

ARKADEB DUTTA (Ph.D.)

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Academic Qualification:

<i>Degree</i>	<i>Institute/University</i>	<i>Year</i>
PhD (Physiology)	DIPAS, DRDO, Delhi	2009
M.Sc. (Physiology)	University of Calcutta	2001
B.Sc.(Physiology Hons.)	University of Calcutta	1999

Postdoctoral Positions:

	<i>Tenure</i>
University of Freiburg, Germany	2017-2019
Israel Institute of Technology, Israel	2012-2016
National Brain Research Center, India	2009-2012

Research Experience:

Earlier research in my postdoctoral tenures were broadly on the aspects of perception and cognition mainly looking into the underlying neuronal correlates of these processes in cortical and subcortical brain regions using *in vivo* extracellular single/ multiunit recording, juxtacellular technique and functional MRI.

In mice model, I studied the activities of different subtypes of inhibitory interneurons in the dentate gyrus of hippocampus in relation to hippocampal local field activities with objectives to understand their roles in behavior.

Neural correlates of visual and auditory saliency detection were another area of my research where spontaneous and not evoked neuronal activities in attentional-gating, stimulus specific adaptation in contrast-based saliency detection, and edge detection of camouflaged

objects by the neurons of optic tectum (mammalian homologue of superior colliculus) of barn owls were underscored.

I also studied the course of maladaptive neuroplastic changes in the brain of spinal cord injured macaque monkeys using non-invasive functional MRI. The significance of this research has an aim for far-reaching goal in future to find out the exact time window for therapeutic intervention in spinal cord injured patients.

Field-Research Activities in Public-Health under DRDO, India:

Assessment of nutritional requirements of armed force personnel based on energy expenditure and physiological status in adverse climatic conditions (extreme hot and cold deserts), across harsh geographical terrain (high altitude Himalayan terrain) and confined underwater environment (submarine).

Title of PhD Thesis: Fatty Acid Oxidation in Cold-Hypoxic Environment in Relation to Leptin and Role of L-Carnitine as Performance Enhancer

Publications:

1. **Dutta A**, Lev-Ari Tidhar, Barzilay O, Mairon R, Wolf A, Ban-Shahar O, Gutfreund Y Self-motion trajectories can facilitate orientation-based figure-ground segregation. **J Neurophysiol** 123(3):912-926, 2020.
2. **Dutta A**, Herman Wagner, Yoram Gutfreund. Responses to Pop-Out Stimuli in the Barn Owl's Optic Tectum Can Emerge through Stimulus-Specific Adaptation. **J Neurosci**. 36(17):4876-87, 2016.
3. Shai Netser, **Dutta A**, Yoram Gutfreund. Ongoing activity in the optic tectum is correlated on a trial-by-trial basis with the pupil dilation response. **J Neurophysiol**. 111(5):918-29.2014.
4. **Dutta A**, Yoram Gutfreund. Saliency mapping in the optic tectum and its relationship to habituation. **Front Integr Neurosci**. 8(1)-1-13, 2014.
5. **Dutta A**, Niranjana Kambi, Partha Raghunathan, Subash Khushu, Neeraj Jain. Large-scale reorganization of the somatosensory cortex of adult macaque monkeys revealed by fMRI. **Brain Struct Funct**. 219(4):1305-20, 2014.
6. Singh VK, Amitabh, **Dutta A**, Shukla V, Vats P, Singh SN (2001). Energy

expenditure and nutritional status of sailors and submarine crew of the Indian Navy. *Defence Journal* 61(6):540-544.

7. Sinha S, **Dutta A**, Som N Singh SN, Uday S Ray US (2010). Protein nitration, lipid peroxidation and DNA damage at high altitude in acclimatized lowlanders and native highlanders: Relation with oxygen consumption. *Resp Physiol & Neurobiol* 171: 115- 121.
8. Koushik Ray K, **Dutta A**, Panjwani U, Thakur L, Anand JP, Kumar S (2011). Hypobaric Hypoxia Modulates Brain Biogenic Amines and Disturbs Sleep Architecture. *Neurochem Int* 58:112-118, 2011.
9. **Dutta A**, Vats P, Singh VK, Sharma YK, Singh SN, Singh SB. Impairment of Mitochondrial β -Oxidation in Rats under Cold-Hypoxic Environment. **Int J Biometeorol** 53: 397-407, 2009.
10. **Dutta A**, Ray K, Singh VK, Vats P, Sharma YK, Singh SN, Singh SB. L-Carnitine Supplementation Attenuates Intermittent Hypoxia- Induced Oxidative Stress and Delays Muscle Fatigue in Rats. *Exp Physiol* 93: 1139- 1146, 2008.

Abstracts in Conferences (International/National):

1. **Arkadeb Dutta**, Yoram Gutfreund. Active vision may enhance orientation-contrast based saliency through mechanisms of neural adaptation. Program No. 414.19. 2015 Neuroscience Meeting Planner. Washington, DC: **Society for Neuroscience, 2015**. Online.
2. **Arkadeb Dutta**, Yoram Gutfreund. Neural Responses to Differently Oriented “Pop-Out” Visual Targets in the Optic Tectum of the barn Owl. **9th FENS Forum of Neuroscience**. FENS-2677. July 5-9, Milan, Italy, 2014.
3. **Arkadeb Dutta**, Niranjana Kambi, Partha Ragunathan, Subash Khushu, Neeraj Jain. Functional Magnetic Resonance Imaging (fMRI) of the Normal Somatosensory Cortex in Adult Macaque Monkeys and its Reorganization following Spinal Cord Injuries.74.01.2011. Neuroscience Meeting Planner. Washington, DC: **Society for Neuroscience, 2011**. Online.
4. **Arkadeb Dutta**, Koushik Ray, Vijay K Singh, Praveen Vats, Som N Singh, Shashi B Singh. L-Carnitine Supplementation Attenuates Intermittent Hypoxia Induced Oxidative Stress and Delays Muscle Fatigue in Rats. (Abstract No. PC94). *Physiology* 2008 (July 14-16, 2008, University of Cambridge, UK).
5. **Arkadeb Dutta**, VK Singh, P Vats, SN Singh, S Singh, PK Banerjee. Mitochondrial Long, Medium and Short Chain Carnitine Acyl Transferases Profiles in Rats Exposed to Hypobaric Hypoxia. (Abstract No. PP25). **4th Congress of Federation of Physiological Societies** (January 11-13, 2007, Delhi).
6. **Arkadeb Dutta**, VK Singh, P Vats, SN Singh, SB Singh. Reduced Plasma Leptin may

be Responsible for Decreased β -oxidation of fatty acids in rats exposed to cold and hypoxic environment. (P.-120). **XIX Annual Conference of Physiological Society of India (December 6-8, 2007, Faridabad).**

Awards:

- International Travel Award 2011 by the Department of Science & Technology, Government of India, for attending and presenting scientific research work at Society for Neuroscience Meeting 12th-16th November, 2011 in Washington DC, USA.
 - International Travel Award 2008 by the Department of Biotechnology, Government of India, for attending and presenting scientific research work at Physiological Society Meeting at University of Cambridge, UK.
 - Surg. Rear Admiral M. S. Malhotra Research Prize, Defence Research & Developmental Organization, 2008.
 - Junior Scientist Award, 'The Physiological Society of India', 2007
 - National Eligibility Test, Graduate Aptitude Test for Engineering, State Level Eligibility Test (WB) 2003.
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Invited Talks:

“Possible Neural Correlates of Concentration Deficit”. Webinar Series on “Meeting the Challenges of Covid-19 Pandemic-The Yogic Way”, Sponsored by Inter-University Centre for Yogic Sciences, 2021.

“Neural Correlates of Saliency Detection in the Optic Tectum of the Barn Owls”. Webinar organized by Indian Academy of Neurosciences. Kolkata Chapter.2020.

“Consciousness and Modern Brain Research”. “International One-day Webinar on Consciousness Studies and Research: Ancient and Modern” organized by School of Indian Heritage, RKMVERI and Centre for Consciousness Studies, NIMHANS, 2020.

“Yoga for Holistic Health” in Postgraduate Seminar, D N De Homeopathic Medical College & Hospital, Kolkata, 2020.

Memberships:

- Member, Physiological Society of India.
- Former Annual Member of Society for Neurosciences, USA
- Former Member of Federation of European Neuroscience Societies
- Former Member of Israel Society for Neuroscience
