Dear MSU Pharmacology & Toxicology Alumni, Students, Faculty, Staff, and Friends,

This has been a big year for MSU and our department. As you have no doubt heard, we have a new MSU President, Samuel Stanley Jr., MD. Previously, Dr. Stanley was president at SUNY Stony Brook for 10 years where he increased the number of endowed professorships and strengthened Stony Brook’s stature as a leading research institution. He has already made important connections with the community through open meetings with each college and their faculty.

The administrative organization of the Medical Schools has also undergone a significant shift. Dr. Norman Beauchamp Jr., Dean of the College of Human Medicine (CHM), was named Vice President of Health Sciences serving as leader of the three human health colleges including: CHM, the College of Osteopathic Medicine (COM), and the College of Nursing (CON). Dr. Aron Sousa has been named Interim Dean of CHM. Also, Dr. Andrea Amalfitano was made permanent Dean of COM after serving as Interim Dean last year.

Our physical and research environment has also changed dramatically. In addition to the Life Sciences Building, which you know and love, the IQ building (Institute for Quantitative Health Sciences and Engineering) went in just over 2 years ago. Then this fall, the new Integrative Sciences and Technology Building (ISTB) was completed making the South Campus area a hotbed for biomedical and technology research. Two floors in ISTB will be occupied by neuroscientists, one floor is for the Precision Health Program and another for Reproductive and Developmental Sciences. This provides a tremendous critical mass nearby, including some strong collaborators for Pharmacology and Toxicology.

Within the department, we also have new developments. We have two new tenure-track Assistant Professors, Drs. Neera Tewari-Singh and Nathan Tykocki and one new Fixed-Term Assistant Professor, Dr. Ana Mendes Leal. Also, Dr. Karen Liby was awarded tenure this summer – Congratulations Karen! Dr. Marc Bailie, who helped found our In Vivo Facility has moved on to a full-time role at INDS in Ann Arbor (he was 50% there before) but he remains active as an adjunct faculty member and consultant. We have also had several changes to our office and lab staff – please see the Department Updates page.

This year, we also just kicked off an Alumni Steering Committee to get feedback on our teaching and research missions. It also provides a great opportunity for our students to learn about and network with our outstanding alumni – see Events Page.

As you probably know, MSU continues to deal with the fallout from the Nassar affair and has established a central resource outlining the University’s response (https://msu.edu/ourcommitment/news/nassar-information.html). There have been continuing discussions about how to appropriately identify and respond to activities on campus that run counter to the values and mission of MSU.

On a more positive note, the commitment to hire 100 new faculty (the Global Impact Initiative or GII) has nearly been completed and there is support by MSU leaders to continue to build on that momentum. We anticipate that PharmTox will be looking to take advantage of this new initiative going forward.

Go Green!
Rick Neubig
What made you want to study cannabis?

What interested me wasn’t cannabis per say, but rather “cannabinoids”, which are a large family of structurally-related compounds in cannabis. There had been a large body of evidence showing cannabinoids possess immune modulatory activity (they are able to enhance or suppress various immune responses). In 1990, the first cannabinoid receptor (CB1) was isolated and cloned. I had been following the literature but hadn’t been conducting research in this area due to the lack of understanding of the mechanism. Once the first cannabinoid receptor was isolated and cloned, I was intrigued and wanted to see if this receptor was expressed within the immune system. A second cannabinoid receptor (CB2), was cloned several years later which turned out to be more highly expressed within the immune system. It appears to be the predominant receptor through which cannabinoids signal on white blood cells. The CB2 receptor is a focus of our current studies because CB2 is not expressed within the central nervous system. What this means is that if you have molecules that only target CB2, one can modulate the immune system in the absence of psychotropic effects.

What is your current research focus?

My lab is currently studying how CB2 interacts with the immune system in HIV patients. One of the consequences of HIV in approximately 50% of patients is a phenomenon initially termed “neuro-AIDS” and is now referred to as HIV-Associated Neurocognitive Disorder (HAND). This disorder shares many similarities with Alzheimer’s in that in the most severe causes it leads to dementia. HAND is caused, in part, by migration of white blood cells (monocytes) across the blood-brain-barrier to produce chronic inflammation in the brain of HIV patients that leads to the destruction of neurons. We believe that targeting CB2 to suppress inflammation could be protective for these individuals. Our research has found that HIV patients have very high levels of activated circulating monocytes. These activated monocytes have been identified in brain tissue of deceased HIV patients suffering from HAND. In HIV patients that use medical marijuana we have observed that the levels of activated monocyte was decreased from 40-60 % to a normal range of 10-15%.

How has cannabis research changed since you got started in 1985?

The biggest change has been how National Institutes of Health (NIH) thinks about cannabis and cannabinoids. Historically, the National Institute on Drug Abuse (NIDA), the primary institute within NIH that funds research on drugs of abuse would not fund research exploring drugs of abuse as therapeutic agents. Most research funded by NIDA is to study drug addiction, both prevention and treatment. In the last 3-4 years, this has changed dramatically. NIH has recognized that cannabinoid receptors may be a useful therapeutic target. If so, then those molecules that bind cannabinoid receptors could be considered potential therapeutic agents. My opinion on why this change happened is that published work in the last 5-10 years has suggested more therapeutic benefits of targeting CB1 & CB2. I also think the opioid crisis has driven some of the research due to the analgesic properties of cannabinoids and their potential use in combination with other drugs that could help reduce the use of opiates. Also, public pressure and the public acceptance has had a significant impact.

Do you feel that your research has given you a negative perception from the public or colleagues?

I’ve never felt a stigma or anything like that due to my research. When I was at the Medical College of Virginia during the early part of my career, much of the research in that department was focused on drugs of abuse. So I was surrounded by investigators with similar scientific interests.

Michigan voted to legalize marijuana use for its citizens older than 21. Does this help, hurt, or have no effect on your research?

I don’t think legalization has really changed my research. We presently collaborate with a physician in the College of Osteopathic Medicine, Dr. Peter Gulick, who has established a registry of approximately 500 HIV patients that want to participate in research and provide our lab with blood samples. The bigger impact on my research was when Michigan legalized the use of medical marijuana. Currently we are struggling to recruit HIV patients who do not use cannabis for our control group. The word has gotten out in the HIV community that there are positive aspects to using marijuana when infected with HIV, the most well recognized being as an appetite stimulant.

Learn more about Dr. Kaminski and his research here
Department Updates

New Faculty Hires / Appointments

Neera Tewari-Singh, PhD
Assistant Professor - Tenure System

Nathan Tykocki, PhD
Assistant Professor - Tenure System

Jack Harkema, PhD
Joint Appointment with PharmTox & Pathology & Diagnostic Investigation

Jetze Tepe, PhD
Joint Appointment with PharmTox & Chemistry

Ana Mendes Leal, PhD
Assistant Professor, Fixed-Term

New Staff Hires

Jake Wier
PhD Academic Program Coordinator

Heather deFeijter-Rupp
Core Facility Manager

Luanne Peeper
Receptionist

New Lab Hires

Lizbeth Lockwood
Research Assistant II
Liby Lab

Bridget Seitz, PhD
Specialist - Research Fixed-Term
In Vivo Lab

Satyendra Singh, PhD
Scholar Fixed-Term
Tewari-Singh Lab

Stefan Pittsley
Research Assistant II
In Vivo Lab

Osvaldo Vega Rodriguez
Research Assistant I
Tykocki Lab
Department Updates Continued

Faculty Promotions / Administrative Positions

**John Goudreau, DO, PhD**
Named Associate Dean of Research (COM) & Director, Clinical Translational Science Institute (VPRI)

**Colleen Hegg, PhD**
Named Graduate Director of Comparative Medicine and Integrated Biology (CMIB)

**Karen Liby, PhD**
Promoted from Associate Professor to Associate Professor with Tenure.

**Norbert Kaminski, PhD**
Named Director of the Center for Research on Ingredient Safety (CRIS)

**Teresa Krieger-Burke, DVM, PhD**
Named Director of In Vivo

Select Alumni Updates

**Elaine Faustman, PhD** (Goodman, 1980) - 2019 Merit Award from the International Union of Toxicology.

**Annette E Fleckenstein, PhD** (Moore, 1994) - Inaugural member of the 2019 American Society for Pharmacology and Experimental Therapeutics (ASPET) fellow.

**Lyle Burgoon, PhD** (Zacharewski, 2005) - 2019 Kenneth E Moore Distinguished Alumnus Award.

**Erica Sparkenbaugh, PhD** (Roth, 2011) - Assistant Professor at the University of North Carolina at Chapel Hill.

**Priya Balasubramanian, PhD** (Mohankumar, 2012) Senior postdoctoral fellow in Dr. Anna Csizsar’s lab at the Reynolds Oklahoma Center on Aging in the University of Oklahoma Health Sciences Center.

**Isola Brown, PhD** (Gulbransen, 2017) - Associate Director of Master’s in Physiology program at the University of Michigan.

**Kibrom Alula, PhD** (Galligan, 2019) - Postdoctoral Position at the University of Colorado.

**Alberto Perez-Medina, PhD** (Galligan, 2019) - Postdoctoral Position at the University of Michigan.
Select Faculty Awards

Susan Barman, PhD
2019 Carl Ludwig Distinguished Lecturer

J.R. Haywood, PhD
Ray G. Daggs award, University of Florida

Jay Goodman, PhD
Awarded honorary membership in the Federation of European Toxicologists

Reeza Nassiri, PhD
Keynote presenter @ 4th international Conference & Expo on HIV - AIDS & Sexual Health

Rick Neubig, MD, PhD
2019 Inaugural Fellow of American Society for Pharmacology and Experimental Therapeutics (ASPET)

Kenneth Moore, PhD
2019 Inaugural Fellow of American Society for Pharmacology and Experimental Therapeutics (ASPET)

Neurotoxicology Specialty Section (NTSS)
2019 Distinguished Neurotoxicologist Awardee Dr. William Atchison

Dr. Atchison has demonstrated a life-long commitment to neurotoxicology with significant research contributions to neurotoxicology, neuropharmacology, and neurobiology. His work has significantly advanced our understanding of metal neurotoxicity, particularly the cellular mechanisms of methyl mercury toxicity. Bill derives from a strong scientific lineage including postdoctoral training with Dr. Toshio Narahashi, the first recipient of the NTSS Distinguished Neurotoxicologist Award and whose contributions inspired the need to recognize our founders. The action of methyl mercury to perturb calcium regulation at the cellular level, disrupt ion channels and subsequently impair of synaptic function in susceptible neurons were the basis of a long and outstanding research career. More recently, Bill has applied solid, meticulous, and sophisticated electrophysiological techniques to query neuromuscular diseases, including amyotrophic lateral sclerosis, and to examine contributions of gene-environment interactions in disease etiology. In addition to these many accomplishments, Bill is highly lauded as an excellent and committed teacher and mentor, guiding many successful graduate students and postdoctoral fellows through his laboratory. He has given selflessly to mentoring students from underrepresented groups in their pursuit of graduate studies, establishing a training program at MSU in 2007 to serve as a bridge from undergraduate to graduate studies. This effort expanded over the years and remains strong today, earning him the ‘MSU Excellence in Diversity Award’ in 2010; MSU ‘Distinguished Faculty Award’ in 2011; and SOT’s ‘Undergraduate Educator Award’ in 2014. Finally, Bill’s long-term commitment and service to the SOT and his longstanding and honorable contributions to NTSS, often very much behind the scenes, cannot be overstated. This overall record of research accomplishments and service marks a singularly distinguished career in neurotoxicology that is recognized by this award.

Authored by:
Mary E. Gilbert, Ph.D.
Chair Awards Committee

Michelle Block, Ph.D.
President, Neurotoxicology SpecialtySection
MAJOR AWARDS

Theodore M. Brody Distinguished Lecturer Award

Theodore M. Brody was the founding chair of Michigan State University’s Pharmacology & Toxicology Department

2019
Jeffrey Benovic, Ph.D.

- Thomas Eakins Professor of Biochemistry & Molecular Biology
- Thomas Jefferson University

More on the Theodore M. Brody Distinguished Lecturer Award

Kenneth E. Moore Distinguished Alumnus Award

Kenneth E. Moore was one of the original six faculty members of Pharmacology at Michigan State University. Dr. Moore would later become a department chair with Pharmacology & Toxicology and we honor his contributions with the Distinguished Alumnus Award.

2019
Lyle Burgoon, Ph.D.

- Director, Center for Existential Threat Analysis (CETA)
- Leader, Bioinformatics and Computational Toxicology Team
- US Army

More on the Kenneth E. Moore Distinguished Alumnus Award
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<td>Robert Freeborn</td>
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<td>Jeremy Ginrich</td>
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<td>Veiga-Lopez Lab</td>
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PhD Graduates Summer 2019

Bridget Seitz
From Left: Drs. Watts (Chair), Luyendyk, Seitz, Fink, Krieger-Bruke

Elizabeth Williams
From Left: Drs. Jackson, Fink, Dorrance, Williams, Robison (Chair), Galligan

Hujie “Jade” Feng
From Left: Drs. Yuan, Galligan, Feng, Neubig (Chair), Cox, Hegg

Vincent Shaw
From Left: Drs. Neubig (Chair), Shaw, Liby
Not Pictured: Drs. Kaguni, Vashisth

Alberto Perez-Medina
From Left: Drs. Hegg, Perez-Medina, Galligan (Chair)
Not Pictured: Drs. Atchison, Gulbransen

Kibrom Alula
From Left: Drs. Swain, Galligan (Chair), Alula, Jackson, Fink

PhD Student Selected Awards

Nick Ether
Junior Investigator Travel Award

Di Zhang
F99/K00 NIH: National Cancer Institute Fellowship

Vanessa Benham
AITCH Foundation Fellowship

Kevin Baker
College of Natural Science: John A. Penner Endowed Research Assistantship
PharmTox Department Events

Department Picnic
On Saturday August 24, 2019, the Department had our annual picnic at Hartrick Park in Okemos to welcome new students and to get faculty, staff, students, and families together for games and food.

Our alumni mixer at the 2019 Experimental Biology meeting in San Diego, CA had a very special event with a joint birthday party for Drs. Sue Barman, Greg Fink, and JR Haywood. Sue Barman was also honored with the 2019 Carl Ludwig Distinguished Lectureship from the APS.
PharmTox Department Events

Dr. Goodman Symposium
A symposium, in honor of the retirement of Dr. Jay Goodman, was held at MSU on April 1, 2019. We all enjoyed an excellent scientific symposium featuring many of his trainees.

IPSTP Roadtrip
As part of our NIH-funded T32/Integrative Pharmacological Sciences Training Program, about 20 students visited Eli Lilly and Company in Indianapolis, IN. Dr. Derek Leishman, Adjunct Professor of Pharmacology and Toxicology was our host. We also had the opportunity to visit the Covance CRO site. Both visits were designed to show students about non-academic career opportunities.

Innugural Alumni Steering Committee Weekend
As a way to enhance connections with our alumni, the department has initiated an Alumni Steering Committee. In addition to a day of meetings with faculty, staff, and students which culminated in a speed data/poster session, we had a tour of the amazing Facility for Rare Isotope Beams (F-RIB) right on Wilson Rd. Several of the group attended the sad Illinois football game but many left at halftime and didn’t witness in person the ugly ending. Attendees were: Drs. Jim Bus (chair), Leon Bruner, Fredric Moulin, and Isola Brown. We look forward to engaging more of our alums next year.
Supporting Pharmacology & Toxicology

Strategic Impact Endowment Fund
You can help the Department of Pharmacology & Toxicology at MSU meet its mission of advancing knowledge and training outstanding new pharmacologists and toxicologists.

• To permit a sustained impact on the department we have established a Strategic Impact Endowment Fund that will provide continuing funds to support key department activities.
• Our current focus for this fund is for student support - student travel, our student best paper award, and stipend supplements for students who compete successfully for extramural funded fellowships.
• For an endowment, we need a minimum of $50,000 in the fund within 3 years, but our overall goal is $100,000. The graphic shows that we are 60% of the way to the endowment.
• Multi-year pledges also count (contact us if this is of interest). Your gift can help us establish this long-term support for the department's missions.
Give Green Day

On Tuesday, December 3, Spartans near and far will come together to make a better tomorrow. Give Green Day is a chance to give back and make a difference to impact current and future Spartans.

The Department of Pharmacology & Toxicology has joined the 2019 efforts and is excited to present our project:

This project will provide a license to the citation software, EndNote, and an essential text for their desired discipline. Casarett & Doull’s Toxicology: The Basic Science of Poisons or Goodman & Gilman’s: The Pharmacological Basis of Therapeutics. These are two important books that we feel every Pharmacology & Toxicology student should have.

Give Green Day will start at midnight, December 3rd and run until 12am December 4th. We will send out more details Wednesday, November 27th. Please be on the lookout!