At NYU, neuroscience graduate education provides integrated training that encompasses molecular, developmental, cellular, systems, cognitive, behavioral, and computational approaches to address the most important questions in the field. Our doctoral training program in neural science builds on the diversity and strength of research across many interrelated departments and multiple campuses, especially among the Center for Neural Science, the NYU Neuroscience Institute, and the Institute of Brain and Cognitive Science in Shanghai.

This brochure will introduce you to the Shanghai Track of the NYU Doctoral Program in Neural Science, including the cutting-edge neuroscience research conducted by our faculty and their most recent discoveries in the field. The Shanghai Track is a specialized track combining the long-standing strength of NYU’s neural science program based in New York with the unique environment for research and training at the newly established NYU Shanghai, and the NYU-ECNU Institute of Brain and Cognitive Science at NYU Shanghai. Students who participate in the track will benefit from NYU’s global vision of transformative teaching and innovative research. Interested students should apply to the NYU Doctoral Program in Neural Science and select Shanghai on their application.
Students in the Shanghai track of the Doctoral Program in Neural Science will spend one and a half years at NYU in New York for course-work and laboratory rotations, before joining a laboratory in Shanghai for thesis research. They will maintain a close tie with New York, and they will receive an NYU Ph.D., typically within 6 years.

Key Components and Timeline of Study

- **Shanghai**
  - Summer Research Rotation
  - Select Thesis Advisor & Committee
  - Summer Research Rotation
  - Summer Research Rotation
  - Select Thesis Advisor & Committee

- **New York**
  - Fall/Spring Research Rotation
  - Core Neuroscience Courses
  - Fall Research Rotation
  - Advanced Elective Course
  - Students may also participate in research in New York during this part of their training

- **Year 1**
  - Qualifying Examination
  - Thesis Research
  - Advanced Elective Courses
  - Dissertation & Oral Defense

- **Year 2**
  - Thesis Research
  - Advanced Elective Courses
  - Dissertation & Oral Defense

- **Year 3**
  - Thesis Research
  - Advanced Elective Courses
  - Dissertation & Oral Defense

- **Year 4**
  - Thesis Research
  - Advanced Elective Courses
  - Dissertation & Oral Defense

- **Year 5**
  - Thesis Research
  - Advanced Elective Courses
  - Dissertation & Oral Defense

- **Ph.D. in Neural Science**
Dynamical Behavior of Neural Circuits

Wang is an expert on the neurobiology of executive and cognitive functions. His group has pioneered neural circuit models of the prefrontal cortex, often called the “CEO of the brain.” From cellular mechanisms to large-scale brain circuit models, Wang is well-known for his work on memory, decision-making, communication, and other cognitively-controlled, flexible behaviors.

Before joining NYU in 2012, Wang was Professor of Neurobiology, Physics, Applied Mathematics, and Psychology at Yale University and Director of the Swartz Center for Theoretical Neuroscience.

Valuation, Rewards, and Decision Making

Cai’s research focuses on elucidating the neural underpinnings of economic decision-making. He has studied the encoding of economic value in various brain areas, most recently focusing on how abstract choice outcome is transformed into a suitable action plan.

Cai holds a Ph.D. in Bioengineering from Arizona State University and was a postdoctoral fellow at Yale University and Washington University in St Louis.
Competition, Stress, and Attention on Decision Making

Erlich’s research interests include the neural mechanisms of decision-making, attention and emotion. His lab investigates how coherent behaviors and decisions emerge from chaotic neural activity that is driven by a combination of internal dynamics and external sensory input.

Erlich received his Ph.D. from NYU’s Center for Neural Science in 2006 and completed his postdoctoral training at Princeton University.

Human Perception of Self- and Object Motion

Li’s lab uses approaches from psychology, computer science, and engineering to examine how visual information affects perception and motor control of self- and object motion to understand the integration of motion perception and motor control processes.

Li has a PhD from Brown University and was a postdoctoral fellow at Harvard Medical School. Prior to joining NYU Shanghai, Li was a faculty member at the University of Hong Kong.
Modeling and Analysis of Neural Systems

Lim’s research group uses a broad spectrum of dynamical systems theories, the theory of stochastic processes, and information and control theories to develop and analyze neural network models and synaptic plasticity rules for learning and memory.

Lim received her Ph.D. from NYU’s Courant Institute of Mathematical Sciences in 2006 and completed her postdoctoral training at the University of Chicago.

The Relationship between Action and Perception

Using electrophysiological (MEG/EEG), neuroimaging (fMRI) techniques, and behavioral, computational approaches, Tian investigates motor-sensory interactions, mental imagery, and speech and language.

Tian has a Ph.D. from the University of Maryland and, prior to joining NYU Shanghai, he was a postdoctoral fellow in the Department of Psychology at NYU.


Li L and Niehorster DC. (2014) Influence of optic flow on the control of heading and target egocentric direction during steering toward a goal. *Journal of Neurophysiology*.


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<th>Name</th>
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<td>Cristina Alberini</td>
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<td>Chiye Aoki</td>
<td>Neuronal plasticity in neocortex</td>
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<td>Jayeeta Basu</td>
<td>Circuits mechanisms underlying learning</td>
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<td>Adam Carter</td>
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<td>Mitchell Chesler</td>
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<td>Jeremy Dasen</td>
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<td>Nathaniel Daw</td>
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<td>Andre Fenton</td>
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<td>Gord Fishell</td>
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<td>Robert Froemke</td>
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<td><strong>Wen-Biao Gan</strong></td>
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<td>Esther Gardner</td>
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<td>Stephen Ginsberg</td>
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<td><strong>Paul Glimcher</strong></td>
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<td>Michael Hawken</td>
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<td>David Heeger</td>
<td>Computational neuroimaging</td>
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Other NYU Neuroscience Faculty

Roozbeh Kiani Perceptual & mnemonic decision making
Lynne Kiorpes Development of visual function
Eric Klann Molecular basis of cognition & brain disorders
Eric Lang Neuronal basis of motor control
Joseph LeDoux* Memory & emotion
Efrat Levy Neurodegenerative disease
Dayu Lin Neural circuits for social behaviors
Rodolfo Llinas Intrinsic properties of neurons
Michael Long Complex, learned motor behaviors
Wei Ji Ma Behavioral & neural mechanisms of perception
Laurence Maloney* Math approaches to psychology & neuroscience
Paul Mathews Neuronal vulnerability in Alzheimer’s disease
David McLaughlin Visual neural science
Anthony Movshon* Vision & visual development
Katherine Nagel Biophysics of sensory processing
Ralph Nixon Cellular basis of neurodegenerative diseases
Bijan Pesaran* Neuronal dynamics and decision making
Elizabeth Phelps* Cognitive neuroscience of emotion, learning and memory
Dimitris Placantonakis Neurogenesis & gliomagenesis
Alex Reyes Functional interactions in neural networks
Margaret Rice Neurophysiology of dopaminergic neurons
Dmitry Rinberg Olfactory information processing
Niels Ringstad Signalling pathways that modulate behavior
John Rinzel* Biophysical & theoretical neural computations
Bernardo Rudy Molecular regulation of neuronal excitability
### Other NYU Neuroscience Faculty

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<td>Dan Sanes</td>
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<td>Helen Scharfman</td>
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<td>Nicholas Stavropoulos</td>
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<td>Greg Suh</td>
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<td>Regina Sullivan</td>
<td>Neurobiology of infant attachment</td>
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<td><strong>Wendy Suzuki</strong>*</td>
<td>Memory, learning &amp; cognition</td>
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<td><strong>Richard Tsien</strong>*</td>
<td>Activity driven signaling to the nucleus</td>
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<td>Donald Wilson</td>
<td>Neurobiology of memory &amp; perception</td>
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<td>Thomas Wisniewski</td>
<td>Pathogenesis of Alzheimer’s disease</td>
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<td>Edward Ziff</td>
<td>Synaptic trafficking &amp; neurological disease</td>
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* denotes Collaboring Faculty in the NYU-ECNU Institute of Brain and Cognitive Science at NYU Shanghai


Xing D, Yeh CI, Gordon J, Shapley RM (2014) Cortical brightness adaptation when darkness and brightness produce different dynamical states in the visual cortex. *Proc Natl Acad Sci USA*.

Current NYU Neuroscience Students

Shanghai Track Students
In summer 2015, three students began studies in this new program.

Xingyu Ding received his B.S. in Physics from Peking University. During his first summer in Shanghai, he rotated with Xiao-Jing Wang.

Joshua Moller-Mara majored in Cognitive Science, Computer Science and Statistics at University of California, Berkeley. He choose Jeff Erlich’s lab for his first rotation.

Chengze Xu received a B.S. and M.S. in Biomedical Engineering from Shanghai Jiao Tony University. His first summer was spent working with Xingying Cai’s lab.

A Selection of NYC Track Students

Mel Khaw (B.A., University of Arizona), a 3rd year student in the Glimcher Lab, is interested in how preferences emerge from neural activity and modeling decision making.

Andra Mihali (B.A., Columbia University), a 3rd year student in the Ma Lab, studies the role of microsaccades in visual short term memory.

Caitlin Mullins (B.A., Columbia University) is a 3rd year student with the Tsien Lab, and she is interested in how neuromodulators regulate synapses, circuits, and behavior.

Ryan Shewcraft (B.A., Brown University) is a 4th year student with the Pesaran Lab, who is applying optogenetics to probe neocortical circuit dynamics in primates.
Kevin LaBar, Ph.D. ’96, is a Professor at Duke University. His lab examines how emotions modify cognition in healthy adults and in psychiatric patients.

Emre Aksay, Ph.D. ’01, is an Assistant Professor at Weill Cornell Medical College, who investigates molecular, cellular and circuit mechanisms of neural temporal integration.

Nicole Rust, Ph.D. ’04, is an Assistant Professor at the University of Pennsylvania studying how the brain stores visual memories and recognizes objects.

Wei Lu, Ph.D. ’06, is an Investigator at the National Institutes of Health (NINDS), where his group focuses on unraveling the molecular mechanisms of synaptic plasticity.

Mehrdad Jazayeri, Ph.D. ’07, is an Assistant Professor at MIT. He is interested in the neural bases of complex behaviors such as flexible timing and sensorimotor integration.

Edward Zagha, Ph.D. ’08, is a postdoctoral fellow with David McCormick at Yale University and studies sensory processing between cortical brain regions.

Anne Takesian, Ph.D. ’10, is a postdoctoral fellow in Takao Hensch’s lab at Harvard University and is focused on experience-dependent plasticity during critical periods.

Jeremy Freeman, Ph.D. ’12, is a Group Leader at Janelia Research Campus studying how neural circuits encode and transform sensory information in order to guide behavior.
The NYU Neuroscience community comes together for weekly seminars and a wealth of additional scientific events that encourage interdisciplinary and cross-campus interactions to ensure a stimulating intellectual environment for graduate training.

Joint Neuroscience Colloquia are a fundamental component of the neuroscience community at NYU, featuring esteemed neuroscientists from around the world. Students and postdocs have the opportunity to meet with invited speakers informally to discuss their research.

Annual Neuroscience Retreats are held in a picturesque, upstate New York resort and bring together faculty and students for a 3-day scientific meeting focused on fostering new collaborations.

Numerous additional events - Weekly Group Meeting, Fellows’ Seminars, Uptown/Downtown, etc. - highlight our graduate students’ research in progress, giving them an opportunity to develop presentation skills as well as receive valuable input from their colleagues.
While in New York, students have the opportunity to work with neuroscience faculty from more than a dozen academic departments from the NYU Washington Square and School of Medicine campuses. Labs working in all areas of neuroscience are well-equipped with state-of-the-art research facilities that support basic, translational, and clinical neuroscience.

NYU provides housing benefits to assist doctoral students while they reside in New York City. The school also provides free shuttles to each campus and other areas of the city, and the city’s public transportation is also very convenient, with extensive subways, buses, and a new bike sharing system.

New York City is a thriving, lively backdrop for our doctoral students, who benefit from its diversity of cultures, cuisines, art, and entertainment.
NYU Shanghai, part of New York University’s Global Network University, is the first Sino-US higher education joint venture. The NYU-ECNU Institute of Brain and Cognitive Science at NYU Shanghai seeks to advance our understanding of brain function with the primary goal of understanding the neural circuits in the brain that generate higher cognition and flexible behavior and how their impairments are associated with brain diseases.

The Institute leverages our existing significant strength of neuroscience research in systems and cognitive neuroscience, using a range of tools including the development of transgenic primates, molecular and physiological studies of neural circuits, experimental analysis of behavior, microcircuit and large-scale neural circuit modeling, and human brain imaging. The Institute will have more than twenty, collaborating research groups and bring together faculty from New York, Shanghai, and the world.
Graduate Program Director
Michael Hawken
Center for Neural Science
mjh2@nyu.edu

Academic Administrator
Jess Holman
Center for Neural Science
jess.holman@nyu.edu

To apply to the Doctoral Program in Neural Science Shanghai Track, visit:
neuroscience.nyu.edu/graduate-programs

To learn more about the Neural Science at NYU Shanghai, please visit:
neuro.shanghai.nyu.edu