANT

Co-Directors



New Trainees

Stefan Strack, PhD



saias Herring

ndrew Kain

leuroscience Grad. Student,

Neuroscience Grad. Student, Parker & Williams Laboratories



<u>6</u>6

Roman, PhD

Scientific research can

reduce superstition by

encouraging people to

think and view things in

terms of cause and effect.

DGS & Professor, naceutical Sci. & Exp. Therapeutics



avda Quiñones-Labernil Pharmacology Grad. Student,



mma Simpson-Wade Molecular Medicine Grad. Student,

Pain Training Grant

The training grant (T32 NS045549) MISSION is to mentor the next generation of scientists and physicians in the recognition, mechanisms, and management of pain. Training is provided to 2 **Trainces** predoctoral and 2 postdoctoral fellows each year for up to 2 years.

As health care research continues to emphasize patient-centered outcomes, the UI Pain Research Program incorporates nurse scientists as part of the training program and works collaboratively with the UI Institute for Clinical and Translational Science in the development of research programs.

RESEARCH TRAINING GRANTS



Co-Directors

Jsachev, PhD



luka, PT, PhD, FAPTA



amie Morton, PhD stdoctoral Scholar,



lexander Gleboy-McClou

Physical Therapy & Rehabilitation Science

Molecular Medicine Grad. Student,



shley Plumb euroscience Grad, Student

Find out more about our Training Grants

Pharmacological Sciences







RESEARCH TRAINEE FUNDING FY24

One of the Department's GOALS is to help students develop skills needed for success in academic or research careers, including **GRANT WRITING.** Students share responsibility with their mentors in obtaining funding. Here is a list of new FY24 student funding.

EXTERNAL



Aklan, PhD

Postdoctoral Scholar

Brain stem mechanisms regulating sucrose preference, American Diabetes Association Postdoctoral Fellowship



Celvinaton

Pharmacology Grad. Student,

Defining the molecular, impact of 16p11.2 deletion on reward response in striatal dopamine receptor D1-expressing neurons, NIH NRSA F31



hmet Kuralay

leuroscience Grad. Student

HSD2 neuron afferents in central amygdala and their role in sodium appetite, AHA **Diversity Supplement**



1iriam **AcDonouah**

Molecular Medicine Grad. Student, Resch Laboratory

Investigating the molecular mechanisms underlying aldosterone-mediated sodium appetite, NIH NRSA F31



Andrew Sullivan

Molecular Medicine Grad. Student, Potthoff Laboratory

The role of IRX3 neurons in the reg. of body weight homeostasis, NIH NRSA F31

DIABETES T32 TRAINING GRANT



Keyes, PhD

Postdoctoral Scholar Usachev Laboratory



ertha ostdoctoral Scholar

Resch Laboratory

INTERNAL



Pharmacology Grad. Student,

Grad. College Post-Comp, Fellowship



Pharmacology Grad. Student, Stephens Laboratory

Ballard & Seashore Dissertation Fellowship



Pharmacology Grad. Student, Usachev Laboratory

Graduate College Summer Fellowship



Monaghan

harmacology Grad. Student, Benson Laboratory

Graduate College Summer Fellowship

RESEARCH PUBLICATIONS FY24

Paper Trail

Below is a list of some of the research manuscripts published from the Dept. in FY24 in which trainees and faculty are first and/or senior authors.

ENDOCRINOLOGY AND METABOLISM

Metabolic consequences of skeletal muscle- & liverspecific BBSome deficiency.

Rouabhi Y, Guo D-F, Ahao Y, Rahmouni K

Am J Physiol Endocrinol Metab. 2023 Dec 1;325(6):E711-E722.

Journal of Human Genetics

A splice acceptor variant in RGS6 assoc. with intel. disability, microcephally, & cataracts disproportionately promotes expression of a subset of RGS6 isoforms.

Ahlers-Dannen KE, Yang J, Spicer MM, Fu D, DeVore A, Fisher RA

J Hum Genet 2024 Apr;69(3-4):145-152.

IMCB

Active Gailo Mutants **Accelerate Breast Tumor** Metastasis via the c-Src Pathway.

Lyu C, Bhimani AK, Draus WT, Weigel R, Chen S

Mol Cell Biol Dec 2023;43(12):650-663.



Stress integration by an ascending adrenergic-

melanocortin circuit. Laule C, Sayar-Atasoy N, Aklan I, Kim H, Ates T, Davis D, Atasoy D

2024 Feb 7. doi: 10.1038/s41386-024-01810-9

ENDOCRINOLOGY AND METABOLISM

Loss of the golgi-localized v-ATPase subunit does not alter insulin granule formation or pancreatic islet β-cell function.

Boyer CK, Bloom SE, Machado AE, Rohli KE, Maxson ME, Stephens SB

Am J Physiol Endocrinol Metab 2024 Mar 1;326(3):E245-E257. Pharmacological Research

Serotonergic dysfunction may mediate the relationship between alcohol consumption and Alzheimer's disease.

Pierson SR, Kolling LJ, James TD, Govindhasamy Pushpavathi S, Marcinkiewcz CA

2024 May:203:107171 doi:10.1016/j.phrs.2024.107171

Molecular Psychiatry

Dissecting 16p11.2 hemideletion to study sexspecific striatal phenotypes of neurodevelopmental disorders.

Kim J, Vanrobayes Y, Kelvington B, Peterson Z, Baldwin E, Gaine ME, Nickl-Jockschat T, Abel T

Mol Psychiatry 2024 May;29(5):1310-1321.

IT MADE THE COVER

nature

AgRP neurons encode

circadian mealtimes

neuroscience



Deniz Atasov, PhD

Associate Professor, Neuroscience & Pharmacology

AgRP neurons encode

circadian feeding time. Sayar-Atasoy N, Aklan I, Yavus Y, Laule C, Kim H, Rysted J, Ikbal Alp

M, Davis D, Yilmaz B, Atasoy D

2024 Jan; 27(1):102-115.

The time of day that we eat has a significant impact on body weight and metabolic health, but what determines those mealtimes? The Atasov lab monitored daily oscillations in the activity of key hypothalamic hunger neurons expressing AgRP. Their findings indicate that AGRP neurons integrate time-of-day information of past feeding experience with current metabolic needs to predict circadian feeding time.

Find out more

The Cerebellum

Driving mitochondrial fission improves cognitive. but not motor deficits in a mouse model of Ataxia of Charlevoix-Saguenay.

Chen C, Merrill RA, Jong CJ, Strack S

Cerebellum 2024 May 13. doi: 10.1007/s12311-024-01701-1.

Psychopharmacology

Regulator of G protein signaling 6 (RGS6) in dopamine neurons promotes EtOH seeking, behavioral reward, and susceptibility to relapse.

Spicer MM, Weber MA, Luo Z, Yang J, Narayanan NS, Fisher RA

2024 Jun 10;doi: 10.1007/s00213-024-06631-8

Molecular and Cellular Endocrinology

Control of sodium appetite by hindbrain aldosteronesensitive neurons.

Kuralay A, McDonough MC, Resch JM

Mol Cell Endocrinology. 2024 Jun 26;592:112323.

EDUCATION

TRAINING PROGRAMS

Hands-on Learning in Pharmacology

The Department's mission to educate the next generation of leaders in the Pharmacological Sciences is wellsupported by our growing family of dedicated faculty mentors. Students at all levels work side-by-side with faculty to explore the basic mechanisms of disease and drug action while also performing meaningful, translational research. Through our cutting-edge research facilities, highly applicable coursework, and collaborative environment, we provide our students the skills and expertise needed to set them apart from the crowd.

STUDENTS IN **OUR LABS**

UNDERGRADUATE

36

GRADUATE

33% in Pharmacology Graduate Program

POSTDOCS

Want to know more about our training programs?



EDUCATION UNDERGRADUATE

A changing landscape

In recent years, the Department has broadened its presence into the University's undergraduate curricula. This was accomplished in two ways:

 Our long-standing undergraduate course, Drugs: Their Nature, Action and Use (PCOL:2120) was renamed Drug Use and Abuse (PCOL:2220)

19-20 20-21 21-22 22-23 23-24

Year

and was reclassified as a CLAS general education elective. This reclassification has allowed more students to enroll as it fulfills their Natural Science requirement.

 A new Pharmacology course sequence was created, Pharmacology I: A Drug's Fantastic Journey (PCOL:3101) and Pharmacology II: Mechanisms of Drug Action (PCOL:3102). While open to all undergraduate students with appropriate science background, these courses are specifically offered as electives within the undergraduate Neuroscience, Biochemistry, and Biochemical Engineering majors.

EDUCATION ACCESSIBLE PHARMACOLOGY

Pharmacology is a multifaceted subject requiring students to perform the **DIFFICULT TASK** of mentally overlaying complex mechanisms of drug action onto intricate body physiology to make sense of how drugs both correct and cause disease. Despite this, very little research has been conducted to define effective Pharmacology pedagogy and increase Pharmacology ACCESSIBILITY



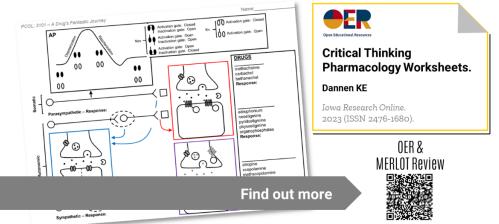
Katelin Dannen, PhD

Assistant Professor. Neuroscience & Pharmacology

THE ROAD TO ACCESSIBLE PHARMACOLOGY

Dr. Dannen is making the most of her days in the classroom. She has developed critical thinking exercises and guided diagramming activities (see example below) to break up the often lecture-heavy Pharmacology curriculum in her undergraduate courses. Furthermore, she is assessing whether these active learning strategies make Pharmacology material more understandable and accessible to students.

Dr. Dannen recognizes that, in addition to its critical role in healthcare curriculums, Pharmacology may also benefit students whose professions lie outside of healthcare. Drugs, both therapeutic and non-therapeutic, are common on college campuses. Access to Pharmacology education in college may serve to create a culture of more educated consumers and to reduce drug misuse. Therefore, Dr. Dannen is also measuring the extent to which elementary and advanced undergraduate Pharmacology coursework influences student drug consumer knowledge and use.

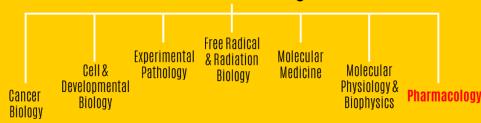


EDUCATION GRADUATE

Biomedical Science (Pharmacology)

In 2020 the Biomedical Science Program (BSP) was established. The BSP is a first-year umbrella program encompassing 7 PhD subprograms (see below). Students interested in Pharmacology enter the graduate program through the BSP. The first year is comprised of a common curriculum tailored to enhance the educational goals of all subprograms. At the end of the first year, a student selects a thesis laboratory and enters Pharmacologyspecific coursework.

Biomedical Science Program



EDUCATION GRADUATE SEMINARS FY24

Pharmacology's well-rounded and applicable curriculum is supplemented by an active seminar series that connects students with WORLD-RENOWNED RESEARCHERS (including Nobel Laureates) and scientists in various **DRUG-DISCOVERY CAREERS**.



Michael J. Brody, PhD

Professor. Neuroscience & Pharmacology

Brody Memorial Lecture

This annual lecture honors the memory and contributions of Dr. Michael J. Brody, a distinguished Professor in the Dept.

Dr. Brody received many awards during his distinguished career. However, the awards he valued the most were those he received for outstanding instruction. It is thus fitting that graduate students, about whom he cared so much, select and invite a distinguished scientist to present this lecture each year.

2023-24 Lecturers:



Charles Zuker, PhD

rof of Biochem & Mol Biophys & Neuro, columbia University, Zuckerman Mind

The Body-Brain Axis: From Sugar and Fat to Immunity



Beth Stevens. PhD

Associate Professor of Neurology, Harvard Medical School

Mapping Microglia States to Function in Development & Disease



Bryan Cox, PhD

Adjunct Professor Neuroscience & Pharmacology

Careers in Drug Development Seminar Series

This annual seminar series features talks by Adj. Prof. and Pharmacology alumnus Bryan Cox as well as invited leaders from Pharma/Biotech. The series provides trainees with career development training and knowledge of alternative career paths related to Pharmacology.

2023-24 Presenters & Topics:



Shannon Harlan, PhD

Dir. of BioTechnology Discovery Research Eli Lilly & Company

Novel Hypertensive Mouse Models of Progressive Diabetic Kidney Disease for Preclinical Assessment of Therapeutics



Bryan Cox, PhD

Adjunct Professor, Neuroscience & Pharmacology

Management 101

Academic Discovery Becomes a Biotech Start-up: Case Study of Nephraegis Ther.

Careers in Drug Discovery and Development

Farewell & best wishes....

to our Pharmacology graduates.



Cierra Bover, PhD

Pharmacology Grad. Student,

Cierra Boyer successfully defended her thesis entitled β-cell Secretory Capacity as an Adaptive Mechanism During the Development of Type 2 Diabetes.



Alex Keyes, PhD

Pharmacology Grad. Student,

Alex Keyes successfully defended her thesis entitled Central Mechanisms of Pain Transmission.



Iltan Aklan, PhD

Pharmacology Grad. Student, Potthoff Laboratory

Iltan Aklan successfully defended her thesis entitled Central Monoamineraic Pathways in Appetite Regulation.

GRADUATE **PROGRAM STATS**

93%

PROGRAM COMPLETION

5.3yr

TIME TO DEGREE

CELEBRATING GRAD ALUMNI SUCCESS

The Department of Neuroscience and Pharmacology, which houses the Pharmacology Graduate Program, is a leader in graduate training. For over 100 years we have educated Ph.D. scientists who have gone on to distinguished careers in the Pharmacological Sciences.

To celebrate the many accomplishments of our graduates, we have erected a graduate Alumni Display, featuring posters detailing alumni careers and words of wisdom. It is our hope that this display will continue to grow through the years and act as an inspiration for students.

Included here are posters from alumni who have already contributed information for the display.



View Display Virtually





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INDUSTRY - 53%

#2

ACADEMIA - 33%

#3

RESEARCH STAFF - 7%





OTHER - 7% Sci. Writing, EHS, etc.









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EDUCATION POSTDOCTORAL SCHOLARS

Postdoctoral Seminar Series

The **MISSION** of the Department Postdoctoral Committee is to provide trainees with the opportunity to build leadership skills and connect with peers.

The committee launched the NEURO-ROOT Postdoctoral Seminar series, to serve as a forum for career development talks and research seminars by postdocs across the nation.

2023-24 Invited Speakers



Assistant Professor of Biochemistry, University of Washington

Cultivating research success: Harnessing funding opportunities & crafting fundable grant proposals



Raajaram Gowrishankar, PhD

Postdoc in Dept. of Anesthesiology & Pain Medicine, University of Washington

Dynamic endogenous opioid neuromodulation shapes goal-directed behavior



Zang

Assistant Professor of Pediatrics Baylor College of Medicine

Deciphering Obesity: The role of the serotonin 2C receptor



Postdoc in Dept. of Regeneration Medicine, University of California – San Francisco

Development of the human neocortex: From progenitors to circuits

Want to Participate? Apply at:



EDUCATION TRAINEE LEADERSHIP FY24

Part of the Department's MISSION is to educate the next generation of leaders in the Pharmacological Sciences. Therefore, one of our goals is to help students develop the **LEADERSHIP SKILLS** required for success in academic or research-based careers by encouraging them to practice leadership.





Nagalakshmi Balasubramaninan, PhD ostdoctoral Scholar Representative, leuroscience & Pharmacology

FACULTY MEETING REPRESENTATIVES

Each year, one graduate student and one postdoctoral scholar are nominated to act as representatives at faculty meetings. These representatives are student advocates that not only help shape Department policy, but also work to strengthen our trainee community.

2023-24 Community-building Event:



Fall Trainee Networking Event Backpocket Brewery



Grad. Student Representative,

GRADUATE STUDENT SENATE (GSS) REPRESENTATIVE

Each year, one graduate student is elected as a representative to GSS, the Neuroscience & Pharmacology primary representative, administrative, and service org. for graduate students.



Selvington

Grad. Student - 2e Advocate Neuroscience & Pharmacology

TWICE EXCEPTIONAL DAY CAMP

Established by Ben Kelvington, this camp is hosted jointly by the Dept. of Neuroscience and Pharmacology and the Belin-Blank Center for Gifted Education. This camp was established to empower neurodiversity in Neuroscience and provides twice-exceptional (2e) high school students access to research staff and hands-on lab experience. 2e students are academically gifted but face challenges from a developmental disability.



SERVICE LEADERSHIP POSITIONS FY24

Creating a Community

In academia, **SERVICE** denotes those activities of faculty that lie outside of teaching and research. Service activities are those that ultimately support the Department and larger University communities.

Neuroscience and Pharmacology faculty are committed to service. Highlighted here are some of the many service leadership positions our faculty hold both within and outside the Dept.

Find out more

N & P DEPT. LEADERSHIP



Abel, PhD

Neuroscience & Pharmacology

Departmental Executive Officer (DEO)

Provides vision and leadership for the Department, working with both faculty and with the Dean's Office to promote the Department's mission.



Strack, PhD

Neuroscience & Pharmacology

Assists in the oversight of day-to-day Department operations, acts for the DEO when the DEO is unavailable, and undertakes special assignments at the request of the DEO.



Matthew Potthoff, PhD Professor.

Associate Chair for Diversity & Faculty Development

Upholds the Department's commitment to the inclusion of faculty and trainees of all cultural experiences and works to cultivate a welcoming, supportive, and collaborative culture for all members of the Department.



Katelin Dannen, PhD Assistant Professor Neuroscience & Pharmacology

Associate Chair for Education

Oversees and upholds the Department's education mission, working with both faculty and students to ensure the Pharmacology curriculum is both relevant and applicable.



Fisher, PhD Professor.

Director of Graduate Studies (DGS) Helps oversee administration of the Pharmacology graduate curriculum and monitors students to ensure their timely



Resch, PhD Assistant Professor, Neuroscience & Pharmacology

Director of Admissions

assessment and success.

Represents the Pharmacology Subprogram interests within the Biomedical Sciences Graduate Program and coordinates the Department's recruitment efforts.

Robert

Svetly



Department Administrator

Supports the success of the Department by managing and directing administrative services in operations, finances, human resources, strategic planning, and facilities management.

OTHER UI LEADERSHIP



Director of the Iowa Neuroscience Institute (INI)

Oversees the mission of the INI, a premier, comprehensive, and cross-disciplinary research institute.



Tomchik, PhD Professor

Neuroscience & Pharmacology

Associate Director of Research for the Iowa Neuroscience Institute (INI)

Helps oversee the research mission of the INI, a premier, comprehensive, and crossdisciplinary research institute.



Kamal Rahmouni, PhD

Professor.

Co-Director of the Fraternal Order of **Eagles Diabetes Research Center** (FOEDRC)

Oversees the mission of FOEDRC, which is becoming a premier research institute focused on advancing knowledge of diabetes mechanisms and complications through cutting-edge research.



Dawn Quelle, PhD

Professor. Neuroscience & Pharmacology

Cancer Genes and Pathways (CGP) **Program Leader for the Holden Comprehensive Cancer Center (HCCC)**

Oversees activities supporting the research mission of the HCCC and CGP program, including allocation of research funds, fostering productive collaborations among HCCC members, leading programmatic meetings and retreats, and securing comprehensive cancer center status through the NCI-designated Cancer Center Support Grant.



Matthew Potthoff, PhD

Neuroscience & Pharmacology

Director of Molecular Medicine (MMED) PhD Program

Oversees the mission of the MMED program and represents its interests as a subprogram within the Biomedical Sciences Graduate Program.

The service you do for others is the rent you pay for your room here on earth.

Muhammad Ali 14



IOWA

Department of Neuroscience and Pharmacology

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

Be part of the action....



Give to Iowa

Support our research

The University of Iowa is running the TOGETHER HAWKEYES CAMPAIGN, established to change lives and ensure a bright future for Iowa's people and programs.

Now's your chance to invest in the lowa cause that means the most to you...for instance the Neuroscience and Pharmacology Department research

Make a Pledge





Stay updated with "Drugs in the News"

New articles the 1^{st} & 3^{rd} Thursday of every month.

