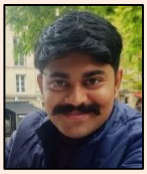

Avishek Roy

Post Doc

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Nationality: Indian; Date/ Place of birth: 05.10.1992 Birbhum, West bengal, India
Address: 59, Rue Kleber, Bordeaux, 33800, France; Hobbies: Cooking, poetry, painting.

I'm physiologist by training and experimental neuroscientist by experience. My aim is to gain knowledge on the synaptic physiological mechanisms of neural circuit and behavior.

SKILLS:

★★★★★ Animal handling and behavior; ★★★★★ Stereotaxic manipulation; ★★★★★ Histology and immunostaining; ★★★★★ Transmission electron microscopy; ★★★☆☆ Electroporation; ★★★★☆ Electrophysiology; ★★★★★ Organotypic slice culture; ★★★★★ Biochemical tests; ★★★☆☆ NMR spectroscopy; ★★★★☆ Python; ★★★★☆ PowerBI; ★★★☆☆ IgorPro; ★★★★☆ Statistics; ★★★★☆ Writing

WORK EXPERIENCE:

April 2022 – Present Postdoctoral researcher at University of Bordeaux, Interdisciplinary Institute for Neuroscience (UMR 5297), Bordeaux	I'm working in IINS (UMR 5297) in team Synapses and neural circuits in behaviour with Dr Christophe Mulle in a ANR project from Centre national de la recherche scientifique (CNRS) with acronym 'GenSynAlz'. My role here as a postdoctoral fellow is to develop tools to test the Alzheimer's risk genes in organotypic as well as acute slices to link morpho-functional relationship using transfection, microscopic and electrophysiological tools. This project is also collaborated with GAWAS expert Jean Charles Lambert from University of Lille and his team.
April 2019 – April 2022 Senior Research Fellow at Indian Council for Medical Research (ICMR), New Delhi	Involved into a project no. 45/5/2019-PHY/BMS where the aim was to understand the electrophysiological correlates in terms of miniature and LTP related changes in hippocampal circuitry of i.c.v. sterptozotocin injected animals and after whole-body magnetic field stimulation to low frequency and intensity (50Hz; 17.96uT).
August 2015 – March 2022	Worked on a project understanding the role of whole-body electro-magnetic stimulation in i.c.v. streptozotocin injected rat model of Alzheimer's disease. In the mean-time I was involved into few more

PhD Scholar at All India Institute for Medical Sciences, New Delhi

exciting projects namely, early-life trauma and violent behavior seen in maternal separation in mouse. Two of them are related to the role of sleep-wakefulness and its neuronal and neuro-muscular component. Last one was understanding the micro-structural changes seen in network disturbances in lithium-pilocarpine model of status elpilepticus.

EDUCATION:

July 2010 – August 2013
University of Calcutta, Kolkata
Bachelors of Science

Perused bachelor's degree in human physiology (major/ honors) from SurendraNath college. Here I came across experimental, biochemical and histological physiology with few molecular approaches to understand protein isolation through paper chromatography.

September 2013 – August 2015
University of Calcutta, Kolkata
Masters in Science

I have completed master's in science in human physiology from University of Calcutta Rajabajar Science college with specialization in neurophysiology. Here I have been trained in performing behavioral, stereotaxic manipulation, histological examination in brain sections and few biochemical experiments by my masters supervisor Prof. Tushar Kanti Ghosh.

August 2015 – March 2022
All India Institute of Medical Sciences, New Delhi Ph.D.

Did PhD from Department of Physiology with Dr Suman Jain and strengthen my skills in neurophysiology.

MEMBERSHIPS:

life member, scientific societies, 2015 – Present

Electron Microscopy Society of India (Id. LM1507),
Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (Id.100018406521),
IBRO, FENS,
Project Encephalon,
Royal Microscopy Society (RMS13651),
European Brain and Behaviour Society (20.1074);
British Geriatrics Society (C, 132382)

JOURNAL ROLES:

Ad-hoc reviewer, journal, October 2022 – Present

Neurochemical Research;
Journal of Chemical Neuroanatomy;
International Journal of General Medicine

PUBLICATIONS:

Abstracts:

Roy A, Jain S, Iyenger S, Banerjee J. Mnemonic effect of chronic low-intensity electromagnetic field stimulation by preserving synaptic plasticity of place cells and through attenuation of DNA damage in intracerebroventricular streptozotocin injected rat model of Alzheimer's disease. Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation. 2021 Nov 1;14(6).

Roy A, Nag TC, Gupta YK, Jain S. Extremely low intensity magnetic field effectively improves cognitive impairment in intracerebroventricular streptozotocin animal model sparing septo-hippocampal cholinergic pathway and CAMKII. Alzheimer's & Dementia. 2022 Feb 1;17.

Roy A, Sharma B, Banerjee J, Iyenger S, Jain S. Dual role of low frequency magnetic field on neuroinflammation induced dendritic trimming and memory impairment on rat model of sporadic Alzheimer's disease. The FASEB Journal. 2022 May 13;36.

Sharma B, **Roy A**, Singh A, Tripathi M, Banerjee J, Netam R, et al. Total sleep deprivation leads to changes in neuromuscular junction of soleus muscle in male wistar rats. Neuromuscular Disorders. 2022 Oct;32:S85.

Sharma B, **Roy A**, Banerjee J, Deepak KK, Nag T, Neetam R, et al. Sleep deprivation induces aging like changes in antigravity muscles of young adult male wistar rats. Neuromuscular Disorders. 2022 Oct;32:S78.

Roy A, Sharma B, Nag TC, Gupta YK, Jain S. Non-invasive brain stimulation causes anxiolytic effect in intracerebroventricular streptozotocin injected rats through prevention of serotonergic fibres in dorsal hippocampus. Alzheimer's & Dementia. 18. DOI: 10.1002/alz.068663

Sharma B, **Roy A**, Sharma MC, Banerjee J, Netam R, Nag T, et al. Sleep Deprivation Induces Ageing-like Changes in Antigravity Muscles of Young Adult Male Wistar Rats. Age and Ageing. 2023 Jan 16;52(Supplement_1). DOI: 10.1016/j.nmd.2022.07.154

Roy A, Sharma S, Sharma B, Nag T, Katyal J, Gupta YK, et al. Morpho-functional Evaluation of 3mg/kg Icv-stz Rat Showed Sporadic Alzheimer's like Pathology with Progressive Dementia. Age and Ageing. 2023 Jan 16;52(Supplement_1). DOI: 10.1093/ageing/afac322.038

Roy A, Kumar A, Kakkadi V, Nag TC, Katyal J, Gupta YK, et al. rTMS Treatment Improved Cognitive Dysfunction through Adult Neurogenesis in Icv-stz Rat Model of Sporadic Alzheimer's Disease. Age and Ageing. 2023 Jan 16;52(Supplement_1). DOI: 10.1093/ageing/afac322.037

Roy A, Sharma B, Iyenger S, Gupta YK, Jain S, Banerjee J. Dual Role of Low Frequency Magnetic Field on Neuroinflammation Induced Dendritic Trimming And Memory Impairment on Rat Model of Sporadic Alzheimer's Disease. Alzheimer's & Dementia. 2023 Jun 16;19. DOI: 10.1002/alz.061210

Sharma B, **Roy A**, Vishwakarma LC, Neetam R, Nag TC, Akhtar N, et al. Total sleep deprivation leads to changes in neuromuscular junction of soleus muscle in male Wistar rats. Sleep Medicine. 2022 Dec;100:S27.

Methods:

Roy A., Sharma B. A single guide to impregnate samples with Golgi-Cox solution within 24hr and represent results with a set of algorithm. protocols.io. 2023 Apr 12; DOI: 10.17504/protocols.io.3byl4jdrolo5/v1

Preprints:

Rawat RS, Bhambri A, Pal M, **Roy A**, Jain S, Pillai B, et al. Early life trauma leads to escalated aggressive behavior and its inheritance by impairing thyroid hormone availability in brain. Cold Spring Harbor Laboratory; 2021 Jul. Available from: http://dx.doi.org/10.1101/2021.07.05.448713

Roy A[1], Sharma S, Nag TC, Katyal J, Gupta YK, Jain S. Cognitive dysfunction and anxiety resulting from synaptic downscaling, hippocampal atrophy and ventricular enlargement with intracerebroventricular streptozotocin injection in male Wistar rats. Cold Spring Harbor Laboratory; 2022 Apr. Available from: http://dx.doi.org/10.1101/2022.04.04.486747

Sharma B, **Roy A**, Sengupta T, Vishwakarma LC, Singh A, Netam R, et al. Acute sleep deprivation induces synaptic remodeling at the soleus muscle neuromuscular junction in rats. Cold Spring Harbor Laboratory; 2022 Jun. Available from: http://dx.doi.org/10.1101/2022.06.12.495825

Bhatnaagar A, Deepak KK, Roy A, Sharma B, **Roy A**, Singh A, et al. Effect of 15 days hindlimb unloading on baroreflex sensitivity, Hear rate variability and Carotid artery structure in rats. Cold Spring Harbor Laboratory; 2022 Sep. Available from: http://dx.doi.org/10.1101/2022.09.02.506352

Original research articles:

Sil S, Ghosh T, Gupta P, Ghosh R, Kabir SN, **Roy A.** Dual Role of Vitamin C on the Neuroinflammation Mediated Neurodegeneration and Memory Impairments in Colchicine Induced Rat Model of Alzheimer Disease. J Mol Neurosci. 2016 Dec;60(4):421-435. doi: 10.1007/s12031-016-0817-5. Epub 2016 Sep 24. PMID: 27665568.

Somanath S, Sharma B, Puskar P, **Roy A**, Akhtar N, Mallick HN. The Wake Promoting Role of the Mediodorsal Thalamic Nuclei in Rat. Sleep and Vigilance. 2021 Nov 22;6(1):139–43. DOI: 10.1007/s41782-021-00184-y

Roy A, Sharma S, Nag TC, Katyal J, Gupta YK, Jain S. Cognitive Dysfunction and Anxiety Resulting from Synaptic Downscaling, Hippocampal Atrophy, and Ventricular Enlargement with Intracerebroventricular Streptozotocin Injection in Male Wistar Rats. Neurotoxicity Research. 2022 Sep 7;40(6):2179–202. DOI: 10.1007/s12640-022-00563-x

Sharma B, **Roy A**[2], Sengupta T, Vishwakarma LC, Singh A, Netam R, et al. Acute sleep deprivation induces synaptic remodeling at the soleus muscle neuromuscular junction in rats. Sleep. 2022 Sep 21;46(8). DOI: 10.1093/sleep/zsac229

[1] Corresponding author
[2] Joint first author

Rawat RS, Bhambri A, Pal M, **Roy A**, Jain S, Pillai B, et al. Early life stressful experiences escalate aggressive behavior in adulthood via changes in transthyretin expression and function. eLife Sciences Publications, Ltd. 2022. DOI: 10.7554/eLife.77968

Dubey V, **Roy A**, Dixit AB, Tripathi M, Pandey S, Jain S, et al. Dendritic reorganization in the hippocampus, anterior temporal lobe, and frontal neocortex of lithium-pilocarpine induced Status Epilepticus (SE). Journal of Chemical Neuroanatomy. 2023 Nov;133:102329. DOI: 10.1016/j.jchemneu.2023.102329

Manuscripts submitted/ in preparation:

Chittora R, **Roy A**, Pandey S, Kocchar KP, Jain S. Multifactorial effects of short duration early exposure low intensity magnetic field stimulation in Streptozotocin induced Alzheimer's disease rat model *(submitted to Journal of Alzheimer's disease)*

Gupta A, **Roy A**. Comprehensive review on culprits of neurodegeneration in Alzheimer's disease: Bench to bedside impression *(submitted to Current Journal of Neurology)*

Coulon A, Rabiller F, **Roy A**[3], Siedlecki-Wullich D, Mendes T, Ehrardt A, Farias ARM, Najdek C, Lannette-Weimann N, Gelle C, Freire A, Lambert E, Ayral AM, Demiautte F, Deforges S, Costa M, Kilinc D, Mulle C, Chapuis J, Dumont J, Lambert JC. The Alzheimer genetic risk factor PLCG2 impacts on synaptic function and Alzheimer's related pathophysiological hallmarks *(in preparation)*

Roy A[4], Sharma B. Sleep and wakefulness regulating synaptic dynamics of brain and muscle *(in preparation)*

[3] Co-third author
[4] Corresponding author