ERICA J. RODRIGUEZ, PHD

(718) 751-5294 er2934@cumc.columbia.edu

POSITION AND EDUCATION

Postdoctoral Fellow 2018-present
Columbia University, ZMBBI
Advisor: C. Daniel Salzman, M.D., Ph.D.

PhD Duke University, Neurobiology May 2018
Thesis Defense Date: December 6, 2017
Advisor: Fan Wang, Ph.D.

BA Macaulay Honors College in Queens College
of the City University of New York
Biology and Neuroscience; Psychology May 2011
Cum Laude with minor in History
Advisor: Carolyn Pytte, Ph.D.

RESEARCH EXPERIENCE

Columbia University, New York, NY 2018-Present
Postdoctoral Fellow, PI: Dr. C. Daniel Salzman

- **Research project:** Dissecting the anterior cingulate cortex and basolateral amygdala's role in mediating the effect that social interactions have on emotional processing and motivational behavior.

Collaborative projects: I applied my expertise in viral strategies and optogenetics to projects focused on cue-induced feeding in mice within my lab. I also acquired and contributed behavioral videos to two collaboration projects with scientists in the theory center at Columbia.

Duke University, Durham, NC 2014-2018
Graduate Research Assistant, PI: Dr. Fan Wang

- **Research project:** Uncovering a novel monosynaptic trigeminal ganglion to the lateral parabrachial nucleus pathway that drives robust aversive behavior. This provided a neural mechanism for why facial pain is perceived more intensely than bodily pain.
- **Research project:** Dissecting the PB_L pathway that is activated by appetitive behavior (sweetened milk), using CANE. This added to the established but still incomplete neural circuitry for homeostatic satiety-mediated meal termination.
- **Collaborative projects:** I applied my expertise in electrophysiology to six distinct collaboration projects with scientists both within my lab and in other lab groups at Duke over topics ranging from neuronal circuits to targeted epigenetic editing of neurons. My experiments helped my co-authors understand how neuronal behavior in various regions of the brain was impacted in these collaborative projects, leading to five additional publications I co-authored.

Duke University, Durham, NC 2012-2013
Graduate Research Assistant, PI: Dr. Chay Kuo

- **Research project:** Studying a novel sub-population of cholinergic neurons in subventricular zone (SVZ) and revealing activity-dependent cholinergic modulation of SVZ neurogenesis in adult mice.

Rockefeller University, New York, NY 2010
Undergraduate Research Assistant, PI: Dr. Fernando Nottebohm

- **Research project:** Studying effect on neuronal replacement after lesioning the avian basal ganglia of the adult male zebra finch prior to deafening.

Macaulay Honors College in CUNY Queens College, Queens, NY 2008-2011
Undergraduate Research Assistant, PI: Dr. Carolyn Pytte

- **Research project:** Studying effects of mismatched auditory feedback on new neuron incorporation in regions of the adult male zebra finch's song learning and production pathways.

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TEACHING AND MENTORING EXPERIENCE

Teaching

Columbia University, Guest Lecturer Fall 2018
Columbia Science Honors Program
"Emotions and the Brain"

- Taught a lecture to high school students on the neural circuitry underlying emotional processing.

Duke University, Teaching Assistant Fall 2012
Department of Neurobiology, 719.01
"Concepts in Neuroscience I"

- Subjects covered in graduate level class: methods and brain organization, neurophysiology, molecular biology of the synapse, molecular mechanisms of learning and neural modulation, molecular biology of brain development

Mentoring

Columbia University, Undergraduate Mentor 2018-Present
Department of Neuroscience
"Columbia Summer Undergraduate Research Fellowship" program & independent study

- One-on-one mentorship for three undergraduate students doing independent study.
  - Christina Adeyemi, 2022-Present
  - Alejandra Nunez, Spring 2023
  - Benjamin Eisenstadt, 2018-2019
- Assisted each in proposal/research/thesis writing, experimentation, and analysis of data.

Columbia University, High School Mentor 2022-Present
Zuckerman Mind, Brain, and Behavior Institute

- One-on-one mentorship for four high school students
  - Caleb Lee-Kong, summer 2023
  - Miles Thurnherr, participant in "BRAINYAC" program, summer 2023
  - Dylan Alphenaar, summer 2022
  - Brian Lin, participant in "BRAINYAC" program, summer 2022
- Trained students to independently conducted histological projects over the summer.

Columbia University, BUMP Mentor 2022-2023
Department of Biological Sciences

- Helped prepare applications for paid summer research programs.
- Provided off-the-bench mentorship.

Duke University, Undergraduate Mentor 2015-2018
Department of Neurobiology
"Independent Study" & "Duke Summer Neuroscience Program"

- One-on-one mentorship for two undergraduate students doing independent study.
  - Jennie Xu, 2015-2016
  - David Ryu, 2016-2018
- Mentored both in their proposal/research/thesis writings, as well as experimentation and analysis of data leading to co-authorships for both students.

Duke University, High School Mentor 2016
Department of Neurobiology

- Co-trained Alex and Charles Wang to conduct a behavioral project over the summer.

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HONORS AND AWARDS

Fellowships

2023	Intersections Science Fellow	Yale
2023-2028	NIH MOSAIC K99/R00 Postdoctoral Career Transition Award	NIGMS
2019-2022	Helen Hay Whitney Fellowship	Helen Hay Whitney
2018-2021	NIH T32 NRSA Institutional Postdoctoral Fellowship	CUIMC
2015-2018	NIH F31 NRSA Predoctoral Fellowship in Diversity	NIDCR
2011-2015	Dean's Graduate Fellowship	Duke University
2011-2013	NIH T32 Institutional Predoctoral Fellowship	Duke University
2010	Summer Undergraduate Research Fellowship	Rockefeller University
2010	Undergraduate Research and Mentoring Education Fellowship	CUNY Queens College
2009-2011	NIH T34 MARC U-STAR Award	CUNY Queens College

Honors

2017	Bill Hall Prize for Excellence in Graduate Student Research	Duke Neurobiology
2017	The Challenge of Chronic Pain: Best Poster	Wellcome Genome
2011	Outstanding Undergraduate Research	CUNY Queens College
2010, 2011	Paul Paplin Scholar-Athlete Award	CUNY Queens College

PEER REVIEWED PUBLICATIONS

Whiteway, M.R.; Biderman, D.; Friedman, Y.; Dipoppa, M.; Buchanan, E.K.; Wu, A.; Zhou, J.; Bonacchi, N.; Miska, N.J.; Noel, J-P.; **Rodriguez, E.**; Schartner, M.; Socha, K.; Urai, A.E.; Salzman, C.D.; The International Brain Laboratory; Cunningham, J.P.; Paninski, L. Partitioning variability in animal behavioral videos using semi-supervised variational autoencoders. *PLOS Computational Biology* **17**(9): e1009439. (2021)

Aronowitz, J.V.; Perez, A.; O'Brien, C.; Aziz, S.; **Rodriguez, E.**; Wasner, K.; Ribeiro, S.; Green, D.; Faruk, F.; Pytte, C.L. Unilateral vocal nerve resection alters neurogenesis in the avian song system in a region-specific manner. *PLOS ONE*. **16**(8): e0256709 (2021)

Gemberling, M.; Siklenka, K.; **Rodriguez, E.**; Tonn-Eisenger, K.R.; Barrera, A.; Liu, F.; Kantor, A.; Li, L.; Cigliola, V.; Hazlett, M.F.; Williams, C; Bartelt, L.C.; Madigan, V.J; Bodle, J.; Daniels, H.; Rouse, D.C.; Hilton, I.B.; Asokan, A.; Ciofani, M.; Poss, K.D.; Reddy, T.E.; West, A.E.; Gersbach, C.A. Transgenic mice for in vivo epigenome editing with CRISPR-based systems. *Nature Methods*. **18**, 965-974 (2021*)*

Ryu B.; Nagappan S.; Santos-Valencia F.; Lee P.; **Rodriguez E.**; Lackie M.; Takatoh J.; Franks K.M. Chronic loss of inhibition in piriform cortex following brief, daily optogenetic stimulation. *Cell Reports*. **35**,109001 (2021)

Wu, A.; Buchanan, E.K.; Whiteway, M.; Schartner, M.; Meijer, G.; Noel, J-P.; **Rodriguez, E.**; Everett, C.; Norovich, A.; Schaffer, E.; Mishra, N.; Salzman, C.D.; Angelaki, D.; Bendesky, A; The International Brain Laboratory, Cunningham, J.P.; Paninski, L. Deep Graph Pose: a semi-supervised deep graphical model for improved animal pose tracking. Advances in Neural Information Processing Systems. **33**. (2020)

Rodriguez, E; Ryu, D.; Zhao, S.; Han, B-X.; Wang, F. Identifying parabrachial neurons selectively regulating satiety for highly palatable food in mice. eNeuro. **6**, ENEURO.0252-19.2019 (2019)

Rodriguez, E; Sakurai K.; Xu, J; Chen, Y.; Toda, K.; Zhao, S.; Han, B-X.; Ryu, D.; Yin, H.; Liedtke W.; Wang, F. A craniofacial-specific monosynaptic circuit enables heightened affective pain. *Nature Neuroscience.* **20**, 1734-1743 (2017)

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Sakurai, K., Zhao, S., Takatoh, J., **Rodriguez, E.**, Lu, J., Levitt, D. A., Fu, M., Han, B-X., Wan,g F. Capturing and Manipulating Activated Neuronal Ensembles with CANE Delineates a Hypothalamic Social-Fear Circuit. *Neuron*. **36**,7663-7675 (2016)

Stanek IV, E., **Rodriguez, E.**, Zhao, S., Han, B-X., Wang, F. Supratrigeminal Bilaterally Projecting Neurons Maintain Basal Tone and Enable Bilateral Phasic Activation of Jaw-Closing Muscles. *Journal of Neuroscience.* **36**, 7663-7675 (2016)

Zhang, Y., Zhao, S., **Rodriguez, E**., Takatoh, J., Han, B-X., Zhou, X., Wang, F. Identifying local and descending inputs for primary sensory neurons. *Journal of clinical Investigation.* **125**, 3782-3794 (2015)

Paez-Gonzalez, P.*, Asrican, B.*, **Rodriguez, E.*,** Kuo, C.T**.** Identification of distinct ChAT+ neurons and activity-dependent control of postnatal SVZ neurogenesis. *Nature Neuroscience.* **17**, 934-942 (2014) **(**<u>*co-first authors</u>).

PRESENTATIONS AND ABSTRACTS

<u>Platform Presentations</u>

Rodriguez, E.; Salzman, D. "Rank and sex influence olfactory-guided social motivation." Zuckerman Institute Postdoctoral Seminar. April 2023.

Rodriguez, E.; Salzman, D. "Neural correlates of social processing shaping emotional behavior." Helen Hay Whitney Annual Fellows Meeting. November 2021.

Rodriguez, E.; Salzman, D. "Dissecting the neural mechanisms of rodent social perception." T32 Third-Year Fellows Meeting. April 2021.

Rodriguez, E.; Xu, J.; Sakurai, K.; Zhao, S.; Wang, F. "Characterizing the lateral parabrachial circuits that process affective orofacial pain." Annual Dental Research in Review Day (DRRD). February 2016.

Rodriguez, E.; Sakurai, K.; Zhao, S.; Han, B-X.; Wang, F. **"**Towards dissecting the neural circuits that process thermal orofacial pain." CUNY Queens College MARC U-STAR Alumni Day. October 2014.

Rodriguez, E.; Kuo, C. "Novel Subtype of Cholinergic Cells found in the Striatum." CUNY Queens College MARC U-STAR Alumni Day. October 2012

Croll, S.; Datan E.; **Rodriguez, E.** A panelist at N.E.U.RO.N. Conference diversity workshop. April 2010.

Rodriguez, E.; Parent, C.; Wildstein, S.; Pytte, C. "Activity dependent neuron survival in the adult telencephalon." Annual BioMedical Research Conference for Minority Students. September 2009.

<u>Select Poster Presentations</u>

Rodriguez E, Salzman D. Dissecting the synaptic and circuit mechanisms underlying olfactory-driven social behavior. *Society for Social Neuroscience*. November 2022.

Rodriguez, E; Sakurai K.;Xu, J; Ryu, D.; Zhao, S.; Toda, K.; Yin, H.; Han, B-X.; Wang, F. "A new monosynaptic craniofacial affective pain neural circuit drives aversive behavior." Annual Meeting of Society for Neuroscience. November 2017.

Rodriguez, E; Sakurai K.;Xu, J; Ryu, D.; Zhao, S.; Toda, K.; Yin, H.; Han, B-X.; Wang, F. "A new monosynaptic craniofacial affective pain neural circuit drives aversive behavior." Wellcome Genome Campus. March 2017. (**Awarded for best poster**).

Rodriguez, E.; Xu, J.; Sakurai K.; Zhao, S.; Wang, F. "Dissecting the lateral Parabrachial affective pain circuits reveals recurrent loops & monosynaptic trigeminal ganglion inputs." NIH Annual Symposium on Advances in Pain Research. 2016. (**Invitation only**).

Rodriguez, E.; Xu, J.; Sakurai K.; Zhao, S.; Wang, F. "Characterizing the Lateral Parabrachial circuits that process affective pain." Cold Spring Harbor Laboratory Neural Circuits Meeting. 2016

Rodriguez, E.; Pytte, C. "Neuron Incorporation into HVC is altered by unilateral tracheosyringeal nerve cut in adult zebra finches." Annual BioMedical Research Conference for Minority Students. 2010

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OUTREACH

Rhythm and Reason with Arts and Minds:
The More the Merrier (and Brainier) and Lullaby of the Brain
I was an invited speaker for monthly series designed for people with dementia and their care partners. I discussed my research on how the social environment shapes our emotional response and examined how this research sheds light on how our brains enable us to enjoy music and dance together for one event, and how music can help us communicate and connect in another event.

Make it Make Sense: A Neuroscience Podcast
I was an invited speaker for a podcast whose goal is to shed light on cutting edge neuroscience research to young teenagers/high school students.

First Tech Fund
I was an invited neuroscientist speaker for a nonprofit dedicated to providing opportunities for low-income high school students in navigating academic and professional careers.

Art in the Ed Lab
I discussed my research with past and current Art in the Ed Lab artists, Damali Abrams and Manon Casimir-Sainton, as part of their interviews and explorations of ZI labs to serve as inspiration for their artworks displayed throughout in the education lab at ZI.

Zuckerman Institute Gender Inclusion (ZIGI)
I am a co-organizer of a gender inclusion group focused on building a local support and social network for female and gender minority students, staff, postdocs, and PIs at the Zuckerman Institute. I specifically co-organize the ZIGI Seminar Series which consists of diverse experts discussing gender minority issues and ways in which the ZI community can be more inclusive to gender minority groups.

Zuckerman Institute Postdoctoral Extramural Seminar (ZIPS-X)
I am a co-founder and co-organizer for this inaugural seminar series which currently focuses on promoting women and gender minority postdoctoral researchers in their final stages of training.

Zuckerman Institute Trainee Advisory Committee (ZTAC)
I facilitate communication between trainees, ZI and CU affiliated trainee and working groups, the union, and ZI leadership to improve mentoring, trainee programs and life at ZI.

Columbia University NBB Graduate Program Diversity Working Group
I help brainstorm and implement ideas and plans that will improve graduate experiences and mentoring. This includes anti-bias workshops and building a networking/mentoring program for students belonging to underrepresented groups.

REFERENCES

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