

Arkarup Banerjee
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RESEARCH INTERESTS

Neural mechanisms of vocal communication, Computation, Microscopy.

EDUCATION

Ph.D. (Neuroscience, 2010-2016). Cold Spring Harbor Laboratory, NY, USA.

M.Sc (Biophysics, 2007-2010). Tata Institute of Fundamental Research, Mumbai, India.

B.Sc (Biochemistry, 2004-2007). University of Delhi, New Delhi, India.

SUMMER COURSES

Advanced Course in Computational Neuroscience, Lisbon, Portugal (2015).

Harvard-NCBS Optogenetics course, Bangalore, India (2009).

POSITIONS AND EMPLOYMENT

2020 -	Assistant Professor, Cold Spring Harbor Laboratory, NY
2017-2020	Junior Fellow, Simons Foundation Society of Fellows, NY
2016-2020	Post-doctoral Fellow, New York University School of Medicine, NY
Fall, 2016	Adjunct Faculty, Adelphi University, Garden City, NY
2010-2016	Graduate Student, Cold Spring Harbor Laboratory, NY

Other Experience and Professional Memberships

2012-present	Member, Society for Neuroscience
2019-present	Member, International Society for Neuroethology
2019-present	Member, Post-doctoral Planning Committee, NYU Medical Center, NY
2020	Advisor, Neuroscience Institute Committee for Diversity Initiative, NYU Medical Center, NY
2017-2019	Teaching Assistant, Imaging Structure and Function in the Nervous System Course, CSHL
2016	Teaching Assistant, Transylvanian Experimental Neuroscience Summer School (TENSS), Romania
2016	Lecturer, Cellular and Systems Neuroscience, graduate course, Adelphi University, NY
2016	Teaching Assistant, WSBS Optical Methods in Biology, CSHL
2014-2015	Organizer, "Neuroscience boot-camp" for 1 st year graduate students, CSHL, NY
2009-2010	Teaching Assistant, Biostatistics, TIFR, India
2008	Teaching Assistant, Fluorescence Correlation Spectroscopy Workshop, TIFR, India

ACADEMIC AWARDS/HONORS

2020	Advances and Perspectives in Auditory Neuroscience Poster/Talk award.
2017-2020	Junior Fellow, Simons Foundation Society of Fellows.

2016	National Science Foundation Travel Award.
2015	Best Talk at Graduate Student Symposium, CSHL, NY.
2010-2014	Lindsay-Goldberg Fellowship for graduate studies, CSHL, NY.
2007	Karyn-Kupcnet International summer school fellowship, Weizmann Institute of Science, Israel.
2007	University Gold Medal for ranking 1 st in Bachelor of Science.
2004-2007	KVPY scholar, Government of India.

PUBLICATIONS: (ORCID number 0000-0003-1979-857X)

1. Chae H.G.*, **Banerjee A.*** & Albeanu D.F. *A non-canonical feedforward pathway for computing odor identity*. bioRxiv 2020.09.28.317248
2. **Banerjee, A**, Steven M. Phelps and Michael A. Long. 2019. Singing Mice. *Current Biology*, 29:6.
3. Okobi DE Jr*, **Banerjee A***, Matheson AMM, Phelps SM, Long MA. Motor cortical control of vocal interactions in neotropical singing mice. *Science*. 2019, 263 (6430): 983-988.
4. **Banerjee, A** and Long, MA. 2017. Ready, Steady, Go! Imaging Cortical Activity during Movement Planning and Execution. *Neuron* **94**: 698-700.
5. **Banerjee, A.***, Marbach, F.*, Anselmi, F., Koh, M.S., Davis, M.B., Oyibo, H.K., Gupta, P. and Albeanu, D.F. 2015. Longrange interactions between short axon cells and external tufted cells gate glomerular output in the mouse olfactory bulb. *Neuron* **87**: 193-207.
6. Anselmi, F., **Banerjee, A**, and Albeanu, D.F. Patterned photo-stimulation in the brain. (Book Chapter) In: *New Techniques in Systems Neuroscience*, Springer. 2015.
7. Sarkar, B. *, **Banerjee, A.***, Das, A.K., Nag, S., Kaushalya, S.K., Tripathy, U., Shameem, M., Shukla, S., Maiti, S., 2014. Label-free dopamine imaging in live rat brain slices. *ACS Chem Neurosci*. 5:329-34.
8. Sarkar, B., Das, A.K., Arumugam, S., Kaushalya, S.K., **Bandyopadhyay, A.**, Balaji, J., and Maiti, S. 2012. The dynamics of somatic exocytosis in monoaminergic neurons. *Front Physiol*. 3: 41.
9. Nag, S., Sarkar, B., **Bandyopadhyay, A.**, Sahoo, B., Sreenivasan, V.K., Kombrabail, M., Muralidharan, C., and Maiti, S. 2011. Nature of the amyloid-beta monomer and the monomer- oligomer equilibrium. *J Biol Chem*. 286: 13827-13833.
10. Suman, N., **Bandyopadhyay, A.**, Sudipta, M. 2009. Spatial pH-jump measures chemical kinetics in a steady state system. *J. Phys. Chem*. 113: 5269-5272.

* Equal Contribution.

In preparation

1. **Banerjee, A** & Albeanu, D.F. Intensity Invariant Readout of Olfactory Bulb Output is facilitated by divisive normalization by an interneuron circuit.
2. Koh M.*, Anselmi F.*, **Banerjee A.***, Davis M.B. & Albeanu D.F. Axially decoupled DMD-based optical control and multiphoton readout of neuronal circuits.
3. **Banerjee, A** & Long, M A. 2019. Motor cortical population dynamics during natural vocal interactions.

INVITED TALKS

Nencki Institute, Poland, 2020 (Virtual)

Neural control of vocal interactions in a neotropical mice.

Motor club, Columbia University and NIH, 2020 (Virtual)

Neural control of vocal interactions in a neotropical mice.

U.T. Austin, 2020 (Virtual)

Neural control of vocal interactions in a neotropical mice.
Tata Institute of Fundamental Research, Mumbai, 2019.
Neural control of vocal interactions in a neotropical mice.
Gordon Research Seminar on Neuroethology, Vermont, 2019.
Neural control of vocal interactions in a neotropical mice.
Burbach symposium, Cold Spring Harbor Laboratory, NY, 2019.
Cortical control of vocal interactions in a neotropical mice.
Bird Song and Animal Communication Annual Meeting (Millbrook, NY, 2018)
Cortical control of vocal interactions in a neotropical mice.
Simons Society of Fellows Annual Retreat (South Carolina, NY, 2018)
Cortical control of vocal interactions in a neotropical mice.
NYU Annual retreat (Mohonk, NY, 2018)
Cortical control of vocal interactions in a neotropical mice.
Research in Encoding and Decoding of Neuronal Ensembles (AREADNE) meeting (Greece, 2016)
Linear Readout of Concentration Invariant Odor Identity from the Olfactory Bulb Output Populations
Neuronal Circuits meeting (Cold Spring Harbor Laboratory (New York, 2016)
Intensity Invariant Readout of Olfactory Bulb Output is Facilitated by an Interglomerular circuit

PRESENTATIONS/POSTERS

Vocal production meeting. UT Austin, 2019.
Neural Control of Vocal Interactions in a Neotropical Singing Mouse.
Banerjee A, Okobi DE Jr, Frazel, P W., Phelps SM, Long MA.
Society for Neuroscience (SFN, San Diego, 2018)
Cortical control of vocal interactions in a neotropical mice.
Okobi DE Jr*, **Banerjee A***, Matheson AMM, Phelps SM, Long MA.
Sense to Synapse (NY, 2018)
Cortical control of vocal interactions in a neotropical mice.
Banerjee A*, Okobi DE Jr*, Matheson AMM, Phelps SM, Long MA.
Computational and Systems neuroscience (COSYNE Salt Lake City, 2016)
Intensity Invariant Readout of Olfactory Bulb Output is Facilitated by an Interglomerular circuit.
Arkarup Banerjee, Honggoo Chae, Dinu F. Albeanu.
Society for Neuroscience (SFN, Chicago, 2015)
In vivo patterned photo-stimulation and imaging in independent axis planes.
Koh, M.S. *, Anselmi, F. *, **Banerjee A. ***, Davis, M.B., and Albeanu, D.F.
Neuronal Circuits meeting (Cold Spring Harbor Laboratory, New York, 2014) Long-distance inhibition by short axon cells gate the output of the olfactory bulb.
Arkarup Bandyopadhyay*, Fred Marbach*, Francesca Anselmi, Matthew Koh, Martin B. Davis, Hassana K. Oyibo, Priyanka Gupta, Dinu Albeanu.
Computational and Systems neuroscience (COSYNE Salt Lake City, 2014)
Long-distance inhibition by short axon cells gate the output of the olfactory bulb.
Arkarup Bandyopadhyay*, Fred Marbach*, Francesca Anselmi, Matthew Koh, Martin B. Davis, Hassana K. Oyibo, Priyanka Gupta, Dinu Albeanu.
Synapse Meeting (Cold Spring Harbor Laboratory, New York, 2013)
Dual excitation and inhibition in the mouse olfactory bulb by long-distance broadcasting short axon cells.
Arkarup Banerjee, Fred Marbach, Matthew Koh, Martin B. Davis, Priyanka Gupta & Dinu F. Albeanu.
Computational and Systems neuroscience (COSYNE Salt Lake City, 2012)
Short-axon Cells Provide Both Excitatory and Inhibitory Drive to the Mitral/Tufted Cells
Arkarup Bandyopadhyay*, Fred Marbach*, Matthew Koh, Dinu F. Albeanu, Cold Spring Harbor Laboratory.
Fluorescence (TIFR, Mumbai, India, 2009)

Multiphoton imaging of neurotransmitters in live neurons: Strategies for understanding the amyloid-induced neurodegeneration pathway.

Arkarup Bandyopadhyay, Suman Nag, Sudipta Maiti. **Young**

Explorers in Indian Biology (TIFR, Mumbai, India, 2008)

Towards Understanding Intracellular Aggregation Mediated Neurotoxicity

Arkarup Bandyopadhyay, Suman Nag, Sudipta Maiti.

Tata Institute of Fundamental Research-Open Day (TIFR, Mumbai 2008)

Invited talk titled “Ode to the Code(s)”.

Benzer Meet (to commemorate Seymour Benzer’s life in Science), (**TIFR, Mumbai, 2007**).

Talk titled “Phage Genetics: fine structure, topology and beyond.”

* Equal contribution

TEACHING EXPERIENCE

Teaching Assistant – CSHL Imaging Structure and Function in the Nervous System Course (2017-2019)

Teaching Assistant - Transylvanian Experimental Neuroscience Summer School (TENSS, Pike Lake, Romania, 2016)

Organizer - Cellular function and interaction in the nervous system, graduate course (Adelphi University, NY, USA, 2016)

Teaching Assistant - WSBS Optical Methods in Biology (CSHL, 2016)

Organizer - “Neuroscience boot-camp” for 1st year graduate students (CSHL, 2014 and 2015)

Teaching Assistant - Biostatistics (TIFR, 2009, 2010)

Teaching Assistant - Fluorescence Correlation Spectroscopy Workshop (TIFR, 2008)

SCIENCE OUTREACH

Authored an essay titled: How topology *almost* made bacterial replication impossible for the Cold Spring Harbor Student Magazine – Current exchange (CSHL, 2015)

Co-organizer of Graduate Student Symposium (CSHL, 2014)

Co-edited inaugural student magazine of TIFR “IMAGINE” (TIFR, Mumbai, 2010)

Conducted lab demonstrations at the Cold Spring Harbor Laboratory Open day (CSHL, 2015)

Member of the Tata Institute of Fundamental Research-Science Outreach Committee (TIFR, 2007-2010).

Member of the student organizing committee of the second ASEAN Bioinformatics Workshop (University of Delhi, 2007).

REFERENCES:

1. Michael Long, Associate Professor, NYU Medical Center, NY – 10016. Email: mlong@nyumc.org. Phone number: 212-263-9120.
2. Dinu F. Albeanu, Associate Professor, Cold Spring Harbor Laboratory, NY – 11724. Email: albeanu@cschl.edu. Phone number: 516-367-8822.
3. Anthony M. Zador, Professor, Cold Spring Harbor Laboratory, NY – 11724. Email: zador@cschl.edu. Phone number: 516-367-6950.