

MPB GSA NEWSLETTER

Molecular Physiology & Biophysics Graduate Student Association

Fall 2018

The purpose of this newsletter is to serve as a resource for MPB students to get to know the department better.

UPCOMING EVENTS

October 26th – **MPB Halloween Party** – 4-6PM 7th floor atrium of MRBIV

November 2nd - **2018 Diabetes Day** - <https://redcap.vanderbilt.edu/surveys/?s=HJKY8JN4DA>

November 16th – **2018 Vanderbilt Center for Addiction Research (VCAR) Science Day** - <https://redcap.vanderbilt.edu/surveys/?s=Y93W94YPXC>

November 16th - **Coffee Hour with Wenbiao Chen** – 10:00 am 736 RRB

December 8th – **MPB Holiday Party**

December 14th - **Coffee Hour with Alyssa Hasty** – 10:00 am 736 RRB

January 25th - **Coffee Hour with Maureen Gannon** – 10:00 am 7455 MRBIV

Congratulations, MPB!

The MPBGSA would like to say congratulations for all of the achievements to our MPB students! We have a very talented bunch, so we are taking a moment to highlight some of the accomplishments over the past year. We apologize to any students that we may have missed. **Let us know of recent grants, awards and publications so we can feature it in the newsletter.** <>>

- May 2018: Islet cell consortium (Gu, Jacobson, Stein, Gannon and Magnuson labs) published in *Developmental Cell*: “Synaptotagmin 4 regulates pancreatic beta cell maturation by modulating the Ca²⁺ sensitivity of insulin secretion vesicles.”
- June 2018: Kristin Peterson and Matt Cottam published a review in *Trends in Pharmacological Sciences* on macrophage-targeted therapeutics for metabolic disease
- July 2018: Ian Williams published a paper in *Diabetes* on inhibition of nitric oxide synthase and its effects on trans-endothelial insulin efflux
- July 2018: Sarah Graff was selected as one of the inaugural winners of the Dean’s Award for Exceptional Achievements in Graduate Studies.
- July 2018: Alexander Thiemicke was awarded an AHA predoctoral fellowship
- October 2018: Tyler Perfitt was awarded an AHA predoctoral fellowship

Dr. Nancy Carrasco, new chair of MPB!

Dr. Nancy Carrasco, a leading figure in the study of iodide transport and its critical role in the thyroid and mammary glands, has been named chair of Vanderbilt University’s Department of Molecular Physiology and Biophysics. Carrasco is expected to join the Vanderbilt faculty in spring 2019. <>>



MPB Annual Relay Race

By Sarah Graff

Once again, the 8th annual MPB relay race did not disappoint! Despite the sweltering heat, the runners ran an exciting race! As per tradition, the race started with the PI's trying to secure the lead for their team. The spectators cheered as the next racers waited in anticipation for their PI to come around the track. It was a grueling race, but in the end the famous teapot was won by a mixed team of Simerly lab and Venters lab members. The race was followed up by a happy hour in the 7th floor atrium of MRBIV. The racers showed up tired and sweaty, but it was nothing that a cold beer and some snacks couldn't fix! It all made for a very nice evening of friendly competition, food, and fun! <>>



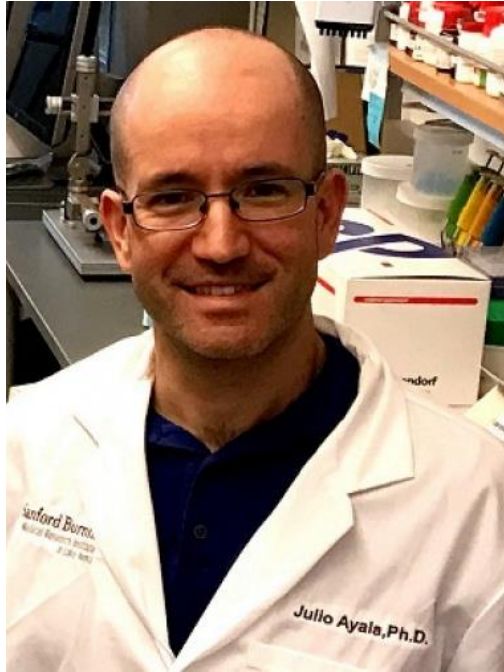
Faculty Spotlight: Julio Ayala, Ph.D.

By Slavi Goleva

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The Ayala lab studies gut-brain interactions that regulate energy balance. Prior to joining MPB faculty, Dr. Ayala received his PhD in MPB at Vanderbilt, successfully completed a post-doctoral fellowship with Dr. David Wasserman at Vanderbilt, and established an independent research program at Sanford Burnham Prebys Medical Discovery Institute in Florida



What made you want to focus on gut-brain interactions and how they regulate energy balance? As with many things in science, I did not start out thinking that I wanted to work on this particular subject. This is just where the science took my group. I began working on gut hormones as a “side project” during my post-doctoral fellowship with David Wasserman at Vanderbilt. At the time, I was focusing more on the role of gut hormones in the maintenance of glucose homeostasis. It seemed like an interesting project that could potentially give me the opportunity to carve out my own niche. Things just started falling into place, and as I established my own independent lab in Florida, the questions we were asking took us more towards looking at events and mechanisms in the brain. Now that I am back at Vanderbilt, I am very much interested in studying the gut-brain circuit as a whole and its role not only in the maintenance of body weight but also other physiological and pathophysiological conditions.

Besides energy balance, what sorts of other processes are gut hormones known to regulate/influence? There is so much

that we are beginning to really appreciate about the gut. It is very similar to the realization a few decades ago about how adipose tissue is not just a storage depot for fat – it is a secretory organ that communicates with many other organ systems. The gut is very similar. It is not just for absorption of nutrients – it is a large reservoir of the immune system; it has a complex nervous system; it has more resident organisms (microbiota) than there are cells of our own in our body. Gut hormones play a key role in all of these systems. They not only aid in the absorption of nutrients, but they also signal about nutrient availability to the brain, play a role in immune responses, modulate cardiovascular and kidney function, act as a conduit for information from microbiota and even affect cognitive function and mood.

Do gut bacteria influence gut hormones or gut-brain interactions, and if so, what sort of influences do they have on them? Absolutely! Many of the cells in the gut that produce gut hormones have receptors for or are receptive to metabolites produced by gut bacteria. We are beginning to understand this interaction and how it affects processes like nutrient absorption, immune response and even cognition and behavior, but many of the finer details about how bacteria influence gut hormone action are still under investigation.

Why did you choose to go into academia at a medical research institution as opposed to the many other paths you could’ve taken with your Ph.D? I like to ask and answer questions, and I like the freedom to ask the questions that are of interest to me. That freedom may not necessarily be there in an industry setting, for example. Working in academia also allows you to explore the fundamental issues that may someday lead to a treatment or a therapeutic. Certainly, working for a pharmaceutical company places you closer to the actual development of drugs, but I think that these days there are greater opportunities in academia, and especially at Vanderbilt, to play a larger role in that process by working with clinical partners and/or

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industry partners. This is not to say that the only options out there are academia or industry. There are so many career opportunities for well-trained PhD scientists that do not follow the so-called “traditional” research path, and there needs to be a wider recognition and acceptance that these are just as viable as lab research careers. I just enjoy the atmosphere and energy of the lab setting.

What are your career goals? I just want to keep answering questions with the hope that someday what we discover in the lab may help bring therapies to patients in need. I also want the opportunity to train people to move on and establish their own successful careers, whatever those careers may be. If I accomplish either one of those, I will be satisfied.

Since you had received your Ph.D. in MPB at Vanderbilt, what made you want to come back to Vanderbilt in the same department in an associate professor capacity? When I left to start my own lab, I went to a small private research institution which was fantastic because it had a very close-knit and entrepreneurial spirit. The drawback was that the breadth of the expertise there was relatively limited. Since the work in my lab was expanding into areas that were not necessarily within our expertise, I started to think about the possibility of moving on to a larger institution that had a greater variety of local expertise. The diversity of the scientific environment at Vanderbilt and also within the Molecular Physiology and Biophysics department really appealed to me.

Familiarity with Vanderbilt and with Nashville also played a small part. Also, my wife earned her PhD at Vanderbilt (Pharmacology), so it was a little bit like coming home for both of us.

What do you like most about life in Nashville? Can you perceive any changes since you were here doing your PhD? If so, do you like it better or worse now? I like the fact that there are many things to do in Nashville and the surrounding areas. The city has grown dramatically since I left, and I see both positive and negative aspects to that growth. On the positive side, there are more things to do and enjoy now than there were when I was first here – restaurants, entertainment, etc. On the other hand, it is more expensive to live here now, and the traffic has definitely gotten worse. I live in Franklin, so my commute can be as short as 25 minutes or as long as 90 minutes.

Do you have any hobbies? I have two young kids (9 and 7), so they monopolize most of the time that I would ordinarily have for hobbies. On the rare occasion that I have free time, I like to play the guitar. I am also a big soccer fan, and I am lucky that I get to watch my favorite player (my 9-year-old son) play almost every weekend for a local soccer club.

What do your parents do? What got you interested in biology/research in the first place? My parents were not scientists, so I did not get my interest from them. As a kid, I enjoyed watching nature and science documentaries on TV, so I guess I was always drawn to biology from an early age. Biology and chemistry were my favorite subjects in high school and college, so it just carried through to this day.

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Welcome New MPB Students!

By Karin Bosma



Name: Payam Fathi

Hometown: Gaithersburg, MD

Undergraduate school: University of Maryland College Park

Current lab: Dr. Julio Ayala

Fun fact: Fun is relative.

Spirit animal: Great Potoo



Name: Thao Le

Hometown: Tra Vinh, Viet Nam

Undergraduate school: Hampshire College

Current lab: Dr. Julio Ayala

Fun fact: I once lived in a town that calls itself Midway USA. It's 1,561 mi. west of NYC and 1,561 mi. east of San Francisco.

Guilty pleasure: The Great British Bake Off!



Name: Tiffany Richardson

Hometown: Spotsylvania, Virginia

Undergraduate school: Princeton University

Current lab: Dr. Al Powers

Fun fact: I'm currently training for my first half marathon

Spirit animal: Chinchilla



Name: Haley Mendoza-Romero

Hometown: Los Angeles, CA

Undergraduate school: Duke University

Current lab: Dr. Richard Simerly

Fun fact: I lived in St. Petersburg, Russia for 2 months in the summer of 2013!

Hobbies: Antiquing, Baking and Gardening (but I'm not very good at this one yet)



Name: Duncan Smart
Hometown: Dallas, TX
Undergraduate school: University of Texas at Austin
Current lab: Dr. Meena Madhur
Fun fact: I wrote a lengthy college thesis on the Rolling Stones.
Spirit animal: Corgi



Name: Ashley Smith
Hometown: Fayetteville, NC
Undergraduate school: Cornell University
Current lab: Dr. Maureen Gannon
Fun fact: I have visited 10 countries.
Hobbies: drawing, traveling, photography

NEW MPB GSA Officers

President: Karin Bosma
Vice President: Sarah Graff
Secretary: Matt Cottam
Treasurers: Shannon Townsend
Seminar Chair: Joey Elsakr
Newsletter Chair: Slavi Goleva
Social Media Chair: Bethany Dale

We want to hear from you!

MPB students know how to get things done! **Let us know of recent grants, awards and publications so we can feature it in the newsletter.** Also, if you would like to contribute to the newsletter just let us know. You can submit articles to slavina.b.goleva@vanderbilt.edu. It's a great way to improve your writing skills and would look great on your CV. Comments and suggestions are encouraged as well.



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