Abhilash Lakshman

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EDUCATION AND TRAINING

Postdoctoral Fellow — 2024 – Present
Gill Institute for Neuroscience: Indiana University
Advisor: Prof. Orie Shafer

Postdoctoral Research Associate — 2021 – 2024
Neuroscience Initiative
Advanced Science Research Center, CUNY
Advisor: Prof. Orie Shafer

Ph.D. in Biological Sciences — 2015 – 2021
Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR)
Advisors: Profs. Vijay Kumar Sharma and Sheeba Vasu

M.S. in Biological Sciences — 2012 – 2015
Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR)
Advisors: Profs. Vijay Kumar Sharma and Sheeba Vasu

B.Sc. (Hons) in Zoology — 2009 – 2012
Calcutta University

HONORS and AWARDS

CUNY Postdoctoral travel award, CUNY, USA. — 2023
Young Scientist Medal, Indian National Science Academy, India. — 2023
(Highest recognition for young scientists in India)
Prof. CNR Rao Medal for the best Ph.D. thesis in Biological Sciences, JNCASR. — 2021
International Travel Support (SERB, Govt. of India) to attend SRBR meeting 2018. — 2018
Runner-up for Chronovideo competition at SRBR meeting 2018. — 2018
Best participant at the Insect Biology School (SERB, Govt. of India). — 2015
Best poster at the Chronobiology School (SERB, Govt. of India). — 2013
Best participant at the Chronobiology School (SERB, Govt. of India). — 2013
First prize for chronobiology quiz at the Chronobiology School (SERB, Govt. of India). — 2013
Summer Research Fellowship from the Indian Academy of Science. — 2011

GRANT SUPPORT

Pending
NIH – 1K99NS140562-01
Title: Effects of Circadian Misalignment on Central and Peripheral Clocks, Sleep, and Metabolism
Role: Principal Investigator

Duration: 07/01/2025 – 06/30/2030

[A previous version of this proposal was discussed and scored (Impact Score: 47) at a recent study section and has now been revised and resubmitted]

JOURNAL PUBLICATIONS

1. **Lakshman Abhilash** and Shafer OT (2024) A two-process model of *Drosophila* sleep reveals an inter-dependence between circadian clock speed and the rate of sleep pressure decay. *SLEEP* 47: 1-21. https://doi.org/10.1093/sleep/zsad277. *bioRxiv:* https://doi.org/10.1101/2022.08.12.503775.
2. Chowdhury B, **Lakshman Abhilash**, Ortega A, Liu S and Shafer OT (2023) Homeostatic control of deep sleep and molecular correlates of sleep pressure in *Drosophila*. *eLife 12:e91355. https://doi.org/10.7554/eLife.91355. bioRxiv:* https://doi.org/10.1101/2022.09.30.510368.
3. **Lakshman Abhilash** and Shafer OT (2023) Parametric effects of light acting via multiple photoreceptor types contribute significantly to circadian entrainment in *Drosophila melanogaster*. *Proceedings of the Royal Society B* 290: 20230149. https://doi.org/10.1098/rspb.2023.0149. *bioRxiv:* https://doi.org/10.1101/2022.03.02.482722.
4. Persons JL, **Lakshman Abhilash**, Lopatkin AJ, Roelofs A, Bell EV, Fernandez MP and Shafer OT (2022) PHASE: An open-source program for the analysis of *Drosophila* phase, activity, and sleep under entrainment. *Journal of Biological Rhythms* 37: 455-467. doi.org/10.1177/07487304221093114.
5. **Lakshman Abhilash**, Arshad Kalliyil and Vasu Sheeba (2020) Activity/rest rhythms of *Drosophila* populations selected for divergent eclosion timing under temperature cues. *Journal of Experimental Biology* doi.org/10.1242/jeb.222414. *bioRxiv:* 10.1101/831347.
6. **Lakshman Abhilash** and Vijay Kumar Sharma (2020) Mechanisms of photic entrainment of activity/rest rhythms in populations of *Drosophila* selected for divergent timing of eclosion. *Chronobiology International* 37: 469-484 doi.org/10.1080/07420528.2020.1727917.
7. **Lakshman Abhilash**, Aishwarya Ramakrishnan, Srishti Priya and Vasu Sheeba (2020) Waveform plasticity under entrainment to 12-hour T-cycles in *Drosophila melanogaster*: behaviour, neuronal network and evolution. *Journal of Biological Rhythms* 35: 145-157. doi.org/10.1177/0748730419899549.
8. **Lakshman Abhilash**, Arijit Ghosh, Vasu Sheeba (2019) Selection for timing of eclosion results in co-evolution of temperature responsiveness in *Drosophila melanogaster*. *Journal of Biological Rhythms* 34: 596-609.
9. **Lakshman Abhilash** and Vasu Sheeba (2019) RhythmicAlly: Your R and Shiny based open-source ally for the analysis of biological rhythms. *Journal of Biological Rhythms* 34: 551-561.
10. Saloni Sinha, Arindam Ray, **Lakshman Abhilash**, Manish Kumar, Sreelakshmi K Sreenivasamurthy, TS Keshava Prasad and Maneesha S Inamdar (2019) Proteomics of Asrij perturbation in *Drosophila* lymph glands for identification of novel regulators of hematopoiesis. *Molecular and Cellular Proteomics* 18: 1171-1182.
11. Manishi Srivastava, Vishwanath Varma, **Lakshman Abhilash**, Vijay Kumar Sharma and Vasu Sheeba (2019) Circadian clock properties and their relationships as a function of free-running period in *Drosophila melanogaster*. *Journal of Biological Rhythms* 34: 231-248.
12. **Lakshman Abhilash**, Radhika Shindey and Vijay Kumar Sharma (2017) To be or not to be rhythmic? A review of studies on organisms inhabiting constant environments. *Biological Rhythm Research* 48:677-691.
13. **Lakshman Abhilash** and Vijay Kumar Sharma (2016) On the relevance of using laboratory selection to study the adaptive value of circadian clocks. *Physiological Entomology* 41:293-306.
14. KL Nikhil, **Lakshman Abhilash** and Vijay Kumar Sharma (2016) Molecular correlates of circadian clocks in fruit fly *Drosophila melanogaster* populations exhibiting early and late emergence chronotypes. *Journal of Biological Rhythms* 31:125-141.
15. Manaswini Sarangi, Payel Ganguly, Zenia, C Arvind, **Lakshman Abhilash** and TNC Vidya (2014) Common myna roosts are not recruitment centres. *PLoS ONE* 9.
16. Koustubh M Vaze, Nisha N Kannan, **Lakshman Abhilash** and Vijay Kumar Sharma (2012) Chronotype differences in *Drosophila* are enhanced by semi-natural conditions. *Naturwissenschaften* 99:967-971.
17. Koustubh M Vaze, KL Nikhil, **Lakshman Abhilash** and Vijay Kumar Sharma (2012) Early and Late emerging *Drosophila melanogaster* fruit flies differ in their sensitivity to light during morning and evening. *Chronobiology International* 29:674-682.

OTHER PUBLICATIONS

18. **Lakshman Abhilash** (2018) The 2017 Nobel Prize in Physiology or Medicine: From flies to clocks. In *KAAS News (Karnataka Association for the Advancement of Science)* 4:1-4.
19. **Lakshman Abhilash** and Vijay Kumar Sharma (2017) Time measurement in living systems: Human understanding and health implications. In *Space, Time and the Limits of Human Understanding* (Eds. Wuppuluri S and Ghirardi G) pp. 337-352 Springer.
20. **Lakshman Abhilash** (2017) On the reality of time: Lessons from chronobiology. In *Samay* (Indian Society for Chronobiology) 3:3-7.

INVITED TALKS

The 8th Rhythms in the SouthEastern Region Meeting (RISER) 2025
Vanderbilt University, Nashville, TN, USA

Gill Mini-Symposium 2024
Gill Institute for Neuroscience, Indiana University, USA

10-year Anniversary Celebration 2024
Advanced Science Research Center, CUNY, USA

Drosophila Neurobiology Colloquium 2023
NIH/NHLBI

Neuroscience Tutorial: A two-process model of fly sleep 2023
Initiative for the Theoretical Science, CUNY, USA.

Neuroscience Seminar 2022
Jawaharlal Nehru Center for Advanced Scientific Research, India.

Hargobind Khorana Lecture 2018
Indian Academy Degree College, Karnataka Association for the Advancement of Science.

TEACHING and MENTORSHIP EXPERIENCE

Time-series Analysis and Entrainment March 2025
EMBO Chronobiology School, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India.

Statistical Hypothesis Testing for Biologists October 2024
Graduate Center, CUNY, New York, USA.

Statistical Hypothesis Testing and R Programming for Biologists Spring 2024
Advanced Science Research Center, CUNY, New York, USA.

Scientific Rigor and Data Management April 16, 2024
Graduate Center, CUNY, New York, USA.

Responsible Conduct of Research March 25, 2024
Graduate Center, CUNY, New York, USA.

Undergraduate Student Research 2023 – Present

Advanced Science Research Center, CUNY, New York, USA.
Gill Institute for Neuroscience, Indiana University, Bloomington, IN, USA.

High School Student Research 2022 – 2023
Advanced Science Research Center, CUNY, New York, USA.

Statistical Hypothesis Testing (Graduate level) Sep 2022
Jawaharlal Nehru Center for Advanced Scientific Research, India.

High School Student Research 2021 – 2022
Advanced Science Research Center, CUNY, New York, USA.

Basic Chronobiology (Graduate level) 2016 – 2020
Jawaharlal Nehru Center for Advanced Scientific Research, India.

Advanced Chronobiology (Graduate level) 2017
Jawaharlal Nehru Center for Advanced Scientific Research, India.

Experimental Design and Statistical Hypothesis Testing for Biologists (Graduate level) 2016 – 2020
Jawaharlal Nehru Center for Advanced Scientific Research, India.
JNCASR, Bangalore, India.

Analysing Biological Rhythms (Graduate level) 2019
CCS University, India.

Undergraduate Summer Research Program 2015 – 2020
Jawaharlal Nehru Center for Advanced Scientific Research, India.

SERVICE

Upcoming

Chair 2025
Gordon Research Seminar in Chronobiology

Member 2025
Diversity Committee – Gordon Research Conference

Current

OSF (Open Science Framework) Technology Advocate 2025 – Present
Center for Open Science

Review Editor 2023 – Present
Frontiers in Physiology (Chronobiology)

Preprint Editor (Systems Biology team lead) 2023 – Present
Proceedings of the Royal Society B

Independent peer reviewer 2019 – Present
Journal of Biological Rhythms, F1000 Research, PLoS ONE, Journal of Insect Science

Assisted peer review 2018 – Present
Journal of Biological Rhythms, Current Biology, iScience, Journal of Comparative Physiology A, PLoS Biology, Nature

Previous

Community Science Outreach Volunteer 2022-2024
Advanced Science Research Center, CUNY, New York, USA.

Content contributor 2022
"Lighten Up! On Biology and Time" – An exhibition at EPFL Pavilions, Switzerland
Exploring the connection of living organisms with the natural cycle of light and dark through the lens of art

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