OMB No. 0925-0001 and 0925-0002 (Rev. 03/2020 Approved Through 02/28/2023)

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.

Follow this format for each person. DO NOT EXCEED FIVE PAGES.

|  |
| --- |
| NAME: Santiago Moreno, Juan Gabriel |
| eRA COMMONS USER NAME (credential, e.g., agency login): JSMORENO |
| POSITION TITLE: MSTP Student |

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

|  |  |  |  |
| --- | --- | --- | --- |
| INSTITUTION AND LOCATION | DEGREE (if applicable) | END DATE MM/YYYY | FIELD OF STUDY |
| Eastern Florida State College, Melbourne, FL | AA | 05/2013 | N/A |
| University of Florida, Gainesville, FL | BS | 05/2016 | Behavioral and Cognitive Neuroscience |
| University of Florida, Gainesville, FL | MS | 05/2018 | Medical Sciences |
| University of Colorado, Aurora, CO | PHD | 05/2024 | Neuroscience |
| University of Colorado, Aurora, CO | MD | 06/2026 | N/A |

### A. Personal Statement

My long term research interests involve elucidating how neural signals are coded within systems and propagated between systems. While these questions aren't necessarily new, very recent technological advances are allowing scientists to study the activity of the brain with unprecedented resolution. These technologies are providing the opportunity to approach questions about systems neuroscience in exciting and creative ways. As well, they suggest a new frontier for the clinical management of neurological conditions. My academic experiences and prior training have provided me knowledge and skills that I am excited to apply to an approach to neuroscience which is entirely new to me. During my undergraduate at University of Florida, I began my research career under Dr. Sylvain Dore, studying strategies to ameliorate injury following intracerebral hemorrhage using endogenous heme scavenging proteins. I then transitioned to the Lab of Dr. Gordon S. Mitchell whose focus is on respiratory neurophysiology and how *acute intermittent hypoxia* (AIH) might be used to enhance plasticity in cases of spinal injury and neurodegerative disease. I decided to complete a master's degree in medical sciences in Dr. Mitchell's lab, which gave me the freedom to design my own thesis project around the potential for mechanisms of structural plasticity to promote neural regeneration. During my undergraduate and master's degrees, I published two papers, collaborated on work for multiple abstracts, and had the opportunity to present my research at both local and international conferences. For my PhD training at the University of Colorado, I've moved into the field of computational neuroscience and neural population dynamics under Dr. Daniel J. Denman. Dr. Denman is one of the pioneers of the revolutionary Neuropixels probe and his lab is one of only a handful in the world using this technology. My research project in this lab will involve using data from multiple Neuropixels probes to decode the population dynamics of color representation in the early visual system. In addition to technical instruction, our proposed research plan includes career development activities, and guidance seeking independent fellowships within the first year. As a Latino and the first person in my family to graduate college, it is hard to overstate the pride and excitement that comes from achieving my academic goals. I feel that my choice of sponsor, my thesis project, and the training I will receive through this fellowship will go a long way of facilitating my goal of becoming a physician-scientist.

### B. Positions and Honors

Positions and Employment

|  |  |
| --- | --- |
| 2014 - 2015 | Undergraduate Researcher, University of Florida, Lab of Dr. Sylvain Dore, Gainesville, FL |
| 2015 - 2016 | Undergraduate Researcher, University of Florida, Lab of Dr. Gordon S. Mitchell, Gainesville, FL |
| 2016 - 2018 | Graduate Assistant, UNIVERSITY OF FLORIDA |
| 2018 - | MSTP Student, UNIVERSITY OF COLORADO DENVER |

Other Experience and Professional Memberships

|  |  |
| --- | --- |
| 2016 - 2018 | Member, Center for Respiratory Research and Rehabilitation |
| 2016 - 2018 | Member, Interdisciplinary Program in Biomedical Sciences Diversity Committee |
| 2017 - 2018 | Member, American Physiological Society |
| 2018 - | Student, University of Colorado Medical Scientist Training Program |
| 2018 - | Founding Member, CU Latino Medical Student Association |
| 2018 - 2019 | President, CU Latino Medical Student Association |
| 2019 - | Member, CU MSTP Curriculum Reform Committee |

Honors

|  |  |
| --- | --- |
| 2013 - 2016 | Academic Scholar, Florida Bright Futures |
| 2017 | Volunteer Recognition Award, UF Mobile Outreach Clinic |
| 2017 | Minority Travel Fellowship, American Physiological Society |
| 2017 | Travel Grant, UF Graduate Student Council |
| 2018 | Ethics Case Competition, First Place, University of Colorado |
| 2019 | Ethics Case Competition, First Place, University of Colorado |

### C. Contribution to Science

1. Lab of Dr. Sylvain Dore: I worked in the Dore Lab during the first two years of my undergraduate education at UF. My first project was to write a review article on the neuroprotective effects of ginseng under the guidance of my lab mentor. I then transitioned to another team that investigated ameliorating the toxic effects of hemoglobin degradation on the brain after intracerebral hemorrhage through overexpression of heme scavenging proteins. I was responsible for animal behavior analysis, tissue collection, histology, and analysis. I was able to present my research in multiple poster symposiums and published two articles in peer-reviewed journals.
   1. Leclerc J, **Santiago-Moreno J**, Dang A, Lampert A, Cruz P, Rosario A, Golde T, Doré S. Increased brain hemopexin levels improve outcomes after intracerebral hemorrhage. Journal of Cerebral Blood Flow & Metabolism. 2016 November 19; 38(6):1032-1046.
   2. Rastogi Vaibhav, **Santiago-Moreno Juan**, Dore Sylvain. Ginseng: a promising neuroprotective strategy in stroke. Frontiers in Cellular Neuroscience. 2015; 8:457.
2. Lab of Dr. Gordon S. Mitchell: The remainder of my undergraduate and subsequent master's program at UF were spent in the Mitchell Lab. My projects in this lab were primarily devoted to studying neural regeneration after spinal cord injury using a novel treatment called *acute intermittent hypoxia* (AIH). I participated in nearly every part of the projects including experimental injuries, peri-operative animal care, AIH treatment, tissue harvesting, histology, and analysis. The results of these studies were the main subject of my master’s thesis. Apart from my thesis, I also presented my research at academic conferences, mentored undergraduate students, and collaborated on projects with other graduate students and post-doctoral fellows
   1. Marciante A, Kelly M, Ciesla M, **Santiago-Moreno J**, Allen L, Gonzalez-Rothi E, Lewis J, Mitchell G. Intermittent Hypoxia Differentially Modulates Endogenous Tau Phosphorylation in Rats. The FASEB Journal. 2020 April 17; 34(S1):1-1.
   2. Gonzalez-Rothi Elisa Janine, Allen Latoya A, **Santiago-Moreno Juan**, Ciesla Marissa C, Asa Zachary A, Smith Kristin N, Tadjalli Arash, Perim Raphael, Santiago Juliet V, Holland Ashley E, others. Long-term Delivery of “Low Dose” Repetitive Intermittent Hypoxia is Not Associated with Detectable Pathology. The FASEB Journal. 2018; 32(1\\_supplement):625--11.
   3. Tadjalli Arash, Perim Raphael, Satriotomo Irawan, **Santiago-Moreno Juan**, Seven Yasin, Mitchell Gordon S. LPS-induced systemic inflammation impairs phrenic long-term facilitation via okadaic acid-sensitive protein phosphatase activity. The FASEB Journal. 2017; 31(1\\_supplement):1053--3.
   4. **Santiago-Moreno Juan Gabriel**, Satriotomo Irawan, Dougherty Brendan J, Springborn Sarah, Kopp Elizabeth, Sullivan Lydia, Mitchell Gordon S. Repetitive Acute Intermittent Hypoxia Affects Lesion Volume After Cervical Spinal Injury. The FASEB Journal. 2017; 31(1\\_supplement):1055--5.
3. University of Colorado: Despite having just joined the lab of Dr. Daniel J. Denman, I have already had some significant research experience at CU. I did first research rotation during summer, 2019 in the lab of Dr. Cristin G. Welle building an *optrode* device designed to stimulate and record from optogenetically labeled neurons in the basal forebrains of awake, behaving mice. As a side project, I assisted in writing a review with an MSTP classmate on data collected from patients during deep brain stimulation surgery. Since June 2020, I have been working in the lab of Dr. Denman, recording from the visual cortex of awake, head-fixed animals using high density probes.
   1. Tekriwal A, Afshar N, **Santiago-Moreno J**, Kuijper F, Kern D, Halpern C, Felsen G, Thompson J. Neural Circuit and Clinical Insights from Intraoperative Recordings During Deep Brain Stimulation Surgery. Brain Sciences. 2019 July 20; 9(7):173-.

### Complete List of Published Work in My Bibliography:

<https://www.ncbi.nlm.nih.gov/myncbi/juan.santiago%20moreno.1/bibliography/public/>

### D. Additional Information: Research Support and/or Scholastic Performance

Scholastic Performance

|  |  |  |
| --- | --- | --- |
| YEAR | COURSE TITLE | GRADE |
| Eastern Florida State College | | |
| 2010 | Statistics | B |
| 2010 | College Algebra | A |
| 2010 | American National Government | B |
| 2010 | Fundamentals of Speech | B |
| 2010 | World Religions | A |
| 2010 | Social Problems | A |
| 2011 | General Biology | A |
| 2011 | Biology 2 | B |
| 2011 | Success Strategies | A |
| 2011 | Humanities Survey: Ancient - Byzantine | A |
| 2011 | Humanities Survey: Byzantine - Modern | A |
| 2011 | General Psychology | A |
| 2011 | Principles of Economics 2 | B |
| 2011 | Communications 1 | A |
| 2012 | General Chemistry 1 | B |
| 2012 | General Chemistry Lab 1 | A |
| 2012 | Precalculus Algebra | B |
| 2012 | College Trigonometry | A |
| 2012 | Intro to Astronomy | A |
| 2012 | General Chemistry 2 | A |
| 2012 | General Chemistry Lab 2 | A |
| 2012 | Calculus 1 with Analytic Geometry | A |
| 2012 | Communications 2 | A |
| 2012 | Intro to Sociology | B |
| 2012 | Philosophy of Science Fiction | A |
| 2013 | Calculus 2 with Analytic Geometry | B |
| 2013 | First Aid and Safety | A |
| 2013 | Problems in Philosophy | A |
| University of Florida | | |
| 2013 | Organic Chemistry | C |
| 2013 | Calculus 2 with Analytic Geometry | C+ |
| 2013 | Intro to Statistics 2 | A |
| 2013 | Human Sexuality and Culture | B+ |
| 2013 | Science for Life Seminar | A |
| 2013 | Cognitive Psychology | B |
| 2013 | Language as a Cognitive System | A- |
| 2014 | Organic Chemistry 2 | B- |
| 2014 | Organic Chemistry Lab | B |
| 2014 | Behavioral Neuroscience | C+ |
| 2014 | Physics 1 | B+ |
| 2014 | Physics 1 Lab | A- |
| 2014 | Physics 2 | B- |
| 2014 | Physics 2 Lab | B+ |
| 2014 | Undergraduate Research in Psychology | Pass |
| 2014 | Biochemistry | C+ |
| 2014 | Intro to Medical Professions | A |
| 2014 | Spanish Grammar and Composition for Bilinguals | B+ |
| 2015 | Medical Science Senior Research | A |
| 2015 | Lab Methods in Psychology | A- |
| 2015 | Basic Biology of Microorganisms | A |
| 2015 | Genetics | B |
| 2015 | Microbiology Lab | A |
| 2015 | Chemical Senses and Behavior | A |
| 2015 | Advanced Spanish Composition for Bilinguals | B+ |
| 2015 | Pseudoscience | A |
| 2015 | Spanish for Health Professions | A |
| 2015 | Spanish Service Learning | A |
| 2016 | Lab Methods in Sensory Processes | A |
| 2016 | Psychobiology of Abnormal Behavior | A |
| 2016 | Culture and Civilization of Spanish America | A |
| 2016 | Intro to Hispanic Linguistics | A |
| University of Florida | | |
| 2016 | Eukaryotic Molecular Biology and Genetics | B |
| 2016 | Respiratory Journal Club | A |
| 2016 | Professional Development in Research | Pass |
| 2016 | Principles of Neuroscience 1 | B+ |
| 2016 | Independent Studies | A |
| 2016 | Biotechnology Seminar | A- |
| 2017 | Principles of Neuroscience 3 | A |
| 2017 | Biotechnology Seminar | A |
| 2017 | Principles of Neuroscience 2 | A |
| 2017 | Physiology and Functional Genomics 1 | A |
| 2017 | Physiology and Functional Genomics 2 | A |
| 2017 | Independent Studies | A |
| 2018 | Independent Studies | A |
| 2018 | Supervised Research | A |
| University of Colorado | | |
| 2018 | MSTP Seminar | A |
| 2018 | Core I: Foundations in Biomedical Science | A- |
| 2018 | Molecules to Medicine Seminar | Pass |
| 2018 | Evolutionary Genetics and Genomics | A- |
| 2018 | Practical Data Analysis in R | A |
| 2019 | Blood and Lymph | B+ |
| 2019 | Disease and Defense | A- |
| 2019 | MSTP Seminar | A |
| 2019 | MSTP Advanced Topics | Pass |
| 2019 | MSTP Seminar | A |
| 2020 | MSTP Seminar | A |
| University of Colorado | | |
| 2018 | Foundations of Doctoring I | Pass |
| 2018 | Human Body | Pass |
| 2018 | Problem-Based Learning - Phase I | Pass |
| 2019 | Interprofessional Education - Phase I | Pass |
| 2019 | SABES Spanish Immersion | Pass |
| 2019 | Digestive, Endocrine, and Metabolic Systems | Pass |
| 2019 | Blood and Lymph | Pass |
| 2019 | Disease and Defense | Pass |
| 2019 | Cardiovascular, Pulmonary and Renal | Pass |
| 2019 | Problem-Based Learning - Phase II | Pass |
| 2019 | Foundations of Doctoring II | Pass |
| 2020 | Interprofessional Education - Phase II | Pass |
| 2020 | Nervous System | Pass |
| 2020 | Infectious Disease | Pass |
| 2020 | Life Cycle | Pass |

Medical school courses are all graded pass/fail with pass being set as any grade above a C.

Ongoing Research Support

T32 GM008497-26, National Institute of General Medical Sciences

GUTIERREZ-HARTMANN, ARTHUR  (PI)

07/01/93-06/30/23

Medical Scientist Training Program

Role: TA

T32 GM008497-27, National Institute of General Medical Sciences

GUTIERREZ-HARTMANN, ARTHUR  (PI)

07/01/93-06/30/23

Medical Scientist Training Program

Role: TA