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## BIOGRAPHICAL SKETCH

NAME: **José Manuel Santiago Santana** POSITION TITLE: **Professor**

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### EDUCATION/TRAINING

INSTITUTION AND LOCATION	DEGREE	Completion Date	FIELD OF STUDY
<b>University of Puerto Rico, Bayamon Campus</b>	<b>B.S.</b>	<b>05/99</b>	<b>Human Biology</b>
<b>University of Puerto Rico, Medical Sciences Campus</b>	<b>Ph.D.</b>	<b>05/11</b>	<b>Physiology and Biophysics</b>
<b>University of Puerto Rico, Medical Sciences Campus</b>	<b>Postdoc</b>	<b>05/13</b>	<b>Neuroregeneration</b>

### A. Personal Statement

Throughout my academic career, I've been privileged to serve in various capacities, each contributing to my growth as an educator, administrator, and researcher. My journey began with a passion for biological sciences, which I've since translated into a multifaceted commitment to advancing education and research within the field. As a Professor at the University of Puerto Rico, Carolina, I have the privilege of shaping the minds of future healthcare professionals, instilling in them a deep understanding of human anatomy and physiology. Working within the Cytotechnology Department from the School of Health Professions in UPR I have been able to hone my teaching skills even further, it has allowed me to merge my expertise in biological sciences with practical applications in healthcare, preparing students for the rigors of clinical practice. In my journey through the academia I've had the opportunity to mentor aspiring researchers and educators, fostering a culture of inquiry and intellectual curiosity. Additionally, I have had the opportunity of working with medical students, by teaching medical physiology and serve as an Instructor for reviews of USMLE step 1 & 2 I have been able to contribute to the success of medical students, equipping them with the knowledge and skills needed to excel in their examinations and beyond. More recently, I am maintaining my curiosity and desire to learn alive by taking workshops, certifications and courses related to several topics in the field of forensic sciences. This motivation is born from the establishment of our most recent bachelor degree in Forensic Sciences at UPR in Carolina. I have been learning and plan to keep on learning so our students can keep on benefiting from the most recent and comprehensible as possible details pertaining to this field.

My desire to serve in the educational aspect has moved me to help on the administrative branch of the academia. In the past I have served as Chair of the Physiology and Patho-Physiology Department at San Juan Bautista School of Medicine, where I led initiatives to enhance curriculum development and research opportunities for students. Afterwards, working in the UPR in Carolina, I have been able to work as Assistant Dean of Academic Affairs, where I honed my skills in academic administration and strategic planning, laying the groundwork for effective leadership and collaboration. Currently I am working as Associate Dean of Academic Affairs in the UPR in Carolina, where I keep on helping to develop effective collaboration between our coworkers to make our education as effective as possible in these fast-changing times. As important as the academia and its effective administration is for education, research is a very important aspect for a complete educational program. Prior to my academic appointments, I served my postdoctoral research experience at the University of Puerto Rico's School of Medicine further enriched my understanding of physiological processes specifically in neurosciences, which laid the foundation for my subsequent career in academia. As a Postdoctoral Research Specialist, I've had the privilege of conducting groundbreaking research and disseminating knowledge through publications and presentations. My passion for research extends beyond the laboratory, driving me to mentor students and fellow researchers in their academic pursuits.

In summary, my professional journey reflects a deep-seated commitment to education, research, and academic leadership. I am dedicated to nurturing the next generation of healthcare professionals and scientists and advancing our understanding of the biology field through innovative research and collaborative partnerships.

1. [Santiago-Santana, J.M.](#), Vega-Torres, J.D., Ontiveros-Angel, P., Lee, J.B., Arroyo-Torres, Y., Cruz-González, A., Aponte-Boria, E., Zabala-Ortiz, D., Alvarez Carmona, C., Figueroa, J.D. (2021). Oxidative Stress and Neuroinflammation in a Rat Model of Co-Morbid Obesity and Psychogenic Stress. *Behavioural Brain Research*. 14. PMID: 33301815; PMCID: PMC5639730
2. Vega-Torres, J. D., Haddad, E., Lee, J. Bin, Kalyan-Masih, P., George, W. I. M., Pérez, L. L., ... [Santiago, J.M.](#); ... Figueroa, J. D. (2018). Exposure to an Obesogenic Diet During Adolescence Leads to Abnormal Maturation of Neural and Behavioral Substrates Underpinning Fear and Anxiety. *Brain, Behavior, and Immunity*. 70, 96-117. PMID: 29428401; PMCID: PMC6255817
3. Colón, J. M., González, P. A., Cajigas, Á., Maldonado, W. I., Torrado, A. I., [Santiago, J. M.](#); Miranda, J. D. (2018). Continuous tamoxifen delivery improves locomotor recovery 6 h after spinal cord injury by neuronal and glial mechanisms in male rats. *Experimental Neurology*. 299, 109– 121. PMID: 29037533; PMCID: PMC5723542
4. Colón, J.M.; Torrado, A.I.; Cajigas, Á.; [Santiago, J.M.](#); Salgado, I.K.; Arroyo, Y.; Miranda, J.D. (2016). Tamoxifen Administration Immediately or 24 Hours after Spinal Cord Injury Improves Locomotor Recovery and Reduces Secondary Damage in Female Rats. *Journal of Neurotrauma*.33 (18): 1696-1708. PMID: 26896212; PMCID: PMC5035917

5. Salgado, I.K.; Torrado, A.I.; Santiago, J.M.; Miranda, J.D. (2015). Tamoxifen and Src kinase inhibitors as neuroprotective/neuroregenerative drugs after spinal cord injury. *Neural Regeneration Research*. 10 (3): 385-390. PMID: 25878585; PMID4396099
6. Rosas, O.R.; Santiago, J.M.; Torrado, A.I.; Rodríguez, A.E.; Salgado, I.K.; Miranda, J.D. (2014). Long-term treatment with PP2 after spinal cord injury resulted in functional locomotor recovery and increased spared tissue. *Neural Regeneration Research*. 9 (24): 2164-2173. PMID: 25657738; PMID4316450

## B. Positions and Honors

### Positions

2011-2012	Chair of the Physiology and Patho-Physiology Dept. San Juan Bautista School of Medicine, Caguas PR	2022-present	Professor, Natural Sciences Dept. University of Puerto Rico in Carolina, Carolina, PR
2012-2016	Assistant Professor, Natural Sciences Dept. University of Puerto Rico in Carolina, Carolina, PR	2023-2024	Assistant Dean of Academic Affairs University of Puerto Rico in Carolina, Carolina, PR
2016-2022	Associate Professor, Natural Sciences Dept. University of Puerto Rico in Carolina, Carolina, PR	2024-present	Associate Dean of Academic Affairs University of Puerto Rico in Carolina, Carolina, PR

### Honors and Professional Memberships

2004-2009	RISE Honor Programs, UPR-MSC	2014-present	Member, Society for Neuroscience
2011	Academic Excellence Award, UPR-MSC	2015	3 <sup>rd</sup> prize for best counselor of student organizations, UPRCa
2011	Outstanding Research Award, UPR-MSC		

## C. Contribution to Science

1. While I was doing my doctoral studies, I addressed the fact that most researchers did not wanted to administer any analgesic after injury to the animals due to the fact that they did not were sure if the results that they would obtained were in anyway altered by the analgesic administration. The most common analgesic used to address the post-operative pain that the animals might develop after a surgery of this nature is Buprenorphine. I assessed the effects of buprenorphine in animals with microarrays and RT-PCR after injury. These techniques allowed me to do screening of the genes usually used to analyze events that may result as agonist or antagonist of the regeneration of the cord after SCI. The results of this project showed that none of the genes observed were altered significantly I was able to publish this work and nowadays it is possible to use this paper as help to justify the inclusion of analgesic administration as part of the post operative care for the animals after SCI. This publication is:  
Santiago, J.M.; Rosas, O.; Torrado, A.I.; González, M.M.; Kalyan-Masih, P.O.; Miranda, J.D. (2009). Molecular, Anatomical, Physiological and Behavioral studies of rats treated with Buprenorphine. *J. Neurotrauma*. 26 (10): 1783-1793. PMID: 19653810; PMID2864459
2. Another project that I was able to develop was to assess the effects of lipid rafts after SCI. It is known that Flotillin-2 is one of the main scaffolding proteins of the lipid rafts and can conglomerate receptors that are described as repulsive for axonal regeneration after trauma. By using antisense technologies, I was able to reduce the Flotillin-2 expression and hence the integrity of the rafts. The disruption of the rafts leads to broken communication between receptors and cellular internal signals. Upon closer examination of the results we were able to determine that lipid rafts appear to have a role that facilitates the inhibition of functional locomotor recovery after injury. It is possible that these rafts may hold a link towards the discovery of a therapeutic treatment for SCI in the near future. Below is listed the bibliography of the publication product of this project:  
Santiago, J.M.; Torrado, A.I.; Arocho, L.C.; Rosas, O.R.; Rodríguez, A.E.; Toro, F.K.; Salgado, I.K.; Torres, Y.A.; Silva, W.I.; Miranda, J.D. (2013). Expression profile of flotillin-2 and its pathophysiological role after spinal cord injury. *Journal of Molecular Neuroscience*. 49(2): p. 347-359. PMID: 22878913; PMID: 3545048.
3. At the moment we are working in a collaboration with Dr. Figueroa of the Loma Linda School of Medicine in California to elucidate the effects of a high fat diet in the brain physiology, particularly in the field of memory, emotions and PTSD. We have been able to show that a high fat diet leads to several changes at the molecular level of the nervous tissue which leads to neuroinflammation and oxidative stress among other things. Further investigation is still done by our team to keep expanding the knowledge in this particular field. Below is listed the bibliography of the publication product of this project:  
Santiago-Santana, J.M.; Vega-Torres, J.D.; Ontiveros-Angel, P.; Lee, J.B.; Arroyo-Torres, Y.; Cruz-González, A.; Aponte-Boria, E.; Zabala-Ortiz, D.; Álvarez Carmona, C.; Figueroa, J.D. (2021). Oxidative stress and neuroinflammation in a rat model of co-morbid obesity and psychogenic stress. *Behavioural Brain Research*. 26:400: PMID: 33301815; PMID8713435.