

Kirthana Kunikullaya U



MBBS, MD (Physiology), DNB,
PostDoc (Neuroscience)

About

I am a Physician, trained in Medicine and specializing in Human Physiology (MD, DNB). After being an Assistant Professor in a Medical College & Teaching hospital in India for 10 years, I shifted to France as a postdoc in Neuroscience. I am **interested to work on Neurodegeneration using rodent / human tissue models**.

EXPERIENCE

2021-Present
1.1 years



Postdoctoral Researcher | Institut de recherche en santé, environnement et travail (IRSET), University of Rennes 1

(Postdoc - Based on research experience post MD)

Studying the effect of anthropogenic stimuli on neurosteroids and neuroplasticity. **Ongoing & Completed Projects:**

- Prenatal exposure to neonicotinoids in mice and zebrafish
- Developmental neurotoxicity by exposure to Ethinyl Estradiol
- Neurological changes in an AroKO model of zebrafish

2019-Present
3 years



PhD | University of Maastricht, Netherlands (External)

Thesis: Short-term impact of anthropogenic environment on neuroplasticity – a study among humans and animals

- Advisors: Harry Steinbusch, Theirry Charlier, Jodi Pawluski

2010-2021
10.9 years



Assistant Professor, Physiology | Rajiv Gandhi University of Health Sciences (RGUHS), India

- Involved in teaching, research, patient care, and admin roles.
- Investigated the effect of music as an acoustic stimulus on the cardiovascular and nervous systems (using HRV, ERP and EEG-based approaches).

2007-2010
3 years

Postgraduate - MD Physiology | RGUHS, India

In India, MD is considered equivalent to a doctoral degree

- MD Thesis - Comparative study of autonomic functions between day and night shift workers.

SKILLS

Animal models in neuroscience - Molecular Biology Techniques

- Rat brain tissue brain slice preparation, mounting, immunohistochemistry, immunofluorescence, confocal microscopy, bacterial culture, behavioral tests.
- Zebrafish fish models – DNA, RNA extraction, Genotyping, PCR, qRT-PCR, brain inclusion, slicing, Immunostaining for different markers in the brain, cell counting, cortisol assay (ELISA).
- Physiology & Pharmacology of rabbit heart and rat intestine, amphibian heart, neuromuscular junctions (Physiograph)

Human Physiology - Electrophysiology Techniques

- Holter monitoring of blood pressure, electrocardiography, heart rate variability (autonomic function),
- Neurophysiology - event-related potentials (ERP), electroencephalography (EEG), sleep polysomnography recordings, emotional, anxiety, stress, health scales and questionnaires, cognitive functions; analysis of biomarkers in serum and saliva (ECLIA, ELISA, RIA).

Others - Softwares

SPSS, Statistica, R, Graphpad, Adobe Photoshop, Image J

Looking forward to a life full of learning and contributing to Neuroscience.

CONTACT



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ACHIEVEMENTS

- **Prof. N. Padmanabhan Memorial Award - best paper by any PG student (2009)**
- **University Topper in MD Physiology (2010)**
- Principal Investigator of 3 Nationally Funded Projects, India - ~65k€ (2012-2021)
- **Siri research award – best research paper in the area of stress (2019)**
- **Prof. R.C. Shukla Oration Award** for the best paper in Cardiovascular Physiology (2021)

Eager to Learn

Techniques I am interested to learn new skills as part of the next project

- Optogenetics
- Electrophysiology - Patch-clamp technique, In-Vivo Calcium Imaging
- Two-photon microscopy, Light sheet microscopy,
- Cell culture (cell lines, primary neurons), viral vector production (lentiviral and AAV vectors)



Clinical Experience

- June 2020 - May 2021 - involved in treating **COVID patients** in hospitals with over 500 admissions (first and the second wave in India).
- 2005-2008 - Worked in four different hospitals as a **full-time night duty Physician/ Doctor** over an 8-hour shift along with Day time medical internships in a Government hospital (2005-2006), and 2 private hospitals during postgraduate exam preparations (2006-2007), and MD studies (2007-2008) in the morning.

Teaching Experience

- 2010 - 2021 - **Assistant Prof in Dept of Physiology** - teaching courses - Undergraduate medical (MBBS), dental (BDS), Physiotherapy (BPT), B.E Medical Electronics, B.Sc Nursing and MD (Physiology), MDS postgraduate students. I was always rated >4.5/5 in the student feedback and >4/5 in peer feedback.
- Mentored 10 medical students every year (2010-2021).

Memberships

- Société des Neurosciences (FENS),
- European Brain and Behaviour Society (EBBS)
- Society for Music Perception and Cognition (SMPC),
- Association of Physiologists and Pharmacologists of India (APPI),
- The Physiological Society of India (PSI),
- Indian Association of Biomedical Scientists (IABMS),
- National Academy of Medical Sciences (NAMS),
- Scientific committee member of Project Encephalon - a student-run, international not-for-profit organization - <https://www.projectencephalon.org/>

Other Interests

- **Karnataka State topper (May 2018)** in Pre-Vidwath (Pre-Final) **Carnatic vocal exams** conducted by Karnataka Senior Secondary Education Board (KSEEB), Govt of Karnataka.
- Assistant director of Kalamshu, a cultural organization, based in Bengaluru, India, established in 2005, actively promoting art and culture. I teach music and am involved in organizing events, graphic designing, video editing, and writing for grants in this organization (www.kalamshu.org).
- Pursuing Vidhwath Antima (Indian Music Vocals)

5 Recent Publications/ Under Review Papers

- Kunikullaya Ubrangala K, Kunnavil R, Sanjeeva Vernekar M, et al. Effect of Indian Music as an Auditory Stimulus on Physiological Measures of Stress, Anxiety, Cardiovascular and Autonomic Responses in Humans-A Randomized Controlled Trial. Eur J Investig Health Psychol Educ. 2022 Oct 19;12(10):1535-1558. doi: 10.3390/ejihpe12100108. PMID: 36286092
- K Kunikullaya, A Sasidharan, R Srinivasa, et al. Temporal changes in electroencephalographic power spectrum on passive listening to three selected melodic scales of Indian music on healthy young individuals-a randomized controlled trial. Music and Medicine Vol. 14 No. 1 (2022).
- Kunikullaya U K, Kunnavil R, Vijayadas, et al. Normative data and gender differences in heart rate variability in the healthy young individuals aged 18-30 years, a South Indian cross-sectional study. Indian Pacing Electrophysiol J. 2021 Mar-Apr;21(2):112-119.
- Cai Zhang, Baiping Liu, Jodi Pawluski, Harry W.M. Steinbusch, Kirthana Kunikullaya U, Cai Song. Sex Differences in Behaviors and Related Lymphocyte and Inflammatory Mechanisms in a Depression Model of Rats Induced by Chronic Stress - Under Review.
- Kirthana Kunikullaya Ubrangala, Baran Zuzanna, Valentine L'Estoile, et al. Effects of prenatal exposure to thiachlorid, a neonicotinoid on neuroplasticity in zebrafish and mouse - Under Review.

For all Publications:

<https://orcid.org/0000-0001-6150-5975>

Organization Skills

- **'Neuroscience 2017'** - Science academies lecture workshop on 'Recent advances in brain health & diseases' - Obtaining funds (**1.10 Lakhs INR** by Indian Academy of Sciences, Government of India). The workshop had 13 neuroscientists and over 170 participants - Received an **Appreciation letter** for organizing the event meticulously from Prof L S Shashidhara - EMBO Associate Member and Distinguished Visiting Professor of Biology at Ashoka University and Professor and Chair Biology, IISER Pune, India.
- Organized **Guest lecture by Grammy Awardee** Mr. Ricky Kej - World Earth Day on the theme **"Beat Plastic Pollution"** - >500 attendees - Jun 07, 2018- Ramaiah Medical College auditorium.

Research Advisor

- **One MD Thesis** - 2019-21 - Obtained Funds for the same - 50k INR from the Indian Council of Medical Research.
- Guide- **3 Undergraduate Medical Research** projects - 2 publications (2013-2021)
- As a Postdoc - Mentored **One PhD student** - Cai Zhang - from Guangdong Ocean university, China & **One Bachelor Student** Ms Sèmanou Bakpete, Licence 3 BCGMP, Année 2021-2022 - Project entitled : Impact de l'exposition précoce à l'éthinylestradiol sur la neuroplasticité du poisson-zèbre (Danio Rerio) - June - July 2022.
- Recently mentored students during **Project Encephalon Brain Awareness Week (PEBAW)**, sponsored by IBRO (18-26 Sept 2021 - <https://tinyurl.com/nnnjruhh>).

Reviewer

- **Journals** - Neuroscience-and-biobehavioral-reviews, Psychoneuroendocrinology, Music and Medicine (Sage publishers), Frontiers for Young Minds, Canadian Journal of Physiology and Pharmacology, International Journal of Preventive Medicine, Psychology of Music, Indian Journal of Physiology and Pharmacology; International journal of cardiology; Journal of family practice; Heart Asia; International Journal of diabetes in developing countries; European Heart Journal - Cardiovascular Pharmacotherapy; Complementary therapies in Medicine; Complementary Therapies in Clinical Practice, Explore The Journal of Science and Healing.
- **Conference** - 16th International Conference on Music Perception and Cognition; 11th triennial conference of ESCOM (July 2021).