

# Jung Park (박정만)

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**Research Interest:** The goal of my research is to characterize the neural pathways that functionally contribute to animal behavior. My experiments combine advances in rodent training with comprehensive circuit manipulations. I am currently investigating how cortical circuits differentially encode somatosensory information.

**Techniques:** High channel extracellular electrophysiology, high-speed video analysis, and circuit manipulations (lesions, optogenetics, nerve cuts) in head-fixed behaving animals. Customized and automated behavioral training. Background in social psychology, behavior (human, mouse, *Drosophila*), cell culture, protein degradation, and molecular biophysics.

## EDUCATION

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Columbia University | *Doctoral Program in Neurobiology and Behavior* (3.97) | August 2016 – Present

Columbia University | *M.A.* (3.95), *M. Phil* (3.97) *Neuroscience* | May 2018, 2019

Brandeis University | *B.S. Neuroscience, B.A. Psychology* (3.57) | May 2014

Cum Laude with High Honors in Psychology

Languages | English (fluent); Korean (advanced); Spanish (basic)

## RESEARCH EXPERIENCE

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**Doctoral Program in Neurobiology and Behavior** | *PhD Candidate* | **Dr. Randy Bruno** | **Columbia University**

August 2016 – Present

- Investigating role of primary somatosensory cortex in whisker-mediated tactile behaviors (Bruno lab)
- Characterizing psychophysics and cortical circuitry underlying texture discrimination
- Rotated in labs of Dr. Steven Siegelbaum (social memory & aggression) and Dr. Jian Yang (calcium channel regulation)

**Molecular Neurophysiology and Biophysics Unit** | *Postbac IRTA Fellow* | **Dr. Dax Hoffman** | **NIH/NICHD**

July 2014 – July 2016

- Investigated voltage-gated potassium channel Kv4.2 and its role in learning, memory, and synaptic plasticity; and how malfunction contributes to psychiatric disorders and neurodegenerative diseases
- Characterized activity-dependent phosphorylation and ubiquitination of synaptic ion channels (Kv4.2, Cav2.3) and their role in channel regulation, trafficking, and degradation

**Aging, Culture, & Cognition Lab** | *Undergraduate Honors Student* | **Dr. Angela Gutchess** | **Brandeis University**

August 2011 – June 2014

- Investigated effects of aging and social contextual influences (self vs group-reference) on memory and cognition
- Studied spontaneous inferences and false memory of traits and actions with age

**SUCCESS Program** | *Research Scholar* | **Dr. Jonathan Godbout** | **The Ohio State University College of Medicine**

June 2013 – August 2013

- Investigated role of inflammatory cytokines in CNS responsible for neurobehavioral deficits associated with age
- Analyzed TGF- $\beta$  regulation of microglial activation, Amyloid- $\beta$  reuptake, and phagocytic efficiency

**Project Lab (Garrity & Griffith Labs)** | *Research Assistant* | **Dr. Christopher Vecsey** | **Brandeis University**

August 2012 – November 2012, January 2013 – May 2013

- Investigated neurobiology and behavior of temperature sensation in *Drosophila*
- Characterized temperature preferences and avoidance in mutants (TRPA1 & IR25a KO) and various species of *Drosophila*

**Laboratory for Developmental Studies** | *Research Assistant* | **Dr. Elizabeth Spelke** | **Harvard University**

June 2012 – August 2012

- Investigated secular versus religious causes of behavior (5-10 years old) and understanding of quantities (3-4 years old)
- Built stimuli and coded experiments testing toddlers' ability to perform abstract mathematics

## **HONORS & AWARDS**

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### **NSF GRFP Fellowship, 2018-2021 – National Science Foundation**

Young Generation Technical and Leadership Conference Travel Award, 2017, 2019, 2020 – Korean-American Scientists and Engineers Association

US Delegate to Young Generation/Young Professional Alumni Forum in South Korea, 2019 – Korean Federation of Science & Technology Societies

### **Young Investigator Training Program Award, 2019 – International Brain Research Organization**

KSEA-KUSCO Graduate Scholarship, 2019 – Korean-American Scientists and Engineers Association, Korea-US Science Cooperation Center

US-Korea Conference Travel Award, 2018, 2019 – Korean-American Scientists and Engineers Association

Graduate Student Organization Travel Scholarship, 2019 – Columbia University

Young Scientists and Engineers Net Program Award, 2018-2019 – Korean Federation of Science & Technology Societies

AKN Pre-doctoral Award, 2018 – Association of Korean Neuroscientists

Kavli Institute Travel Award, 2018 – The Kavli Institute for Brain Science

### **Ruth L. Kirschstein NRSA Institutional Training Grant (T32), 2016-2018 – National Institutes of Health**

US-Korea Conference Excellent Poster Award, 2018 – Korean-American Scientists and Engineers Association

**UCL-NIMH Joint Doctoral Training Program in Neuroscience full scholarship, 2016-2020 – National Institutes of Health, declined**

**Gruber Science Fellowship at Yale, 2016-2018 – Yale University and Gruber Foundation, declined**

### **Young Generation Leadership Award, 2016 – Korean Federation of Science & Technology Societies**

US Delegate to Young Generation Forum in South Korea, 2016 – Korean Federation of Science & Technology Societies, Korean-American Scientists and Engineers Association

Best Postbac Poster Award, 2015 – National Institute of Child Health and Human Development

Postbac Poster Day Outstanding Poster Award, 2015 – National Institutes of Health

### **Ricardo Morant Undergraduate Award for Outstanding Scholarship and Breadth in Psychological Inquiry, 2014 – Brandeis University**

L. Starling Reid Undergraduate Psychology Conference Travel Award, 2014 – University of Virginia

Cullen Trust for Higher Education Travel Award, 2014 – University of Texas Houston & Baylor University

Provost's Undergraduate Research Travel Award, 2014 – Brandeis University

Provost's Undergraduate Research Award, 2013-2014 – Brandeis University

### **Trustee Scholarship, 2010-2014 – Brandeis University**

Dean's List (5), 2010-2014 – Brandeis University

Brandeis Pluralism Alliance Grants (4), 2011-2013 – Brandeis University

### **Bruce R. Mayper Memorial Award, 2012 – Brandeis University**

Intercultural Center Representative of the Year, 2011 – Brandeis University

## **PUBLICATIONS**

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**Park, J.M.**, Cassidy, B.S., & Gutchess, A.H. (in prep). Pattern of false recognition errors for traits but not actions is preserved with age.

Rodgers, C.C., Nogueira, R., Pil, C., Greeman, E.A., **Park, J.M.**, Hong, Y.K., Fusi, S., Bruno, R.M. (2021). Sensorimotor strategies and neuronal representations for shape discrimination. *Neuron*.

**Park, J.M.**, Hong, Y.K.\*, Rodgers, C.C.\*, Dahan, J.B., Schmidt, E.R.E., & Bruno, R.M. (2020). Deep and superficial layers of the primary somatosensory cortex are critical for whisker-based texture discrimination in mice. *bioRxiv* 2020.08.12.245381. Submitted. **\*co-second authors**

Schmidt, E.R.E., Zhao H.T., **Park, J.M.**, Dahan, J.B., Rodgers, C.C., Hillman, E.M.C., Bruno, R.M., & Polleux, F. (2020). A human-specific modifier of cortical circuit connectivity and function improves behavioral performance. *bioRxiv* 852970. Resubmitted at *Nature*.

**Park, J.**, Rodgers, C., Hong, Y. K., Dahan, J., & Bruno, R. (2019). Primary somatosensory cortex is essential for texture discrimination but not object detection in mice. *IBRO Reports*.

Tabor, G.T.\*, **Park, J.M.\***, Murphy, J.G., Hu, J.H., & Hoffman, D.A. (2019). A novel bungarotoxin binding site-tagged construct reveals MAPK-dependent Kv4.2 trafficking. *Molecular and Cellular Neuroscience*. **\*co-first authors**.

Leroy, F., **Park, J.**, Asok, A., Brann, D.H., Meira, T., Boyle, L.M., Buss, E.W., Kandel, E.R., & Siegelbaum, S.A. (2018). A circuit from hippocampal CA2 to lateral septum disinhibits social aggression. *Nature*.

Meira, T., Leroy, F., Buss, E.W., Oliva, A., **Park, J.**, & Siegelbaum, S.A. (2018). A hippocampal circuit linking dorsal CA2 to ventral CA1 critical for social memory dynamics. *Nature Communications*.

Leshikar, E.D., **Park, J.M.**, & Gutchess, A.H. (2015). Similarity to the self affects memory for impressions of others in younger and older adults. *Journal of Gerontology, Series B: Psychological Sciences and Social Sciences*.

## **PRESENTATIONS**

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- Rodgers, C.C., Nogueira, R., Pil, C., Greeman, E.A., **Park, J.M.**, Hong, Y.K., Fusi, S., Bruno, R.M. (2021, May). Sensorimotor strategies and neuronal representations for shape discrimination. Poster presented virtually at Innovators in Neuroscience: From Molecules to Mind.
- Park, J.M.**, Hong, Y.K., Rodgers, C.C., Dahan, J.B., Schmidt, E.R.E., & Bruno, R.M. (2020, October). Deep and superficial layers of the primary somatosensory cortex are critical for whisker-based texture discrimination in mice. Talk presented virtually at Barrels XXXIII.
- Schmidt, E.R.E., Zhao H.T., **Park, J.M.**, Dahan, J.B., Rodgers, C.C., Hillman, E.M.C., Bruno, R.M., & Polleux, F. (2020, October). A human-specific modifier of cortical circuit connectivity and function improves sensory discrimination in mice. Talk presented virtually at Barrels XXXIII.
- Park, J.M.**, Rodgers, C.C., Hong, Y.K., Dahan, J.B., Jordan, L., & Bruno, R.M. (2019, October). Primary somatosensory cortex is essential for texture discrimination but not object detection in mice. Poster presented at Barrels XXXII and the Society for Neuroscience, Chicago, IL.
- Park, J.M.**, Rodgers, C.C., Hong, Y.K., Dahan, J.B., Jordan, L., & Bruno, R.M. (2019, September). Primary somatosensory cortex is essential for texture discrimination but not object detection in mice. Poster presented at the International Brain Research Organization World Congress of Neuroscience, Daegu, South Korea.
- Park, J.M.**, Rodgers, C.C., Hong, Y.K., Dahan, J.B., & Bruno, R.M. (2018, November). A texture discrimination task reveals an essential role of primary somatosensory cortex in mice. Poster presented at Barrels XXXI and the Society for Neuroscience, San Diego, CA.
- Leroy, F., Boyle, L.M., **Park, J.**, Asok, A., Brann, D.H., Meira, T., Buss, E.W., & Siegelbaum, S.A. (2018, November). Dual gating by vasopressin of hippocampal CA2 soma and presynaptic terminals in lateral septum. Poster presented at the Society for Neuroscience, San Diego, CA.
- Park, J.M.**, Rodgers, C.C., Hong, Y.K., & Bruno, R.M. (2018, August). Reevaluating the role of the primary somatosensory cortex in tactile behaviors using a parametric texture discrimination task. Talk and poster presented at the US-Korea Conference, Queens, NY.
- Leroy, F., **Park, J.**, Meira, T., Buss, E.W., & Siegelbaum, S.A. (2017, November). The hippocampal CA2 region engages a lateral septal disinhibitory circuit to promote social aggression. Poster presented at the Society for Neuroscience, Washington D.C.
- Tabor, G.T., **Park, J.M.**, Murphy, J.G., Hu, J.H., & Hoffman, D.A. (2017, May). Engineering a novel strategy for visualizing A-type potassium channels in live cells. Poster presented at the National Institutes of Health Postbaccalaureate Poster Day, Bethesda, MD.
- Park, J.M.**, Leroy, F., Meira, T., & Siegelbaum, S.A. (2017, January). Mapping the neural circuitry of social aggression. Poster presented at Young Generation Technical and Leadership Conference, Philadelphia, PA.
- Gutchess, A.H., **Park, J.M.**, & Cassidy, B.S. (2015, May). Memory for trait information with age. Talk presented at the Association for Psychological Science, New York, NY.
- Park, J.M.**, Hu, J.H., & Hoffman, D.A. (2015, April). Kv4.2 regulation and trafficking via the ubiquitination pathway. Poster presented at the National Institutes of Health Postbaccalaureate Poster Day, Bethesda, MD.
- Park, J.M.** & Gutchess, A.H. (2014, May). False recognition of trait inferences increases with age. Talk presented at the Senior Honors Presentations at Brandeis University, Waltham, MA.
- Park, J.M.**, Cassidy, B.S., & Gutchess, A.H. (2014, April). False recognition of trait inferences increases with age. Poster presented at the University of Virginia L. Starling Reid Undergraduate Psychology Conference, Charlottesville, VA.
- Park, J.M.**, Cassidy, B.S., & Gutchess, A.H. (2014, April). Aging increases memory errors for traits. Poster presented at the Brandeis University Experimental Learning Symposium, Waltham, MA.
- Leshikar, E.D., **Park, J.M.**, & Gutchess, A.H. (2014, April). Similarity to the self affects memory for impressions of others across age. Poster presented at the Cognitive Aging Conference, Atlanta, GA.
- Park, J.M.**, Norden, D.M., & Godbout, J.P. (2013, August). Examining the role of TGF- $\beta$  in regulating microglial activation and phagocytic efficiency. Talk and poster presented at the Ohio State University SUCCESS Program, Columbus, OH.
- Leshikar, E.D., **Park, J.M.**, & Gutchess, A.H. (2013, January). Similarity to self affects impression memory in younger and older adults. Poster presented at the Dallas Aging and Cognition Conference, Dallas, TX.

## **OTHER PUBLICATIONS AND PRESENTATIONS**

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**Park, J.M.** (2020, January). Neuroscience of Ygnite's social behaviors. Talk presented at Young Generation Technical and Leadership Conference, Seattle, WA.

**Park, J.M.** (2019, August). Crafting a narrative: How to write a personal statement for the NSF and beyond. Talk presented at the US-Korea Conference, Chicago, IL.

**Park, J.M.** (2019, January). Studying mouse whiskers to better understand the human brain. Talk presented at Young Generation Technical and Leadership Conference, Los Angeles, CA.

**Park, J.M.** (2018, August). Neuroscience in the 21<sup>st</sup> Century: New tools to study the brain. Talk presented at Columbia University Neuroscience Outreach's Late Night Science Series, New York, NY.

**Park, J.M.** (2018, July). Neuroscience in the 21<sup>st</sup> Century. Talk presented at the Youth Science and Technology Leadership Camp/US-Korea Conference, Queens, NY.

**Park, J.M.** (2015, August). Novel modification to Alzheimer's-linked ion channel. *The NICHD Connection*, 6(63), 11.

**Park, J.M.** (2014, May). False Recognition of Trait Inferences Increases with Age. Brandeis University.

## **MENTORED STUDENTS & AWARDS**

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Jacob Dahan, '21, Columbia University Undergrad (August 2018 – May 2021)

- Fulbright Research Fellowship, Max-Planck Institute of Neurobiology (2021-2022)
- Amgen Scholars Program, Washington University in St. Louis (2021)
- Bridges and Sturtevant Prize for most outstanding research in Biological Sciences, Columbia University (2021)
- Health & Wellness Award, Columbia University (2021)
- Senior Marshall, Columbia University (2021)
- Class of 1939 Summer Research Fellowship, Columbia University (2020)
- Churchill Scholarship, Columbia University Nominee (2020)
- Interactive Track, Neuromatch Academy for Computational Neuroscience (2020)
- Summer Undergraduate Research Fellowship, Columbia University (2019)

Nina Harano, '23, Columbia University Undergrad (January 2020 – Present)

- Summer Research Fellowship, Okinawa Institute of Science and Technology (2021)
- Summer Undergraduate Research Fellowship, Columbia University (2020)

Lindsay Jordan, High School Intern (Summer 2018, 2019)

- Undergraduate at Cornell University

## **PROFESSIONAL ORGANIZATIONS**

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Society for Neuroscience

Korean-American Scientists and Engineers Association

New York Academy of Sciences

Association of Korean Neuroscientists

National Institutes of Health – Korean Scientists Association

Korean American Society in Biotech and Pharmaceuticals

Psi Chi

National Society of Collegiate Scholars

## **LEADERSHIP POSITIONS & INTERESTS**

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Neurobiology & Behavior Retreat Committee Student Chair (2020-2021)

Event Consultant, New York Metropolitan Chapter of Korean-American Scientists and Engineers Association (2020-2021)

Vice President, Columbia University Chapter of Korean-American Scientists and Engineers Association (2018-2020)

Organizer, Late Night Science; Columbia University Neuroscience Outreach (2017-2019)

Member, National Institutes of Health – Korean Scientists Association (2014-2016)

Steering Committee, Brandeis Pluralism Alliance (2011-2014)

Club Athlete, Brandeis Football Club (2011, 2014)

Varsity Athlete, Brandeis Indoor and Outdoor Track and Field (2010-2013)

Co-Chair, Intercultural Center Programming Board (2012-2013)

Tutor, Student Support Services in Cognitive Neuroscience (2012)

Vice President, Brandeis Korean Students Association (2011-2012)

First Violinist, Brandeis Wellesley Orchestra (2010-2011)

## **REFERENCES**

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**Dr. Randy M. Bruno**

Associate Professor  
Department of Neuroscience  
Columbia University  
212-853-1044  
randybruno@columbia.edu

**Dr. Steven A. Siegelbaum**

Gerald D. Fischbach, M.D. Professor of Neuroscience, Professor of Pharmacology  
Chair, Department of Neuroscience  
Columbia University  
212-853-1056  
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**Dr. Franck Polleux**

Professor  
Department of Neuroscience  
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