NEWSLETTER FROM THE DEPARTMENT OF

BOSTON UNIVERSITY

ANATOMY & NEUROBIOLOGY

Boston University School of Medicine – Division of Graduate Medical Sciences

Volume 2 · Issue 3 · November 2016

In This Issue...

A Message from Our Chair

This issue of the Department newsletter highlights recognition of one of our most respected and noted faculty members, Dr. Thomas Kemper. You will find some very interesting facts and facets of Dr. Kemper's academic and personal life. Needless to say, we will dearly miss his presence and scholarly contributions.

Also in this issue are highlighted two of our PhD alumni, Frank Daly and Kirsten Nielsen, whom have taken somewhat different, but equally impressive career tracks. The Department newsletter continues to present the many achievements of our graduate student alumni, so stay tuned!

Also highlighted in this issue are two of our faculty. Peter Cummings, Assistant Professor, joined the Department just a few years ago, but during that period has had a marked impact on students, faculty, and administration alike. His commitment to teaching, scholarship and medico-legal advocacy have already placed a positive spotlight on him at the Medical school, University and national levels.

Another article highlights the laboratory of our Vice-Chair, Jennie Luebke, for its outreach and participation in the very successful Summer Training as Research Scholars (STaRS) Program. Kudos to Dr. Luebke and her laboratory for their important contribution to this program

In future issues, look for news on enhancements to the Gross Anatomy Laboratory, new faculty hires, and recent achievements and promotions of our faculty.

A Call for Visiting Alumni

Are you interested in returning to BU to network with current graduate students? The 2016-2017 Anatomy and Neurobiology Graduate Student Science and Network Committees would like to invite alumni of the department to speak to our current students about their career paths, teaching, research, or any combination thereof! If you are interested in visiting the department to give an alumni seminar (typically Thursday afternoons throughout the year, but dates and times can be arranged for your convenience), please reach out to Sharon O'Neill (smoneill@bu.edu) or Alexandra Wink (aewink@bu.edu) to arrange your visit!

Dr. Jonathan Wisco (PhD, 2002) visited in 2015 to talk about his current work at Brigham Young University.

A Celebration to Honor Dr. Tom Kemper

Dr. Thomas Kemper gained the title of Professor Emeritus this September after a long and fulfilling career within the department. In addition to his many significant contributions as a scholar and an educator, Dr. Kemper's wide variety of interests and love of life made him a beloved member of our department. Family and former and current colleagues and students gathered together on September 23 to celebrate his work and share his impact on their careers and lives. Anecdotes and stories shared that day ranged from the day a softball broke through a window of Dr. Kemper's laboratory during a departmental softball game (leaving Dr. Kemper unfazed), to Dr. Paul Yakovlev (a former colleague from Harvard Medical School) entrusting Dr. Kemper with his brain after his death. Attendees recalled his expertise at the microscope as well as his love of cooking, beer and wine making, and birding (among many other hobbies). Dr. Kemper was presented with a student gift of a wooden wine box with the Boston University Medical School logo carved into the lid, as a tribute to his love of wine making and as thanks for bringing homemade wine to share with his Journal Club students.

L-R: Dr. Richard Hoyt, Dr. Thomas Kemper, Dr. Mark Moss, and Dr. Doug Rosene

Dr. Peter Bergethon, a former faculty member in the department, shares memories of Dr. Kemper.

Nadine Heyworth (PhD, 2016) presents the student gift.

Current and former students, faculty, and staff were in attendance.

Contributing Authors: Melissa Kelly, Lauren Zajac; Photo Credits: Minny Suh, Lauren Zajac

The 2016-2017 Newsletter Committee:

- Alexandra Wink (editor)
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Would you like to contribute to the Newsletter?

Email updates, stories, or upcoming events to
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Contact or Donate to the Department:

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Volume 2 · Issue 3 · November 2016

Recent Departmental Publications

This list includes only a few of the many papers that students, post-docs, and faculty in our department have published since our last issue!

"Inosine enhances recovery of grasp following cortical injury to the primary motor cortex of the rhesus monkey." **Moore TL**, **Pessina MA,** Finklestein SP, **Killiany RJ**, **Bowley B**, Benowitz L, **Rosene DL.** *Restor Neurol Neurosci* 2016.

"The relationship between functional magnetic resonance imaging activation, diffusion tensor imaging, and training effects." **Farrar D**, Budson AE. *Cogn Neurosci* 2016.

"Edited magnetic resonance spectroscopy detects and age-related decline in nonhuman primate brain GABA levels." He X, **Koo BB**, **Killiany RJ**. *Biomed Res Int* 2016.

"Cognitive reserve as a modifier of clinical expression in chronic traumatic encephalopathy: a preliminary examination." Alosco ML, Mez J, Kow3all NW, Stein TD, Goldstein LE, Cantu RC, Katz DI, Solomon Tm, Kiernan PT, Murphy L, Abdolmohammadi B, Daneshvar D, **Montenigro PH**, Nowinski CJ, Stern RA, McKee AC. *J Neuropsychiatry Clin Neurosci* 2016.

"Lighting up neuroanatomy." **Rockland KS**. *Front Neurosci* 2016.

Faculty Spotlight: Peter Cummings, M.Sc., M.D.

Dr. Peter Cummings joined our department as an Assistant Professor in 2013 after working as a medical examiner and the Director of Forensic Neuropathology at the Massachusetts Office of the Chief Medical Examiner. As a board-certified forensic pathologist, he still performs forensic casework through a non-profit organization he founded with colleagues. This organization performs pro-bono work on post-conviction cases to promote social justice and equality in the judicial system. Dr. Cummings began his career at Dalhousie University in Halifax, Nova Scotia, intending to study orthopedics and sports medicine. Working in the department of pathology with the Chief Medical Examiner of Nova Scotia, he designed a directed reading course in forensic identification following the crash of Swiss Air 111 off the coast of Nova Scotia.

"At that point I became hooked and set out on a path towards forensic pathology."

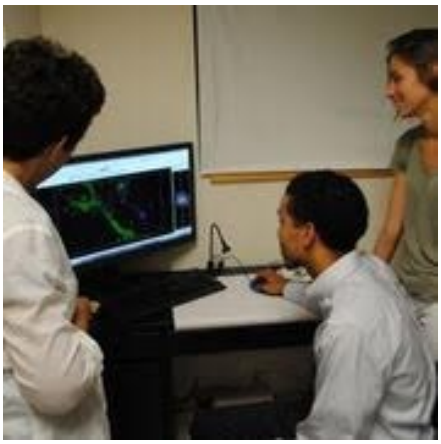
At BU, Dr. Cummings teaches Medical Gross Anatomy and courses in the Master's Program in Forensic Anthropology, and he is the director of Clinical Anatomy for the Physician Assistant Program. His research focus is brain injury, particularly how tau is altered by trauma. He also studies retinal degeneration in spaceflight and effects of simulated cosmic radiation on the brain.

"I love interacting with the students. I try to take a personal interest in their lives and that is an honor. It's great to be at a point in my life where I feel I have enough knowledge and experience to have something meaningful to share! The great thing about doing research is being able to answer the questions you've formulated in your mind through all the years of learning and studying."

Dr. Cummings has authored several textbooks, including *Atlas of Forensic Histopathology* (Cambridge University Press) and *Forensic Pathology: Pearls and Pitfalls of Infant and Child Death Investigation* (Cambridge University Press), in addition to a fiction novel, *The Neuropathology of Zombies* (Sinister Press). Inspiration for this novel came after watching "Night of the Living Dead" one October evening:

*"I thought the zombie gait looked like Parkinson's disease. I started trying to diagnose them. I decided since no one had written a book about autopsying zombies, I should. I wrote a sequel to T*he Neuropathology of Zombies *called* The Seven Stars. *I had originally planned for the books to be a trilogy, so we'll see if the third one creeps out at some point."*

Luebke Lab Hosts Summer STaRS Scholar



The Boston University Graduate Medical Sciences **Summer Training as Research Scholars (STaRS) Program** is designed to promote access to graduate education for talented undergraduates from minority groups traditionally underrepresented in the biomedical sciences. STaRS is funded through the National Heart, Lung, and Blood Institute of the NIH. This summer, Dr. Jennifer Luebke's laboratory hosted a STaRS student, Denston Carey.

Denston discovered his fascination with neuroscience as a teenager, witnessing seizures and traumatic brain injuries while working as an EMT in high school and reading about the wonders of the brain. Now a senior at West Chester University of Pennsylvania, he is majoring in Cell and Molecular Biology. He came across the STaRS program while looking for summer research programs, and the decision to apply came easily.

"I could tell...that I would be able to put a significant amount of time into one meaningful project, present my contributions at a national conference, and be surrounded by like-minded peers through this program."

Mentored by 5th-year PhD Candidate, Teresa Guillamon-Vivancos, Denston processed confocal images of two populations of neurons, derived from different neuronal precursors, in order to understand how they differed. In addition to working on this project, Denston was able to attend department seminars and lab meetings, where he was an active participant.

"Dr. Luebke constantly challenged me to research and answer questions related to my project and others in the lab. Of the many things I learned, one of the most fascinating was learning how to record from live neurons. The most challenging part of my lab experience was learning—and successfully using—the many programs used to analyze electrophysiological and structural characteristics of the neurons."

Denston plans to attend medical school immediately after he graduates. While he is unsure which field of medicine he would like to practice, he hopes to have a career in academic medicine and stay involved in research. The STaRS program definitely influenced his future goals:

"The STaRS program allowed me to see just how fascinating a career in research can be. The depth of knowledge and understanding gained while being immersed in a single project is profound and is certainly something that I can see myself doing in the future. The STaRS program assured me that I want to be significantly involved with research as a medical student and future physician."

Denston Carey, Dr. Jennifer Luebke, and Teresa Guillamon-Vivancos

Denston gave this advice for junior students who are interested in the STaRS program:

"Actively seek out opportunities to be involved full-time with a lab investigating something that interests [you]. I've been involved in labs part-time before the STaRS program, but the full-time commitment that comes along with being a STaRS scholar gave me a complete picture of what working in a lab truly entails.

"To those students applying to the STaRS program, I would say that you are making the right decision. Once accepted, I would insist that you think deeply about what kind of research you would like to be exposed to, and actively seek a mentor who is investigating this. After being matched with your mentor, and figuring out your project, search through the literature and come to Boston prepared. Most of all, have fun!"

For undergraduate mentors interested in recommending the STaRS program to your students, find more information at: **https://www.bumc.bu.edu/gms/admissions/stars/**

Alumna Update: Kirsten Nielsen, PT, PhD

Dr. Kirsten Nielsen is a 2004 graduate of the Department of Anatomy and Neurobiology. She currently is the Program Director of the Physical Therapist Assistant (PTA) program at Bryant & Stratton College in Syracuse, New York. As program director, she performs both administrative and instructional duties. As an administrator, she supports the College's mission and vision by overseeing the day-to-day management of the PTA program. She is also responsible for the hiring, coaching, and mentoring of instructors within their program area as related to classroom methodology and delivery. She also acts as the subject matter expert and coordinator for the campus anatomy and physiology courses. As an instructor, she teaches courses in medical terminology, anatomy and physiology, and physical therapy.

While at BU, Kirsten worked in the laboratory of Dr. Jean-Jacques Soghomonian. Her research focused on the cellular changes in the basal ganglia in a rodent model of Parkinson's Disease following continuous or intermittent levodopa administration.

"As a physical therapist, I worked with many patients with Parkinson's Disease who struggled with the adverse motor complications resulting from chronic intermittent levodopa administration. My work with Dr. Soghomonian provided insight into potential cellular changes that may underlie these motor complications."

Dr. Nielsen was hired by Bryant & Stratton College in 2014 to develop and implement a new program for students interested in becoming physical therapists' assistants.

What was the trajectory that led you to your current position after you graduated from BU?

Balancing my interests in physical therapy, anatomy, and teaching have led me on the path to explore diverse career opportunities. Upon graduation, I worked as an assistant professor at Daemen College teaching graduate courses in cadaver-based anatomy for physician assistant and physical therapy students. I also worked for over five years for a local tissue bank to dissect and recover life-enhancing tissues for transplant (e.g., corneas, skin, fascia, bone, tendons, etc.). I have also worked on a per diem *basis as a licensed physical therapist, grant writer, and adjunct professor in anatomy and physiology at local colleges and universities.*

What do you enjoy most about your work?

There are two aspects of my current position that I like the most. The first is teaching. My interest in teaching began as a graduate teaching assistant at BUSM. I am grateful to the faculty in the Department of Anatomy & Neurobiology for their emphasis on quality instruction and best practices in education. Presentation skills, course development, and teaching methodology were introduced to me as a graduate student, practiced as a teaching assistant, and refined as an educator. Teaching is the most rewarding aspect of my position.

The second most rewarding aspect of my role as a program director is pioneering an educational program from the ground up. For the past 2 years, I have been on the front lines developing the curriculum, designing the lab space, and securing necessary state and program approval to begin accepting students. In 2016, we admitted our first cohort of students into the PTA program.

What do you remember most about the BU Anatomy and Neurobiology Department?

The most memorable moments for me are the ones spent with the other students in the department. We were a close group that shared many laughs, accomplishments and struggles.

What advice would you provide to students preparing to graduate from the department today?

Upon graduation, I choose a career path unique to my needs and interests. The past twelve years have been filled with rewarding experiences, both professionally and personally. My advice to students preparing to graduate would be to stay true to your interests. The training and education gained from the Department of Anatomy and Neurobiology have the potential to open many doors of opportunity.

Alumnus Update: Frank Daly, PhD

Dr. Frank Daly is a 1997 graduate of the PhD program in Anatomy and Neurobiology. He is currently an Associate Professor of Anatomy in the Department of Biomedical Sciences of the College of Osteopathic Medicine at the University of New England. He is also the Director of the State of Maine Anatomical Donor Board and he was recently elected Chair of the University of New England's faculty senate. While he currently teaches anatomy and histology to medical and dental students, he has previously taught physical and occupational therapists, physician assistants, and athletic training and exercise science students.

Dr. Daly's research has moved from the bench to the classroom. He focuses on educational techniques that allow for integrated education in a way that supports a strong anatomical foundation. He has published on increasing anatomical competency in "at risk" students to ensure they will be quality health care professionals. He has also published novel approaches to the dissection of the renal system. He is currently working on publishing his work on a fully integrated Osteopathic Clinical Skills course, a system-based course which parallels a physician's physical exam.

While at BU, Frank worked in Julie Sandell's laboratory and was peripherally part of the aging monkey and monkey cardiovascular disease projects of Alan Peters and the Moss-Rosene lab. His dissertation research focused on the developing visual system of zebrafish. He investigated the patterns involved with the formation of the retina. Using a genetic mutant model, he investigated the degeneration process through *in situ* hybridization and electron microscopy.

Dr. Daly completed his post-doc with Dick Masland at Massachusetts General Hospital in a Howard Hughes Medical Institute laboratory, studying the morphology of the ganglion and bipolar cells using *in vitro* preparations of the adult retina in rabbits. After his second year as a post-doc, he returned to his home town of Biddeford, Maine to teach gross anatomy and neuroscience at the University of New England. Six years later, he was promoted and granted tenure. He joined the College of Osteopathic Medicine in (his current position) in 2011.

What is your favorite aspect of your current position?

The favorite part of my current position is the opportunity to show students the amazing aspects of the human body. As they are starting out, students are often unsure how to approach the dissection and are surprised that anyone can find anything. It's fun to be able to just reach in and grab what they are looking for right before their eyes.

When talking to students about histology and embryology, they don't think that the gross anatomy is relevant any longer. Students seem to enjoy the bridges that link the anatomy disciplines to their future clinical practices.

What was your most memorable moment in the department?

Just before the mid-semester break in 1994 in the Moss-Rosene Lab: they had brought in a very expensive-looking piece of equipment to take the images and the monkeys needed to be anesthetized slightly for the procedure. Because it was close to the holidays, the monkeys were given extra treats (red and green M&M's) to augment their normal diet. One poor monkey either didn't like his treats, the anesthesia, or stretching his neck to fit into the human-sized camera. He reacted by vomiting all over the camera. I saw it coming, but was too far away to help. Because of the distance, it was easy enough for me to avoid having to be on clean-up duty, for which I was grateful. I already did enough gross stuff while I was there.

What advice would you provide to students preparing to graduate from the department today?

There is a real value to being educated in the traditional anatomical sciences: gross, histology, embryology, and neuroanatomy. Although many programs are trying to gear back in these sciences, there is a reason that they are foundational courses for all of the health sciences. Be sure to get the training to be able to teach in any of these disciplines and there will always be positions available.

Dr. Daly misses Boston and takes every opportunity that he has to return.