

# Prerana Shrestha, Ph.D.

## Curriculum Vitae

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Life Sciences Building  
Department of Neurobiology & Behavior  
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### EDUCATION

2003-2011	The Rockefeller University New York, NY	Ph.D. in Life Sciences
1999-2003	Bates College Lewiston, ME	B.S. in Biological Chemistry <i>Magna cum Laude</i>

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### RESEARCH EXPERIENCE

2021-present	Assistant Professor – Stony Brook University, Stony Brook, NY Department of Neurobiology & Behavior
2014-2020	Postdoctoral Associate - NYU Center for Neural Science, New York, NY Laboratory of Dr. Eric Klann
2011-2013	Postdoctoral Associate - The Rockefeller University, New York, NY Laboratory of Dr. Nathaniel Heintz
2004-2011	Graduate Research Fellow - The Rockefeller University, New York, NY Laboratory of Dr. Nathaniel Heintz
2002-2003	Undergraduate Research Fellow – Harvard Medical School, Boston, MA Laboratory of Dr. John Blenis

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### HONORS & AWARDS

2022	Sloan Research Fellow, Alfred P. Sloan Foundation
2019	Anuradha Rao Memorial Award, Cell Press & Rao family
2018	Tianqiao & Chrissy Chen Travel Fellow, CSHL & Chen Institute
2017-2020	NARSAD Young Investigator, Brain & Behavior Research Foundation (BBRF)
2017	Molecular & Cellular Cognition Society (MCCS) Scholar
2001-2003	Charles A. Dana Scholar, Bates College
2003	College Key of Bates College
1996	Ratna Education Medal, School Leaving Certificate (SLC), Nepal Government

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## RESEARCH FUNDING

Sloan Research Fellowship, Alfred P Sloan Foundation (2022 - 2023)

Startup Funds from Stony Brook Foundation, Stony Brook University (2021 - current)

Travel award for EMBO Workshop on Molecular Neuroscience, NCBI, Bangalore (February 2019)

NARSAD Young Investigator Grant, Brain & Behavior Research Foundation (2017 - 2020)

Travel Award for Junior Scientist Workshop in Neuronal Cell Biology, Janelia Farm, VA (May 2017)

Full Undergraduate Scholarship, Bates College (1999 - 2003)

HHMI Independent Research Grant, Bates College (Summer 2002)

Sigma Xi Grant-in-aid-of-Research, Sigma Xi Scientific Research Society (Summer 2002)

Hoffman Mellon Research Support Grant, Bates College (Summer 2000, 2001)

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## PUBLICATIONS

**Shrestha, P.** & Klann, E. Spatiotemporally-resolved protein synthesis as molecular framework for memory consolidation. Trends in Neurosciences 2022. 45(4): 297-311. doi: 10/1016/j.tins.2022.01.004

**Shrestha, P\***, Shan, Z., Marmacz, M., Zerihoun, A.T., Juan, C-Y., San Agustin Ruiz, K., Pelletier, J., Heintz, N. & Klann, E\*. Amygdala inhibitory neurons as loci for translational control of emotional memories. Nature 2020. 586(7829):407-411. doi: 10.1038/s41586-020-2793-8

\*Corresponding authors

**Shrestha, P\***, **Ayata, P\***, Vidal, P.H., Gastone, A., Heintz, N. & Klann, E. Cell-type-specific drug-inducible protein synthesis inhibition demonstrates that memory consolidation requires rapid neuronal translation. Nature Neuroscience 2020. 23(2):281-292. doi: 10.1038/s41593-019-0568-z

\*Equal contribution

**Shrestha, P.** & Klann, E. Alzheimer's disease: Lost memories found. Nature 2016. Mar 24; 531(7595):450-1

**Shrestha, P.**, Mousa, A. & Heintz, N. Layer 2/3 pyramidal cells in the medial prefrontal cortex moderate stress induced depressive behaviors. eLife 2015; e08752

*Reviewed by:* Park CS, Yang XW. Neuropsychiatric disorders: probing stress & depression circuits with a disease gene. eLife 2015; e10829

Doyle, J.P., Dougherty, J.D., Heiman, M., Schmidt, E.F., Stevens, T.R., Ma, G., Bupp, S., **Shrestha, P.**, Shah, R.D., Doughty, M.L., Gong, S., Greengard, P. & Heintz, N. Application of a translational profiling approach for the comparative analysis of CNS cell types. Cell. 2008 Nov 14; 135 (4): 749-62.

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## MANUSCRIPTS IN PREPARATION

**Shrestha, P\***, Juan, C-Y., Oliviera, M.M., Ruiz, K.S.A., Marmacz, M., Triano-Del Rio, R., Hou, M., Singh, M., Chime, A., Fraser, A., Farb, C., Pena, N., Ledoux, J. & Klann E\*. Sex-specific susceptibility to social isolation stress in a mouse model of Tuberous Sclerosis Complex.

\*Corresponding authors

**Shrestha, P.\***, Triana-Del Rio R\*, Cain, C., Oliviera, M.M., Hou, M., Ferber, C., Grinevich, V., Froemke, R., Young, L., Ledoux, J., Stoop, R., & Klann, E. Oxytocin enables the learning of threat discrimination & defensive responses through a specific cellular pathway in the central amygdala. \*Equal contribution

Triano-Del Rio, R., Guardado, J., Ranade, S., Ledoux, J., Klann, E. & **Shrestha, P.** Oxytocin signaling in emotional & social networks regulates the acquisition of threat/stress response choice. *Frontiers in Molecular Neuroscience*.

Ruiz, KS-A., Fraser, A., Chu, S., Ranade, S., Zerihoun, A.T., Oliviera, M.M., Klann, E., & **Shrestha, P.** Temporal evolution of prefrontal protein synthesis during remote memory consolidation.

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## INVITED TALKS

- Shrestha, P. Neuronal protein synthesis during consolidation of long-term emotional memories. *Horizons in Molecular Biology*. Max Planck Institute for Molecular Biology. September, 2022
- Shrestha, P. Spatiotemporally resolved protein synthesis as a molecular framework for memory consolidation. *Nepali Academics in America (NACA)*. April 2022
- Shrestha, P. Translation modulatory pathways in learned emotional behaviors. *IBRO-APRC School on Understanding Neuroscience & the Spectrum of Neurogenetic Disorders*. IBRO – August, 2021
- Shrestha, P. Protein synthesis regulation during consolidation of long-term emotional memories. *Kavli Neural Systems mini-symposium: RNA regulation & brain function*. The Rockefeller University – October, 2020
- Shrestha, P. Using chemogenetic strategies to understand amygdalar protein synthesis regulation during long term memory consolidation. *University of California at Berkeley* – February, 2020
- Shrestha, P. Investigating long-term emotional memories with chemogenetic protein synthesis inhibition in the amygdala. *Icahn School of Medicine at Mount Sinai, New York, NY* - January 2020
- Shrestha, P. Investigating long-term emotional memories with chemogenetic protein synthesis inhibition in the amygdala. *NYU Center for Neural Science Retreat, Skytop Lodge, PA* – November, 2019
- Shrestha, P. A protein synthesis code for differential threat memory trace in central amygdala neurons. *SfN Nanosymposium: Molecular mechanisms of memory formation & reconsolidation*. Chicago – October, 2019
- Shrestha, P. Disrupting memory consolidation by blocking protein synthesis with a chemogenetic strategy. *Junior Scientist Workshop in Neuronal Cell Biology, Janelia Farm* – May, 2017
- Shrestha, P. Disrupting memory consolidation by blocking protein synthesis with a chemogenetic strategy. *Annual Neuroscience Retreat, NYU Neuroscience Institute, Mohonk Mountain, NY* – April, 2017
- Shrestha, P. mTORC1 in the central Oxytocin system & social behavior. *NYU Langone Medical Center* – January, 2017
- Shrestha, P. Disrupting memory consolidation by blocking protein synthesis with a chemogenetic strategy. *Molecular & Cellular Cognition Society Annual Meeting* – November, 2016
- Shrestha, P. Role of a novel cell type in mouse neocortex in stress-induced depression. *Central Department of Biotechnology, Tribhuvan University, Kathmandu, Nepal* – December, 2014

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## SELECTED CONFERENCE ABSTRACTS

- Shrestha, P., Juan C-Y., Oliviera, M.M., Ruiz, K.S.A., Singh, M., Triano-Del Rio, R., Hou, M., Farb, C., Boender, A., Marmacz, M., Chime, A., Pena, N., Chong, A., Fraser, A., Young, L., Ledoux, J. & Klann E. Stress induced emotional dysregulation in a mouse model of Tuberous Sclerosis complex. *Society for Neuroscience virtual meeting* - 2021
- Triana-Del Rio R, Andrade E, Yaragudri V, Branigan L, Farb C, da Cruz J, Hou M, Piper W, Oyarzun JP, Cunha C, Li Y, Shrestha, P., Alberini C, Constantinople C, Klann E, Sears R, Cain C, & Ledoux J. Cannabinoid signals modulate the amygdalostriatal circuit for learning proactive threat-coping. *Society for Neuroscience Global Connectome Meeting (virtual)* - 2021
- Shrestha, P., Shan Z, Marmacz M, Zerihoun AT, Juan CJ, San Agustin Ruiz K, Herrero-Vidal PM, Pelletier J, Heintz N, & Klann E. *De novo* translation in distinct centrolateral amygdala interneurons is required for long-term emotional memories. *Pavlovian Society Annual Meeting, Vancouver, Canada* - 2019
- Shrestha, P., Ayata P, Gastone A, Herrero PM, Heintz N, Klann E. Chemogenetic evidence for the requirement of protein synthesis during long term memory consolidation. *Brain & Behavior: Order & Disorder in the Nervous System*. Cold Spring Harbor Symposium, Cold Spring Harbor, NY - 2018

- Shrestha, P., Ayata P, Gastone A, Herrero PM, Heintz N, Klann E. Chemogenetic interrogation of cell type specific translation in threat memories – Keystone meeting: State of the Brain, Keystone, CO - 2018
- Shrestha, P., Ayata P, Gastone A, Vidal PMH, Heintz N, Klann E. Disrupting memory consolidation by targeting protein synthesis with an inducible pharmacogenetic strategy – Frontiers in Memory Research, La Pietra, Florence, Italy - 2016
- Shrestha, P., Ayata P, Heintz N, Klann E. Inducible pharmacogenetic inhibition of protein synthesis in lateral amygdala. Gordon Research Conference on Amygdala in Health & Disease, Stonehill college, Easton, MA - 2015
- Shrestha, P., Heintz N. Cortical deletion of *Wfs1* precipitates stress induced depression. Cell Symposia – The Networked Brain - 2013
- Shrestha, P., Rimberg J, Schmidt EF, Gong S, Heintz N. Comparative translational profiling for genetic cohorts of pyramidal cell types in murine frontal cerebral cortex. EMBL Symposium: Structure & Function of Neural Circuits, Heidelberg - 2010.
- Shrestha, P., Schmidt EF, Skabardonis G, Meyers E, Gong S, Heintz N. Comparative translational profiling for genetic cohorts of pyramidal cells types in murine frontal cerebral cortex. Society for Neuroscience meeting, Chicago - 2009
- Shrestha, P., Gong S, Heintz N. Molecular profile of functional cohort of projection neurons in the mouse frontal cortex. Society for Neuroscience Meeting, San Diego - 2007

### PEER REVIEW SERVICE (JOURNALS)

Ad hoc: Neuron, Journal of Neuroscience, Neuropsychopharmacology, Molecular Psychiatry, Frontiers  
With previous supervisors: Nature, Neuron, Nature Neuroscience, PNAS

### EDITORIAL BOARD

Reviewing Editor: Frontiers in Molecular Neuroscience (2021 – present)

### SCIENCE INTERVIEWS & OUTREACH

- Safalta ani sangharsa (Success and struggle). Hamro Patro Podcast. February 17<sup>th</sup>, 2022
- Gained in Translation. Top of the NOGN Podcast. June 20<sup>th</sup>, 2020.
- Stress & Depression. The Naked Scientists Podcast. October 2<sup>nd</sup>, 2015.
- Recovering Lost Memories. BBC Inside Science. March 17<sup>th</sup>, 2016.
- Selected as a high-profile neuroscientist on Twitter. Huffington Post, June 11<sup>th</sup>, 2012

### SELECT ATTENDED SCIENTIFIC MEETINGS

Society for Neuroscience Annual Meeting, virtual – October, 2021  
 Memory: It's about time (UC Irvine; virtual) – May, 2021  
 Innovators in Neuroscience: From Molecules to Mind (Mt Sinai; virtual) – May, 2021  
 American College of Neuropsychopharmacology Annual Meeting (virtual) – December, 2020  
 Molecular & Cellular Cognition Society Annual Meeting (virtual) – October, 2020  
 EMBO Workshop on Molecular neuroscience: from genes to circuits in health & disease – Bangalore, India – February, 2019  
 Society for Neuroscience Annual Meeting, San Diego, CA – November, 2018  
 Molecular & Cellular Cognition Society Annual Meeting, Washington DC – November, 2018  
 Keystone meeting - State of the Brain: Genetic dissection of brain circuits & behavior in health & disease, Keystone, CO – January, 2018  
 Molecular & Cellular Cognition Society Annual Meeting, San Diego, CA – November, 2016  
 Frontiers in Memory Research, La Pietra, Florence, Italy – June, 2016  
 Molecular & Cellular Cognition Society Annual Meeting, Chicago, IL – October, 2015  
 Society for Neuroscience Annual Meeting, Chicago, IL – October, 2015  
 Gordon Research Conference on Amygdala in Health & Disease, MA – August, 2015

## ATTENDED WORKSHOPS

Miniscope pre-SfN Workshop, Washington DC – November 2017  
Junior Scientist Workshop in Neuronal Cell Biology, Janelia Farm – May 2017

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## TEACHING EXPERIENCE

### Mentoring & Supervising:

- Keith Yeung, BS student, Stony Brook University – April 2022 - present
- Michelle Surdyn, MS student, Biophysics & Physiology, Stony Brook University – February 2022 - present
- Stephanie Chu, BS student, Stony Brook University – March 2021 – present
- Karen San Agustin Ruiz, BS student, Dean's Undergraduate Research Fellowship (DURF), BP-ENDURE program, Max & Cecil Chesin Research Scholar, Goldwater Fellow: November 2018 - present
- Houda Khaled, PhD student, PhD rotation: June 2020 – December 2020
- Mrinalini Singh, BS/MS student, NYU Tandon School of Engineering: February 2020 – December 2020
- Maya Hopkins, PhD student, PhD rotation: January 2020 – June 2020
- Alicia Nnenna Chima, BS student, BP-ENDURE program: September 2019 – May 2020
- Rudi T D'Hooge, Faculty, KU Leuven, Sabbatical: September 2017 – January 2018
- Vinayak Rayannavar, PhD student, PhD Rotation: January 2015- April 2015
- Pedro Manuel Herrero Vidal, PhD student, PhD Rotation: September 2017 – January 2018
- WenXi Zhou, PhD student, PhD rotation: September 2017 – January 2018
- Alex Chong, BS student, Dean's Undergraduate Research Fellowship (DURF): May 2017 – May 2018
- Laura McCulloch, MD-PhD student, PhD Rotation: August 2015
- Alexandra Gastone, BS student, Dean's Undergraduate Research Fellowship (DURF) & Independent Study: May 2015 – May 2016
- Ellery Jones, BS student, Harvard University; NYU Summer Undergraduate Research Program (SURP) Fellowship: May 2016 – August 2016
- Nicolai Pena, BS student, University of Arizona; NYU Summer Undergraduate Research Program (SURP)/ Simons Foundation Autism Research Initiative (SFARI) Fellowship: May 2018 – August 2018

### Supervised following MS students' theses

- Adam Zerihoun, MS student, MS thesis: May 2018 – May 2019  
*Role of cap-dependent protein synthesis in mPFC neurons in systems consolidation of long-term memory*
- Chien-Yu Juan, MS student, MS thesis: August 2018 – May 2019  
*Behavior characterization & rescue of mutant mice with reduced Tsc2 gene dosage in Oxytocin receptor expressing neurons*
- Zhe Shan, MS student, MS thesis: March 2017 – May 2018  
*Characterization of mTORC1 signaling in the amygdala during discriminative fear memory consolidation*
- Pedro Herrero-Vidal, La Caixa Fellow/ MS student, MS thesis: September 2015 – May 2017  
*Activation of mammalian target of rapamycin (mTOR) signaling in Parvalbumin positive interneurons of the amygdala after fear conditioning*

### Teaching:

Graduate courses -

Advanced Neuroscience (BNB565): Instructor for Lecture: Local translation & axon pathfinding – Fall 2021

Systems Neuroscience (BNB562): Instructor for Lecture: Limbic System – Spring 2022

Undergraduate courses -

Teaching Assistant & Technical Writing Assistant. Biology Department, Bates College, ME – 2002-2003

Assisted the Biology faculty in teaching laboratory techniques to the students for core Biology courses. Instructed students about the scientific format of writing project reports & evaluated their reports for critical peer review.

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## SHRESTHA LAB MEMBERS

Sayali Ranade, Ph.D.: Postdoctoral Associate, September 2021 – present

Alexandra Fraser, B.S.: Lab Manager & Research Support Specialist, March 2021 – present  
Stephanie Chu: Undergraduate research assistant, March 2021 – present  
Karen San-Agustin Ruiz: Undergraduate researcher, January 2021 – present

Michelle Surdyn, B.S.: Graduate student, February 2022 - present  
Keith Yeung: Undergraduate research assistant, April 2022 – present

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## **COMMUNITY SERVICE & LEADERSHIP**

- Member, Turner Fellowship Advisory Committee, Stony Brook University – 2022
- Panelist, Leon Levy Symposium comprising new PIs, NYU (virtual) - 2021
- Panelist, CoNNexINS panel showcasing former & current NYU postdocs, NYU (virtual)- 2021
- Faculty Search Committee, Stony Brook University Department of Neurobiology & Behavior – 2021-2022
- Director, Behavior Core, Stony Brook University Department of Neurobiology & Behavior – 2021 – present
- Session chair, Molecular & Cellular Cognition Society Annual Meeting - 2018
- Founding Executive Committee Member. International Nepali Biomedical Society (INBS) – 2006 - present
- Program Director, Help Nepal Network (HeNN) USA. [www.helpnepal.net](http://www.helpnepal.net) - 2005 - present
- Editorial Team & Writer. Natural Selections, A Newsletter of the Rockefeller University, New York. <http://selections.rockefeller.edu> - 2007 – 2008

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## **MEMBERSHIP**

- Early Career Reviewer, Center for Scientific Review (CSR) at NIH. 2022 - present
- Full Member. Sigma Xi Scientific Research Society. 2021 - present
- Member. Women in Learning. 2019 - present
- Member. Pavlovian Society. 2017 – present
- Member. Society for Behavior Neuroendocrinology. 2021 - present
- Member. Society for Neuroscience. 2005 - present
- Member. New York Academy of Sciences. 2005 - present