

Brain WAVES

Fall 2017

Welcome New Students

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Lauryn Campagnoli _____ *Butler University [Ashton Lab]*
Cameron Casey _____ *Evergreen State College*
Claire Erickson _____ *Ohio State University*
Graham Findlay _____ *Dartmouth College*
Lee Kissel _____ *University of Miami [Fabry Lab]*
Akshay Kohli _____ *Emory University*
Rong Mao _____ *China University of Science & Technology*
Rachel Puralewski _____ *University of Pittsburgh*
Michael Rigby _____ *University of Illinois-Urbana Champaign [Puglielli Lab]*
Olivia Surgent _____ *Hamilton College*
Sue Yi _____ *University of Notre Dame [Yu Lab]*



Left to right: Graham Findlay, Cameron Casey, Michael Rigby, Rong Mao, Olivia Surgent, Lauryn Campagnoli, Lee Kissel, Rachel Puralewski, Claire Erickson, Akshay Kohli [not pictured: Sue Yi]

Randolph Ashton continues research into causes of Lou Gehrig's disease

by Silke Schmidt

In August 2017, Randolph Ashton, an assistant professor of biomedical engineering at the University of Wisconsin-Madison, received almost \$800,000 from the National Institute of Neurological Disorders and Stroke, part of the National Institutes of Health, to continue a five-year research study of Lou Gehrig's disease (amyotrophic lateral sclerosis, or ALS), after successfully completing its first phase.

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Congrats To The Students That Have Recently Completed Their Prelims

Andrew Merluzzi [Bendlin Lab] Andrew Miller [Wolman Lab]

Caitlin Warlick-Short [Gomez Lab]

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Randolph Ashton

The goal of the project is to grow brain and spinal cord tissues from induced pluripotent stem cells derived from ALS patients. Similar to embryonic stem cells, induced pluripotent stem cells can grow indefinitely and give rise to every cell type in the human body, but are created from adult cells.

Ashton hopes to shed light on the cellular mechanisms that cause ALS, with the ultimate goal of identifying and screening novel drug candidates that may slow the disease progression. ALS symptoms result from the death of motor neuron cells: specialized cells in the brain and spinal cord that send electric signals to the muscles in our jaws, arms, legs and other body parts in order to initiate movement and speech. As a result of dying motor neuron cells, ALS patients become increasingly paralyzed and lose the ability to speak and breathe. Most patients succumb to the disease within a few years of onset.



During the first phase of the project, Ashton began to develop a novel tissue engineering platform that supports the long-term growth of multiple diverse cell types to mimic a human spinal cord. During the next phase, he will optimize this platform and use it to build genotype-specific disease models, where the death of motor neuron cells is induced by specific mutations in a gene called SOD1.

This gene has long been known to cause familial forms of ALS and has been the basis of many rodent models for the disease. Since the tissue-engineered system Ashton is building starts with human cells, it has the potential to more accurately mimic the human disease process than traditional animal models.

Published October 25, 2017 <https://www.engr.wisc.edu/randolph-ashton-continues-research-causes-lou-gehrigs-disease/>

Congrats Recent Graduates

Cole Korponay graduated from the Davidson and Koenigs labs and is now a Postdoctoral Research Fellow in the Department of Psychiatry at Harvard Medical School and the Basic Neuroscience Division at McLean hospital.

Aditya Rayasam graduated from the Fabry lab and is now a Postdoctoral Fellow in the Department of Physical Therapy at the University of California - San Francisco.

Andrew Sheldon graduated from the Postle lab and returned to medical school at UW-Madison.

Kate Sprecher graduated from the Benca lab and is now a Research Associate in the Department of Integrative Physiology at the University of Colorado - Boulder.

Joseph Wszalek graduated from the Turkstra lab and is now an Assistant Faculty Associate at the UW-Madison Law School.

Welcome New Faculty

Michael Cahill



Assistant Professor,
Department of
Comparative
Biosciences

Robert Lipinski



Assistant Professor,
Department of
Comparative
Biosciences

Brendon Nacewicz



Assistant Professor,
Department of
Psychiatry

Caroline Niziolek



Assistant Professor,
Department of
Communication
Sciences and
Disorders

Benjamin Parrell



Assistant Professor,
Department of
Communication
Sciences and
Disorders

Brain Trust

The process of discovery keeps an octogenarian professor striving long after retirement age.

*by Jill Sakai, Ph.D.
On Wisconsin [Fall 2017]*

In April 2016, Tony Stretton's lecture to undergraduate biology students began on an ordinary note, until members of the UW Varsity Band marched into the room with a surprise salute in honor of his 80th birthday. Stretton wiped away tears of joy as the class clapped and cheered, a wide grin on his face.

At an age when most professors have the word emeritus attached to their titles, Stretton, a professor of zoology, still relishes his work with students both in and out of the classroom. "I'm very lucky to have the job I have, and it's tremendous fun," he says.

This fall, Stretton is starting his 47th year of teaching at UW-Madison, using science as a vehicle to impart his unflagging love of learning and discovery. Yet



Tony Stretton - Photo by Bryce Richter

he finds as much meaning in the people he encounters as in the pursuit of knowledge itself.

Stretton trained in his native England during the advent of molecular biology, and his list of colleagues is a Who's Who of the biologists enshrined in textbooks. As a young scientist, he started working in the same lab as Francis Crick just a few years after Crick and James Watson reported the structure of DNA, work that would earn them a Nobel Prize.

Now Stretton is teaching students two to three generations his junior in one of the hottest undergraduate programs on campus — brain science. Student interest in neurobiology at the UW has steadily grown since it was introduced as an option for biology majors nearly 20 years

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Awards and Recognitions

Dr. Cindy Czajkowski was named Interim Associate Vice Chancellor for Research in the Biological Sciences at UW-Madison.

Liz Kiernan received a F31 NIH Ruth L. Kirschstein National Research Service Fellowship.

Antoine Madar received the 2017 NTP Travel Award.

Andy Madrid received a F31 NIH Ruth L. Kirschstein National Research Service Fellowship.

Andrew Merluzzi received the 2017 NTP Travel Award.

Russ Taylor received the 2017 NTP Travel Award.

David White received the 2017 NTP Travel Award.

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ago. That interest supported the launch of a new neurobiology major last fall, which has seen rapid growth. More than 450 students enrolled in the first year.

The brain represents a worthy challenge for anyone looking to push the boundaries of human understanding. And with technological advances in recent decades, “you’re able to ask questions that were inconceivable when I was a kid,” Stretton says.

His own research focuses on how tiny but abundant bits of protein, called neuropeptides, work in the nervous system to drive behavior. He is spurred on by the puzzle of figuring out how many complex pieces fit together to add up to the wonder that is a living creature, even a simple worm.

“He’s just so curious about everything,” says Jennifer Knickelbine ’10, PhD’17. She joined his lab as an undergrad to help prepare for medical school, but was so taken with the process of inquiry – and Stretton’s contagious excitement about it – that she ended up staying after graduation. This spring she earned her doctorate, likely as Stretton’s final graduate student.

His lab has at times become a refuge for students struggling to find their place. Joanne Yew PhD’03 joined Stretton’s research group midway through graduate school, when she faced serious doubts about her future in research. “I thought about quitting science,” she says.

Stretton was on Yew’s graduate committee and offered her space in his lab to regain her footing. “I said I’ll try it out, but I might quit after a year,” Yew recalls. “But he had this great humanity about it: life is complicated, people change, and he was willing to deal with that complication. I always felt like he wanted the best for me.”

Yew now runs her own lab at the University of Hawaii at Mānoa. “He believes in the best possible version of each

person,” she says. “And that makes the person live up to that version.”

That genuine, compassionate interest in people shines through in all his interactions. “All of his mentoring extends beyond the lab and beyond coursework,” Knickelbine says. But his guidance is powerfully nonjudgmental and always based on “you could” rather than “you should.”

“It’s tremendous in a mentor, that whatever you say, you know you’re not going to disappoint him,” she says.

For students willing to put in the effort, Stretton creates opportunities to succeed, from extensive office hours in campus cafés to “second chance” exams that offer opportunities to boost grades. He received an Undergraduate Mentoring Award in 2016, bolstered by more than a dozen glowing letters from alumni.

Yet Stretton would say he has gained as much from his students as they have from him. He estimates that he’s taught some 20,000 undergraduates, in addition to a couple dozen graduate students and several postdoctoral trainees.

“In science, you always have to be ready to abandon what you think you know,” Stretton says, before launching into a story about witnessing Crick become ecstatic upon learning his pet theory had just been disproven by another scientist, and how powerfully it influenced him as Crick’s young colleague. “You have to have an open mind and be prepared to entertain all sorts of things. And that’s certainly true of my interactions with people. I love interacting with people who have all different backgrounds and assumptions.”

Reflecting on his days as a young researcher, he chuckles at his own naiveté. “I’m probably still immature, but I feel I’m more mature than I was then,” muses the 81-year-old. “I think I have a little bit more perspective. And I thank my students for that.”



NTP Annual Picnic

Faculty take home a win at the annual student vs. faculty volleyball game!



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NEUROSCIENCE
TRAINING PROGRAM

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Contributions to the Program

Funds given to the program are used to support recruiting activities, guest speakers, the graduate travel award for professional conferences and the annual program picnic. For additional information, please contact the program office at (608) 262-4932. To contribute, please contact the UW Foundation at:

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Thank you to all those who have contributed and continue to support the Neuroscience Training Program and its students.

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