

## Sourav Banerjee, Ph.D.

**Contact Address:** National Brain Research Center

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### **Academic Qualification:**

**M. Sc.** Biotechnology , Madurai Kamaraj University, Madurai. Year: 1997 - 1999

**Ph.D.** Molecular Biology & Genetics, Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore. Year: 2000 - 2003

**Postdoctoral Fellow:** Molecular, Cellular & Developmental Biology, Yale University, USA.  
Year 2004 – 2006.

Research Interest: Developmental Neurobiology

**Postdoctoral Fellow:** Molecular, Cellular & Developmental Biology, University of California, Santa Barabara, USA. Year 2006 – 20012.

**Research Interest:** Developmental Neurobiology, Neuronal Plasticity.

### **Professional Experience:**

Scientist V (Additional Professor) National Brain Research Center 5/17 – Till date

Scientist IV (Associate Professor) National Brain Research Center 5/12 – 5/17

**Research Interest:** Synapse Development, Synaptic Plasticity, Learning and Memory, Adult Neurogenesis, Non-coding RNA

### **Publication:**

1. Homeostatic scaling is driven by a translation-dependent degradation axis that recruits miRISC remodeling. Balakumar, S\*, Samaddar, S\*, Mylavarapu, S.V.S., Clement, J.P. and **Banerjee, S.** (2021) **PLOS Biology**. doi: PLOS Biology 10.1371/journal.pbio.3001432.

\* Equal contribution

### **Selected for Editor's choice with a short review as a "Primer"**

"It takes two to tango: Concerted protein translation and degradation necessary for synaptic scaling" by Ana Luisa Carvalho **PLOS Biology** 10.1371/journal.pbio.3001448.

2. Nucleolin regulates 14-3-3 $\zeta$  mRNA and promotes cofilin phosphorylation to induce tunneling nanotube formation. Dagar, S., Pushpa, K., Pathak, D., Samaddar, S., Saxena, A., **Banerjee S.**, Mylavarapu, S.V.S. (2021) **FASEB J.** 2021 Jan;35(1):e21199. doi: 10.1096/fj.202001152R.

3. Kumari, P., Balakumar, S., and **Banerjee, S.** (2017) Modulation of hippocampal synapse maturation by activity-regulated E3 ligase *via* non-canonical pathway. **Neuroscience**, 19;364:226-241. doi: 10.1016/j.neuroscience.2017.08.057

**Highlighted by Angelman Syndrome News**

4. Kim, J.W., Seung, H, Kim, K.C., Gonzales, E.L. Oh, H.A., Yang, S.M., Ko, M.J., Han, S.H., **Banerjee, S.**, Shin, C.Y. (2017) Agmatine rescues autistic behaviors in the valproic acid-induced animal model of autism. **Neuropharmacology** 113(Pt A):71-81. doi: 10.1016/j.neuropharm.2016.09.014. Epub 2016 Sep 14.

5. Jammalamadaka, A., **Banerjee, S.**, Manjunath, B.S., and Kosik, K.S. (2013) Statistical analysis of dendritic spine distributions in rat hippocampal cultures. **BMC Bioinformatics**, Oct 2;14:287. doi: 10.1186/1471-2105-14-287.

6. Lee, E. J\*, **Banerjee, S\***, Zhou, H\*, Jammalamadaka, A., Arcila, M., Manjunath, B.S., and Kosik, K.S. (2011). Identification of piRNAs in the central nervous system. **RNA**, 17, 1090-9. \*Equal Contribution

**Highlighted on Cover Page**

7. **Banerjee, S.**, Neveu, P., and Kosik, K. S. (2009) A coordinated local translation control point at the synapse involving relief from silencing and MOV10 degradation. **Neuron**, 64, 871-884.

**Highlighted Article in Neuron. Commentaries in BBC , Faculty of 1000 Biology and Science Daily.**

8. **Banerjee, S.**, Kumar, P. B. R., and Kundu, T.K.(2004) Transcriptional coactivator PC4 activates p53 function. **Mol. Cell. Biol.**, 24, 2052-2062.

9. **Banerjee, S.**, and Kundu, T.K. (2003) The acidic C-terminal domain and A-box of HMGB-1 regulates p53-mediated transcription. **Nucleic Acids Research.**, 31, 3236-3247.

10. Kumar, P.B.R., Swaminathan, V., **Banerjee, S.**, and Kundu, T.K. (2001) p300-mediated acetylation of human transcriptional coactivator PC4 is inhibited by phosphorylation. **J. Biol. Chem.**, 276, 16804 – 16809.

#### Reviews:

1. Samaddar, S., and **Banerjee, S.** (2021) Far from the nuclear crowd: Cytoplasmic lncRNA and their implications in synaptic plasticity and memory. **Neurobiology of Learning and Memory**. 2021 Sep 20;185:107522. doi: 10.1016/j.nlm.2021.107522.

2. On the functional relevance of spatiotemporally-specific patterns of experience-dependent long noncoding RNA expression in the brain. (2021) Liao, W.S., Samaddar, S., **Banerjee, S.**, Bredy, T.W. **RNA Biology**. 2021 Jan 4:1-12. doi: 10.1080/15476286.2020.1868165.

3. Shi, Y., Zhao, X., Hsieh, J., Wichterle, H., Impey, S., **Banerjee, S.**, Neveu, P., and Kosik, K. S. (2010) microRNA regulation of neural stem cells and neurogenesis. **Journal of Neuroscience**, 30, 14931-14936.

**Guest Editor** for Special Issue on “RNA and Memory” Neurobiology of Learning and Memory.

**Review Editor:** Frontiers in Molecular Neuroscience

### **Awards**

Global Partnership Research Award, University of Iowa, USA  
Ramalingaswami Fellowship, Department of Biotechnology, Govt. of India.  
Anderson Fellowship for Postdoctoral Research, Yale University, USA.

### **Meeting / Symposium Organized**

SFN Minisymposium 2010  
IBRC-APRC NBRC School 2016  
India | EMBO Symposium 2018  
Molecular Motors, Transport and Trafficking 2019

### **Selected Invited Talk:**

Annual Meeting of Indian Academy of Neurosciences, Allahabad, 2013.  
DST-SERB School, IISER Pune, 2014  
IBRO-APRC School, Punjab University, Chandigarh 2014  
IBRO-APRC School, Banaras Hindu University 2015  
Konkuk University, South Korea, 2015  
Kyoto University, Japan, 2016  
APSN annual Meeting Kuala Lumpur, Malaysia, 2016  
MCCS Asia Meeting Singapore, 2017  
EMBO Meeting Barga, Italy 2017  
Annual Meeting of Indian Society for Neurochemistry, Varanasi, 2017  
Annual Meeting of Indian Academy of Neurosciences, Cuttack, 2017  
EMBO Meeting, Manesar, 2018  
IBRO-APRC School, AIIMS, New Delhi 2018  
Annual Meeting of Indian Academy of Neurosciences, Varanasi, 2018  
Annual Meeting of Japan Society of Neuroscience, Nigata, 2019  
Annual Meeting of Indian Academy of Neurosciences, New Delhi 2019  
Synapse and System Plasticity of Learning and Memory, Kyoto University (Virtual) 2020

### **Poster Presentation:**

1. Neuronal Wiring Meeting at Cold Spring Harbor Laboratory, USA, 2015
2. Molecular Mechanisms in the Synapse Meeting, HHMI Janelia Farm, USA, 2016

## **Research Grant:**

### **1. “CRISPRi system: A toolbox to investigate novel regulatory mechanisms of synapse formation by long non-coding RNAs”**

Department of Biotechnology, BT/PR14071/GET/119/36/2015

This proposal examined role of long non-coding RNAs in synapse formation by CRISPR – mediated manipulation of long non-coding RNA function.

### **2. “Regulation of energy metabolism by miRNA-mediated control of neurogenesis”**

Department of Biotechnology, BT/PR8793/AGR/36/749/2013

This proposal investigated the mechanism of diet induced adult neurogenesis and functional integration of newborn neurons in hypothalamic circuitry to regulate body weight control.

### **3. “Regulation of fear memory formation by long non-coding RNAs and RNA binding proteins: Mechanisms of combinatorial control”**

Science & Engineering Research Board CRG/2018/004425

The research programme investigates the mechanism of fear memory formation by long non-coding RNA – RNA Binding protein interaction.

### **4. CRISPR-Cas13 -mediated engineering of endogenous long non-coding RNAs for fluorescent tagging to study RNA dynamics.**

Department of Biotechnology, BT/PR31811/GET/119/285/2019

The research programme is developing CRISPR-Cas13 based fluorescent labelling tool to study the trafficking of endogenous long non-coding RNA and analyzed how trafficking of long non-coding RNA influence synaptic activities.

## **Teaching and Training:**

**Course:** Developmental Neurobiology  
Laboratory course in Molecular & Cellular Neuroscience

## **Training:**

Ph.D awarded: 1  
M.Sc awarded: 4  
Postdoctoral Fellow: 2

Ph.D students: 6

## **Administrative experience:**

Officiating Registrar and Member of NBRC Executive Management Committee