

# Abhilash Lakshman

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## EDUCATION AND TRAINING

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Postdoctoral Fellow <i>Gill Institute for Neuroscience</i> <i>Indiana University</i> <i>Advisor: Prof. Orie Shafer</i>	2024 – Present
Postdoctoral Research Associate <i>Neuroscience Initiative</i> <i>Advanced Science Research Center, CUNY</i> <i>Advisor: Prof. Orie Shafer</i>	2021 – 2024
Ph.D. in Biological Sciences <i>Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR)</i> <i>Advisors: Profs. Vijay Kumar Sharma and Sheeba Vasu</i>	2015 – 2021
M.S. in Biological Sciences <i>Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR)</i> <i>Advisors: Profs. Vijay Kumar Sharma and Sheeba Vasu</i>	2012 – 2015
B.Sc. (Hons) in Zoology <i>Calcutta University</i>	2009 – 2012

## HONORS and AWARDS

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CUNY Postdoctoral travel award, CUNY, USA.	2023
<b><i>Young Scientist Medal, Indian National Science Academy, India.</i></b>	2023
<b><i>Prof. CNR Rao Medal for the best Ph.D. thesis in Biological Sciences, JNCASR.</i></b>	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

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### 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

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1. **Lakshman Abhilash** and Shafer OT (2023) A two-process model of *Drosophila* sleep reveals an inter-dependence between circadian clock speed and the rate of sleep pressure decay. *SLEEP (in press)* *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 *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 *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](https://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](https://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* [doi.org/10.1080/07420528.2020.1727917](https://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](https://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 *K4AS 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

Gill Mini-Symposium <i>Gill Institute for Neuroscience, Indiana University, USA</i>	2024
10-year Anniversary Celebration <i>Advanced Science Research Center, CUNY, USA</i>	2024
<i>Drosophila</i> Neurobiology Colloquium <i>NIH/NHLBI</i>	2023
Neuroscience Tutorial: A two-process model of fly sleep <i>Initiative for the Theoretical Science, CUNY, USA.</i>	2023
Neuroscience Seminar <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i>	2022
Hargobind Khorana Lecture <i>Indian Academy Degree College, Karnataka Association for the Advancement of Science.</i>	2018

## TEACHING and MENTORSHIP EXPERIENCE

**Upcoming**

Time-series analysis and Entrainment <i>EMBO Chronobiology School</i>	March 2025
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**Past**

Statistical Hypothesis Testing for Biologists <i>Graduate Center, CUNY, New York, USA.</i>	October 2024
Statistical Hypothesis Testing and R Programming for Biologists <i>Advanced Science Research Center, CUNY, New York, USA.</i>	Spring 2024
Scientific Rigor and Data Management <i>Graduate Center, CUNY, New York, USA.</i>	April 16, 2024
Responsible Conduct of Research <i>Graduate Center, CUNY, New York, USA.</i>	March 25, 2024
Undergraduate student research <i>Advanced Science Research Center, CUNY, New York, USA.</i>	2023 – Present

High school student research <i>Advanced Science Research Center, CUNY, New York, USA.</i>	2022 – 2023
Statistical Hypothesis Testing (Graduate level) <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i>	Sep 2022
High school student research <i>Advanced Science Research Center, CUNY, New York, USA.</i>	2021 – 2022
Basic Chronobiology (Graduate level) <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i>	2016 – 2020
Advanced Chronobiology (Graduate level) <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i>	2017
Experimental Design and Statistical Hypothesis Testing for Biologists (Graduate level) <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i> JNCASR, Bangalore, India.	2016 – 2020
Analysing Biological Rhythms (Graduate level) <i>CCS University, India.</i>	2019
Undergraduate summer research program <i>Jawaharlal Nehru Center for Advanced Scientific Research, India.</i>	2015 – 2020

## SERVICE

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### **Upcoming**

Chair <i>Gordon Research Seminar in Chronobiology</i>	2025
Member <i>Diversity Committee – Gordon Research Conference</i>	2025

### **Current**

Review Editor <i>Frontiers in Physiology (Chronobiology)</i>	2023 – Present
Preprint Editor (Systems Biology team lead) <i>Proceedings of the Royal Society B</i>	2023 – Present
Independent peer reviewer <i>Journal of Biological Rhythms, F1000 Research, PLoS ONE, Journal of Insect Science</i>	2019 – Present
Content contributor <i>“Lighten Up! On Biology and Time” – An exhibition at EPFL Pavilions, Switzerland</i> <i>Exploring the connection of living organisms with the natural cycle of light and dark through the lens of art</i>	2022
Assisted peer review <i>Journal of Biological Rhythms, Current Biology, iScience, Journal of Comparative Physiology A, PLoS Biology, Nature</i>	2018 – Present

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