

Message from PANS President Denise Belsham:

The PANS newsletter was initiated to communicate all of the new happenings in neuroendocrinology and to keep our community active and engaged. Our Editors, **Drs. Sasha Kauffman and Dominique Walker**, have continued to come up with interesting pieces, and they always welcome new ideas from the membership. This is meant to be an electronic conversation for our members and we hope that everyone will participate in the process. If you have ideas, or want to announce or highlight a topic, please send us a note.

In this message I would like to encourage everyone to tell their friends and colleagues about us. As we travel the world, it has become clear that we need a better marketing strategy – our best advertisement is the word of mouth from our current members. At this writing, we intend to start a membership drive to increase our numbers. There really is “power in numbers”. We will offer a new member fee of only \$49 until the next PANS meeting in spring 2021. Furthermore, current members will get their continuing membership free until this time as well. What a great deal! Trainees will be offered a \$20 rate. We encourage everyone to become members of PANS, and spread the word.

As mentioned above, we plan to hold our **next PANS meeting in early March 2021 in South America** – either Chile or Brazil (they are currently putting together their bids for PANS2021). We will announce the site in the Spring newsletter – so stay tuned. In the meantime, put this date on your calendar. Although we tried our best, our plans to join ICE2020 fell through in the end, and we will not be having a PANS meeting with this group in 2020. Looking ahead, after the PANS2021 meeting, we will support the ICN2022 meeting in Glasgow, scheduled for August 7-10, 2022.

These are exciting times for neuroendocrinology. Our field is flourishing, and we are at the forefront of scientific discovery. Having a strong network across the Americas is critical to establish new collaborations, and lobby for increased funding and attention for our discipline – keep up the good work!



Professor Denise Belsham,
President of the Pan American Neuroendocrine Society

For more information on PANS, including membership, scientific meetings, research job postings, journal clubs, and more, please visit us online: <https://paneuroendo.org/>

Perspective by Jenn Yang (former Postdoc in the Kauffman Lab, University of California, San Diego)

I have always had a profound interest in neuroendocrinology. To me, neuroendocrinology symbolizes what the core of biology is about – it is an all-encompassing topic covering numerous physiological processes and is critical to understanding many complex diseases and disorders. During my academic career, I was set on becoming a benchtop scientist at a neuroendocrinology-focused pharmaceutical company. My specific interests were in reproductive neuroendocrinology. However, learning about career development opportunities, I recognized that this shouldn't be the only option for me to consider. It was important for me to learn about additional career opportunities in industry and recognize how my strengths, weaknesses, likes, and dislikes should impact my career path. During my postdoctoral fellowship, I realized there was a host of other science-related industry opportunities out there that I had not considered, beyond becoming a reproductive neuroendocrinologist at a pharmaceutical company. I began to talk to industry professionals in several fields to understand what career opportunities existed. In March 2019, I attended the PANS meeting in New Orleans. At the meeting, I attended a networking event where I met an industry scientist. She had just started working as a scientist at a small pharmaceutical company out of her postdoctoral fellowship. I asked her more about what her career was like, what other fields she had considered, and told her a bit more about myself. She not only listened and offered her own advice, but also introduced me to her former graduate school colleagues who were Medical Writers. I contacted these two individuals, who offered great advice and insight about Medical Writing and I realized that this was a path I wanted to take. To me, Medical Writing as a profession is similar to what I thought neuroendocrinology was in the biological sciences realm. It is something that is all-encompassing, covering science from the preclinical stage to the commercial and marketing stage. Medical Writers think about the science behind investigational products through the eyes of numerous audiences and are thorough in their explanation and writing of the science. Today, I am a Scientific Communications Writer II at a medical communications agency Samorn Biosciences. I am still exposed to science, am consistently learning, and have found a career that matches my strengths, weaknesses, likes, and dislikes.



PANS Trainee Perspectives

Perspective by Marianne Bizzozzero (PhD student in the Lux-Lantos Lab, IByME-CONICET)

I am finishing my PhD in the Laboratory of Neuroendocrinology at the “Instituto de Biología y Medicina Experimental (IByME-CONICET)” in Buenos Aires, Argentina. My first introduction to the field of neuroendocrinology was when I was in the last year of college, and it was then that I started feeling curious about the topic. I then looked up for a research internship in a laboratory. I've always felt very attracted to understanding how everything works and is so perfectly connected, and I wanted to know more about it at the level of neuroendocrinology.

Doing my PhD was and still is a real challenge. Not only because of the regular basic problems that every single person doing science and research experiences, but because we are in a country with very limited access to the things you actually need to perform biology research. The funding we have available to work with in Argentina is very limited, adding an extra degree of difficulty and challenge. When I got the possibility of travelling to an international meeting, like the PANS meeting, it was very important. The possibility to participate in meetings like PANS is sometimes not achievable by scientists in third world countries, like Argentina. So, travel awards are very useful and necessary, not just to speak about your latest research, but also to get in touch with people that are working in the same field, to develop useful collaborations, and maybe solve everyday laboratory or technical problems. This experience helped greatly with my own current neuroendocrinology research.



PANS Trainee Perspectives



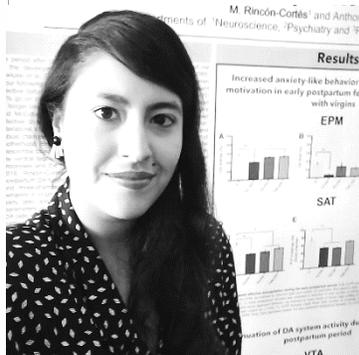
Perspective by Livia Clemente Motta Teixeira (PhD student, Universidad de Sao Paulo, Brazil)

I was always fascinated by the interplay between the endocrine and nervous systems that control essential body processes. I realized that I was really interested in how hormones influenced behavior, especially memory and learning. And how biological timing (Circadian Rhythms) could influence almost all body processes as well. Thus far, I have had several “milestones” in my professional development during my neuroendocrine training. The Research Internships Abroad (BEPE) fellowship from FAPESP gave me the opportunity to participate in a traineeship in The Netherlands. I spent one year at the University of Amsterdam in the group of Paul Lucassen and Aniko Korosi. It was a fantastic experience. Working abroad helped me improve my communication skills, learn about a new culture, and broaden my scientific experiences and knowledge. I was impressed by the level of professionalism exhibited by my Dutch coworkers and the motivation it gives to its employees to always do their best. By this time, I had the opportunity of participating in summer and winter schools that really stimulates meeting with senior researchers and increase networking with other Ph.D. students. These courses and internships provided unparalleled access to a range of academics working at the vanguard of my area of research and helped me enormously to crystalize ideas for my thesis through ongoing discussion and debate. Lastly, I consider all the conferences I attended as great opportunities to share data and to have conversations with senior researchers and benefit from their profound scientific knowledge and experience. I would love PANS to organize summer and winter courses, as well as professional training and grant writing workshops, to promote scientific collaboration and networking.

There are several exciting development in the field, such as CRISPR and genetic tools, which rapidly introduce specific mutations into genes, and genome-wide association studies (GWAS) to identify and establish novel causes of diseases. I think the integration of genetic data with information on genomic gene expression, tissue-specific expression, and systems biology will enable us to elucidate the physiological effects of the genes in pathologies, and these will be a big breakthrough to comprehend disease onset and progression. Finally, the advance of *in vitro* ‘mini-brains’ may allow us to better understand and mimic neural activity and reveal mechanisms underlying neuroendocrine diseases.

Perspective by Millie Rincón-Cortés (Postdoc in the Grace Lab, Univ. of Pittsburgh)

I became interested in neuroendocrinology because my initial postdoctoral project was aimed at evaluating the effects of stress exposure on mesolimbic dopamine neuron activity in male and female rats. We knew that that female rodents exhibit elevated levels of the stress hormone corticosterone (CORT) under basal conditions and post-stress, but how these elevated CORT levels influence dopamine activity at electrophysiological level in both sexes was unknown. I found that both acute and chronic stressors had a greater impact on the female dopamine system, as female rats exhibited enhanced stress-induced dopamine attenuation post-stress compared to males. One of the highlights of my postdoc career was being selected as a PANS Travel Awardee to attend the 2018 Neurobiology of Stress Workshop, which led to me giving a data blitz as well as my first “big” postdoc talk on these data. This was an incredible opportunity for me because I got to share my work with a large international audience (+200 attendees), network and obtain feedback from senior researchers that are experts on this topic, meet trainees that are following up on some of my PhD work and publish a first-author perspective paper with some of the giants in stress neurobiology. Given that my participation in this meeting was contingent upon me receiving a travel award to attend the meeting, all of this would not have been possible without the support of the PANS Travel Award!



Meet the PI

Dr. Jose Donato, Jr.

University of Sao Paulo, Brazil

How long have you been doing research?

I started to do research in 2002 as a graduate student. In 2012, I became an independent PI (assistant professor) at the University of São Paulo, Brazil. I initially studied the metabolic effects of amino acids, then I studied hypothalamic areas that mediate leptin's effects on reproduction. Now, I study how hormonal inputs on neural circuits affect metabolism and also the regulation of the hypothalamic-pituitary-GH axis.



What got you into science and research in the first place?

Curiosity to discover the response to answered questions. I also enjoy the lab routine.

What aspects of research and being a scientist most interest you?

I love the possibility of discovering something really important. I also think that is really amazing that my work (knowledge generated by our research group) will last forever. In other words, even after finishing a research project, the resulting publications can impact science continuously.

What person most influenced you, directly or indirectly, as a scientist?

It is difficult to indicate a single person. I think many people had an important influence on my career. If I have to choose one, I would say that my PhD supervisor, Carol Elias, was important to create opportunities for my development. Without meeting her, my career could have gone in a completely different direction.

Which of your scientific accomplishments are you most proud of?

I think that my current project investigating the role of GH in the brain is producing very interesting and impactful results. Our recent paper: Growth hormone regulates neuroendocrine responses to weight loss via AgRP neurons. (Furigo et. al, Nat Commun, 2019) is one of my favorites because I had to use the knowledge acquired during my entire career to formulate this hypothesis, and we found a new biological function for GH.

What important research question(s) and biological mystery in your field would you most like to see answered in the next 10 years?

The identification of feasible ways to manipulate feeding, body weight and insulin sensitivity to treat obesity and diabetes may present significant advances in 10 years. I also think new methodological tools will allow the revision of some knowledge that we take for granted now and offer reformulations in some fields.

What advice do you have for trainees and junior investigators?

Work hard always, be prepared for good opportunities, and enjoy and have enthusiasm about what you do.

What is your favorite place you have attended for a scientific meeting?

Keystone, Colorado. Amazing place

What's the best way to unwind after a long conference day?

Drink a beer and chat with friends.

What scientist, living or dead, would you love to collaborate with?

My interest in starting to study leptin (which was really important in my career since I began to study the brain) was based on seminal studies published by several scientists, including Jeffrey Flier, Rudolph Leibel, Rexford Ahima and Christos Mantzoros. I think the possibility to work with these brilliant scientists would be amazing.

Dr. Shannon Stephens

Albany Medical College

How long have you been doing research?

Since I was an undergraduate, so about 20 years. My research interests have taken some turns throughout my career, usually to understand topics on a more mechanistic level. I began my career as an undergraduate studying social behavior and cognition in nonhuman primates and now my independent lab focuses on reproductive neuroendocrinology, using transgenic mouse models.



What aspects of research and being a scientist most interest you?

I love that I'm constantly learning new things every day. I love collaborating with others because it allows me to approach research questions from new perspectives and get insight from outside my field.

Who has most influenced you, directly or indirectly, as a scientist?

My graduate mentor (Kim Wallen) and my postdoc mentor (Sasha Kauffman). Kim helped me develop critical thinking skills and taught me how to think scientifically and creatively, always challenging me to think outside the box. Sasha helped me fine tune my research skills, helped me transition from behavioral work in monkeys to molecular work in rodents, and has been an invaluable mentor for professional development.

Which of your scientific accomplishments are you most proud of?

Overall, successfully transitioning from studying behavior in nonhuman primates to studying molecular, genetic, and neural mechanisms in mice.

What is your favorite paper(s) that you have published?

My 2015 *Endocrinology* paper, "Absent Progesterone Signaling in Kisspeptin Neurons Disrupts the LH Surge and Impairs Fertility in Female Mice" because: 1) our hypothesis was supported, showing progesterone signaling in kisspeptin neurons is important for female reproduction; 2) it was one of those lucky projects where nothing went wrong; and 3) it raises some interesting questions about progesterone signaling, kisspeptin regulation, and sex differences in reproduction.

What is the most exciting research trend or emerging topic in biology?

One exciting trend is all of the new tools and methodologies that are being developed to examine the brain and allow us to probe deeper to better understand mechanistic questions about the brain and behavior.

What important research question(s) and biological mystery in your field would you most like to see answered in the next 10 years?

I would say the mechanisms regulating puberty onset and how/if these mechanisms differ between males and females.

What advice do you have for trainees and junior investigators?

I'd say: 1) do not get discouraged, science is full of ups and downs for everyone; 2) networking is important and may lead to new collaborations; and 3) career planning (making an individual development plan). Think about where you want to be in your career 3-5 years from now and make a plan for what you need to do and how/when you will accomplish each step.

What is your favorite place that you have attended for a scientific meeting, and why?

Kyoto, Japan because it was beautiful, the food was great, and I got to visit a few snow monkey sanctuaries!

What scientist, living or dead, would you love to collaborate with?

Darwin or Wallace because their thinking was way ahead of their time. I'd love to get their insights on my research and see what they think of how science has progressed in the last ~150 years.

Meet the PI (continued)

Dr. Damian Zuloaga

University at Albany

How long have you been doing research?

I started as an undergraduate in 1998, so 21 years now. I started in a lab that focused on sex differences and gonadal steroid hormones and have stayed in the Neuroendocrine field ever since. The specifics of the projects have varied but the broad theme has been the same.



What aspects of research and being a scientist most interest you?

Making new discoveries. As a kid I wanted to be an explorer like Magellan but then later realized there wasn't all that much left to explore. The brain was the great unknown.

What is your greatest lab skill?

My ability to keep my cool in any lab situation.

What person has most influenced you as a scientist?

My mom, she always supported me. I actually was introduced to science as a 5-year old when my mom took me with her to chemistry classes at San Diego State University when she couldn't find a babysitter.

Which of your scientific accomplishments are you most proud of? The recent work in my lab investigating sexually dimorphic expression of corticotropin releasing factor receptor 1 cell groups in the brain.

What is your favorite paper(s) that you have published?

Our publication in *Journal of Comparative Neurology* that came out this year. It was great to be able to perform classic organizational versus activational hormone experiments to determine regulation of a sexually dimorphic cell group. Plus, I am always the most excited about what is currently happening in the lab.

What do you think is the most exciting research trend or hot emerging topic in biology today?

Probably my new favorite research trend has to do with the use of cell type specific tracers to map connectivity and functional connectivity in the brain. These tools are excellent for enhancing our understanding of neural circuits that control distinct behaviors.

What important research question(s) and biological mystery would you most like to see answered in the next 10 years and why?

I would really like to have a better understanding about the neural circuitry through which gonadal steroid hormones act to regulate behavioral stress responses and the HPA axis.

What advice do you have for trainees and junior investigators?

Be tough, there are lots of ups and downs but if you are persistent then things will work out and you will be successful.

What is your favorite place you attended a scientific meeting?

Barcelona. It was my first trip to Europe and it is an awesome city.

Where would you like to have a future research conference?

Italy, because I have always wanted to go but haven't yet.

What's the best way to unwind after a long conference day?

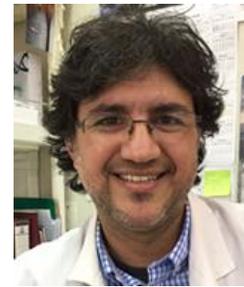
It used to be skateboarding, but my knees are falling apart. Nowadays it is more likely to be a beer with friends.

What scientist, living or dead, would you love to collaborate with?

Hans Selye. He is the godfather of stress endocrinology and a true pioneer in the field.

Dr. Bredord Kerr-Fuentes

CEBICEM, Universidad San Sebastián



What got you into science initially?

Like most scientists, I felt motivated since I was a child to know how things worked, what they were composed of, and how their different components were assembled. That curiosity moved from things to organisms. As a child, I played that I had a laboratory, simulated equipment with old parts of electronics and jam flasks were my test tubes. I dreamed of discovering causes of diseases.

What aspects of research and being a scientist most interest you?

The possibility of working motivated by my interest. I have a question, I want to answer it, and I focus my work on solving it. Besides, I have the possibility to contribute to the academic formation of students who are looking for their way, and I like to convey that science is a beautiful way. In science nothing is all said, never one day is the same as another, everything can be carefully programmed, but the results can change things and move them in unexpected directions.

What person has most influenced you as a scientist?

I would be very ungrateful if I did not mention each of my mentors and teachers because, in one way or another, everyone left a mark on my training. I try to be a guy who makes observations without prejudice and closely related to his students, like my first tutor, Dr. Morales. I think it is essential to see the members of our team as integral human beings, who have emotions, needs, who have a personal life, but also that science requires dedication. I learned that from Dr. Villalón.

Which of your scientific accomplishments are you most proud of?

I don't think that it has come yet, every day is a work in progress.

What is your favorite paper(s) that you have published?

My favorite paper was published when I was working with Juan Young. We were generating a genetically modified mouse to conditionally delete the expression of *Mecp2*, a methylated DNA-binding protein, in dopaminergic neurons to study Rett syndrome. But one of the control models resulted in being a *Mecp2* hypomorph and exhibited an increase in body weight. From that point, the research took another direction.

What do you think is the most exciting research trend or hot emerging topic in biology today?

The advances that have been made in understanding the interaction between the genome and our environment are fascinating, and the implications for the determination of the phenotype of an individual, in the short, long term, and very long term, have shown to be dramatic.

What important research question(s) and biological mystery in your field would you most like to see answered in the next 10 years?

Evidence has emerged indicating that environmental and metabolic factors are capable of transmitting a message to our DNA, generating a mark that will be preponderant in the regulation of both coding and non-coding genes. Today, the question arises how that mark is targeted to a determined gene and not to others and can it be reversed?

What advice do you have for trainees and junior investigators?

Try to maintain motivation, persevere in achieving their goals, and value the advice of the senior scientist.

What scientist, living or dead, would you love to collaborate with?

Since I was young, I admired the work and life story of Santiago Ramón y Cajal. His contribution to the development of neuroscience is admirable.

The Discussion Corner

Should PANS develop a journal?

Many professional societies publish one or more journals. These are often a win-win for the society and its members. Journals are sources of revenue for societies and provide a discipline-specific venue for members to publish their work. Therefore, it is natural to ask, *does PANS plan to have a journal?* The answer for now is no or, at least, not yet.

There are several factors fueling this decision. For example, we already have many high-quality venues in which to publish neuroendocrine research. As a result, we may not need a new journal in our field. Indeed, there are arguably too many journals these days. Another consideration is that changes in the academic publishing landscape have made self-publishing challenging, if not impossible. Many larger societies, including the Endocrine Society, have partnered with publishing houses like Oxford University Press, as this facilitates subscription sales to institutional libraries. Library budgets are constantly under threat. As a result, they tend not to purchase individual titles these days. Publishing houses now sell individual journal subscriptions to libraries as part of larger bundles. They also tend to partner with established rather than fledgling journals.

An open access journal is something that we can and should consider. Indeed, efforts such as [Plan S \(www.coalition-s.org\)](http://www.coalition-s.org) may ultimately make open access the industry norm for publication of federally-funded research. However, here too there are important practical and financial challenges, such as start-up and editorial costs. Moreover, specific criteria must be satisfied for indexing of journals (open access or otherwise) in international databases, such as PubMed. Therefore, it could be years before our journal appears in these venues..

We hope this explains the current thinking about a possible PANS journal. We welcome your thoughts and suggestions.

--Dr. Dan Bernard on behalf of the PANS Executive Council



In Memoriam

Jean Rivier, Salk Professor Emeritus

Salk Professor Emeritus Jean Rivier, who pioneered studies on the neuroendocrine characterization of the hypothalamic peptides that control the stress response, and developed drugs that target this response, passed away peacefully in San Diego, California, on November 13, 2019 at the age of 78. A professor at the Salk Institute, Rivier spent his career studying a class of stress hormones called corticotropin-releasing factors (CRFs). He showed that CRFs are responsible for many of the body's reactions to stress, including disabling the immune system in irritable bowel syndrome (IBS). In an attempt to develop treatments for these conditions, he designed peptide molecules (protein fragments) that block CRF receptors. In addition to his contributions to understanding stress, his work resulted in eight drugs used to diagnose and treat endometriosis, precocious puberty, neuroendocrine tumors, and cancer.

Rivier was born in Casablanca, Morocco, in 1941, then went to Brazil in 1956, where he obtained the French baccalauréat. He moved to Switzerland in 1960, where he earned his bachelor's degree in chemical engineering from Ecole Polytechnique de l'Université de Lausanne and his doctorate in organic chemistry from Université de Lausanne. Rivier went on to complete a postdoctoral fellowship at Rice University in Houston, Texas, before joining the Salk Institute in 1970 with his wife, Catherine (now professor emerita). Among his many accomplishments, he was author or coauthor on more than 1,000 refereed papers and the co-inventor on more than 120 patents. Outside of science, Rivier had a passion for collecting wooden figurines, which adorned his Salk study, and was an avid woodworking hobbyist. A donation may be made in Rivier's memory to Salk's Women & Science program at <https://www.salk.edu/donate/donation-options/women-science/>



Until next time: *Happy Holidays and Prosperous New Year in 2020!*