

# Brain WAVES

Fall 2018

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## Neuroscience Training Program Symposium Summary

by Alejandra Canales  
NTP Graduate Student



Left Photo : Dr. Timothy Ebner from the University of Minnesota gives his talk about his lab's study of the circuitry of the cerebellar cortex. Right Photo : Symposium attendees browse through NTP student research posters.

This year's UW-Madison Neuroscience Research Symposium, co-hosted by the Neuroscience Training Program (NTP), the Neuroscience and Public Policy Program (N&PP), and Promega's Biopharmaceutical Technology Center Institute (BTCI) was held at the BTCI in late August.

NTP director, Dr. Mary Halloran, and Dr. Thomas Machleidt, a senior research scientist from the Research and Development Department at Promega Corporation, gave the welcoming remarks for the event, celebrating the history of collaboration between the NTP and the BTCI. In the first session of research talks, NTP student Russ Taylor (Dent Lab) described how, early in his work studying cortical neuron migration, he realized he needed to develop improved methods for *in utero* electroporation in mice. NTP student Mroj Al Assaf (Wolman Lab) told the audience about her research investigating the role that Pregnancy Associated Plasma Protein-AA (Pappa) plays in regulating the production of reactive oxygen species in the mitochondria, a process to which neurons are particularly sensitive. New NTP faculty trainer Dr. Mrinalini Hoon ended the session talking about circuit assembly in the mammalian retina, focusing specifically on the organization of synapses at rod bipolar cell terminal and the role that the protein LRRTM4 plays in this process.

NTP faculty trainer and NTP alum Dr. Brendon Nacewicz started out the second session talking about amygdala hyperactivity in autistic patients and his search for a structural correlate to this observation using magnetic resonance spectroscopy. NTP student Inca Dieterich (Puglielli Lab) described how protein modification via acetylation is a post-

## Welcome New Faculty



**MRINALINI  
HOON**

*Assistant Professor,  
Department of Ophthalmology  
and Visual Sciences*

*Research Focus:  
Synaptic connections of  
developing and diseased  
retina*



**JAYSHREE  
SAMANTA**

*Assistant Professor,  
Department of Comparative  
Biosciences*

*Research Focus:  
Molecular mechanisms  
regulating remyelination by  
neural stem cells*



**CARA J  
WESTMARK**

*Assistant Professor,  
Department of  
Neurology*

*Research Focus:  
Pharmaceutical and dietary  
treatments for Fragile X  
Syndrome and Alzheimer's  
Disease*

## Congrats to Recent Graduates

Sofiya Hupalo graduated from the Berridge lab and is now a Post-doctoral Fellow at the National Institute of Neurological Disorders and Strokes.

Corinne Jones graduated from the Emborg and Ciucci labs and is now an Assistant Professor of Neurology at the Dell Medical School at the University of Texas – Austin.

Antoine Madar graduated from the Jones lab and is now a Postdoctoral Scholar in the Department of Neurobiology at the University of Chicago.

Andrew Merluzzi graduated from the Bendlin lab and is now a Research Associate at the Potomac Institute for Policy Studies.

Matt Millette graduated from the Dent lab and is now a Postdoctoral Fellow at UW-Madison.

Kendra Taylor graduated from the Dent lab and is now an Education Coordinator for the Manned Space Flight Education Foundation (NASA Johnson Space Center) And Science 'Genius' at the Children's Museum of Houston.

Do Tromp graduated from the Kalin lab and is now an Assistant Researcher in the Department of Psychiatry at UW-Madison.

## Congrats to the following students that recently completed their prelims:

*Josh Cruz  
(Kalin lab)*

*Inca Dieterich  
(Puglielli lab)*

*Margaux Kenwood  
(Kalin Lab)*

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translational quality control for properly folded proteins to enter the secretory pathway and how she is using use mass spectrometry to study how lipid metabolism is affected in ER acetyl-CoA transporter AT-1 mouse models. New NTP faculty member Dr. Raunak Sinha closed out the second session discussing visual processing in the primate retina at the intersection between neural circuits, computation, and perception. Using clips from early black and white film reels, Dr. Sinha demonstrated that the flicker fusion frequency underscores the differences between foveal (or central) and peripheral vision, and he explained that his lab's main research focus is to understand the molecular underpinnings of these perceptual differences.

Before the lunch break, Dr. Timothy Ebner, Head of the Neuroscience Department at the University of Minnesota, delivered the keynote speech. After praising the NTP's history as an outstanding graduate research program, Dr. Ebner described his lab's work studying the circuitry of the cerebellar cortex.

The afternoon session introduced the audience to two different applications of machine learning in neuroscience research. NTP student David White (Chanda Lab) described his single-molecule studies of ligand binding dynamics using zero mode-waveguides, nanostructures that guide light

into a very small volume that allows individual fluorescent marker molecules to be distinguished even at high concentrations. He also described new analysis algorithms in the works to help him process his data. NTP student Taylor Keding told the audience about how he is using machine learning to identify functional connectivity biomarkers of pediatric post-traumatic stress disorder (PTSD). Finally, NTP faculty trainer Dr. Caroline Niziolek described her lab's research focus on understanding how speech feedback is processed in the auditory cortex and how an individual predicts their own speech errors.

As part of an interactive ethics seminar, Amber Smith, Director of Research Mentor and Mentee training at WISCIENCE, lead a workshop with NTP graduate students about building strong mentor-mentee relationships. The lively session sparked debate among students about who is at fault in difficult situations and who should be responsible for fixing them. Following a day filled with research talks, NTP students presented their research in a poster session.

The UW-Madison 2018 Neuroscience Research symposium was a day for NTP students and faculty to take a break from the lab and celebrate the important role that our program's sense of community plays in driving innovative neuroscience research and enthusiastic collaborations between students and faculty.

## Awards and Recognitions for Faculty Trainers

Dr. Meyer Jackson had the cover illustration on the Journal of Neuroscience in August 2018.

Dr. Edwin Chapman received the Sir Bernard Katz Award and a Pew Innovation Fund Award. In addition, he was appointed as the Ricardo Miledi Professor Neuroscience and the Inaugural Director of the Quantitative Membrane Biophysics Program.

Dr. Raghu Vemuganti received a new NIH RO1 grant to study the role of DNA hydroxymethylation in post-stroke brain damage.

Dr. Michelle Ciucci received the status of Fellow in the American Speech-Language-Hearing Association.

Dr. Darcie Moore received the NIH DP2 New Innovator Award.

Dr. Zsuzsanna Fabry was selected to serve as Program Committee member for the upcoming Brain 2019 conference to be held in Yokoham, Japan. In addition, she had been awarded two RO1 grants in 2018 from the National Institute of Neurological Diseases and Stroke to study Neuroinflammation-induced lymphangiogenesis in the Central Nervous System for the first and the role of T lymphocytes in stroke for the second.

Dr. Vivek Prabhakaran and his interdisciplinary team of researchers were recently awarded a RO1 grant towards continuing their research on Brain Computer Interface (BCI) technology in rehabilitating stroke patients.

## Awards and Recognitions for NTP Students

Jose Martinez received the 2018 SfN Trainee Professional Development Award.

Inca Dieterich received the StellenCoA Conference Travel Award and the Neuroscience Training Program Student Travel Award 2018.

Taylor Keding received the Neuroscience Training Program Student Travel Award 2018 and a 2019 Predoctoral Scholars Travel Fellowship Award through the Society of Biological Psychiatry (SOBP).

Marisa Ross received the Neuroscience Training Program Student Travel Award 2018.

Nick Vogt received a F30 NIH Ruth L. Kirchstein National Research Service Fellowship

# SACNAS Conference 2018

by Charlene Rivera-Bonet  
NTP Graduate Student

The Society for the advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) is the leading multicultural and multidisciplinary STEM organization in the United States. Starting in 1973, it is the first society to unite underrepresented minorities in STEM. Since then, it has grown to around 6,000 members and over 100 chapters across the US and Puerto Rico. Their mission is to foster the success of Chicanos/Hispanics and Native Americans in attaining advanced degrees, careers, and positions of leadership in STEM. UW-Madison houses one of these chapters.

According to SACNAS, the current STEM community in America is comprised of 66.6% Caucasian, 20.6% Asian, 6.0% Hispanic, 4.8% African American and 0.2% Native American. SACNAS aims to achieve true diversity by building a scientific community that accurately represents the demographics of the population. Their impact statement is as follows: "[...] we understand that diverse voices bring creative solutions to our world's most pressing scientific problems. That's why we're building a national network that is innovative, powerful and inclusive." In light of this, they provide students with the resources needed to advance in their education and careers.

Once a year, around 4,000 SACNistas come together to celebrate diversity in science and share their scientific progress. Undergraduates, graduate students, postdoctoral fellows, and professionals attend the annual SACNAS meeting, which provides professional development sessions, keynote speakers, poster and oral presentations, cultural events and exhibit halls. Overall, it is an opportunity to learn about science in a diverse environment in which inclusion is the most important thing after science. Mariachis, Native American pow-wows, woman astronauts, and queer scientists are just few examples of the diversity encountered at SACNAS conferences. It is inspiring and empowering. And what a better place to celebrate the biggest, most diverse scientific society than San Antonio, Texas?

There are multiple benefits to attending SACNAS. It offers opportunities for students to expand their networks and explore opportunities for the next step in their scientific career. The exhibit hall was a space to do this. Students interacted with recruiters from different universities or industries to learn about graduate and summer research programs, explore professional tracks, and find their best fit. Since everything is bigger in Texas, we rose to the occasion by bringing multiple Biomedical Sciences graduate programs together to recruit students and increase diversity in our campus. Among those programs were Plant Breeding, Chemistry, Cellular and Molecular Pathology and SciMed GRS. NTP Outreach Specialist, Josh Knackert, and I teamed up to represent the Program, talking about what we offer potential students and the perks of life as a graduate student in Madison.

I remember being on the other side of the booth a few years ago. I attended the SACNAS conference for the first time in 2015, while I was applying to graduate school for the following Fall. At the time, I had two goals in mind: (1) getting information on all of the graduate schools I was interested in and (2) getting as much free pens, sticky notes, and bags from each booth. SACNAS 2015 was my third time interacting with people from UW-Madison, after the UW-Madison Bioscience Opportunities Preview (BOPs) Weekend and the Society for Neuroscience (SfN) meeting. By then, I was convinced that this was the place I wanted to apply for graduate school. My goal at this year's conference was to bring prospective students the same enthusiasm about applying to our program as I had then.

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Photo credit: Nik Santistevan

Members from biomedical science graduate programs at UW Madison attended the SACNAS Conference in San Antonio, Texas to network with and recruit highly motivated young researchers. NTP student, Charlene Rivera-Bonet, is pictured furthest right.



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Photo credit: Nik Santistevan

UW Madison faculty and students manage the graduate school booth during the SACNAS Conference.

SACNAS is also a place to be inspired. Many professionals attend SACNAS to share their stories, and it is often that you encounter one mentoring session with one of my Puerto Rican role models, Dr. Mónica Feliú-Mójer, outreach director of Yale Ciencia Academy. SACNAS is also a place to be inspired. Many professionals attend the conference to share their stories, and it is often that you encounter role models that share a common background. I was able to attend a seminar on science story-telling, and had a one-on-one mentoring session with one of my Puerto Rican role models, Dr. Mónica Feliú-Mójer, outreach director of Yale Ciencia Academy and director of communications for Ciencia Puerto Rico. From that interaction I took not only career advice but also insight into programs that can help me achieve my career goals.

Our institution also benefits from being represented at SACNAS. We are able to recruit highly motivated students, with previous research experiences and skills in science communication, into our programs. We can also share the science being done at UW-Madison and give exposure to our research. And we open doors for new partnerships and collaborations with other visiting institutions or researchers.

Both undergraduate and graduate students can take away a lot from SACNAS, not only professional development, scientific networks, and presentation skills but also encouragement and inspiration to embrace what makes you diverse.



UNIVERSITY OF WISCONSIN-MADISON  
**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:

<https://www.supportuw.org>

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

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