

Curriculum Vitae

DHANANANAJAY KUMAR

LAB ADDRESS: Associate Professor
 Circadian Biology & Laboratory of Integrative Physiology
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EDUCATION & TRAINING

2001-2004 Bachelor of Science (BS), Biosciences (First Div.)
 Jamia Milia Islamia, New Delhi, Nagpur, India

2004-2006 Master of Science (MS), Biosciences (First Div.)
 Jamia Milia Islamia, New Delhi, Nagpur, India

2007-2014 PhD in Biosciences, Department of
 Zoology, Banaras Hindu University,
 Varanasi, UP, India
 Supervisor: Prof. Muniyandi Singaravel, Chronobiology Laboratory

RESEARCH GRANTS as PI

| Sl. no | Position | Funding body | Amount |
|--------|---|--|-------------|
| 1 | Cognitive Science Research Initiative-Post Doctoral Fellow (CSRI-PDF) (PI) | Department of Science and Technology, New Delhi, Govt. of India (From: 04.06.2019 to 03.12.2021) | 24.86 lakhs |
| 2 | SERB Fast-Track Young Scientist Fellow (PI) | Science and Engineering Research Board (SERB), New Delhi, Govt. of India (From: 01.03.2016 to 24.04.2019) | 30.8 lakhs |

POST-DOCTORAL APPOINTMENTS

2022- 2023 Post-Doctoral Fellow
 Laboratory of Integrative Physiology,
 Migal Galilee Research Institute, Kriyat Shmon, Israel

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| 2019- 2021 | Principal Investigator (CSRI-PDF, DST) Department of Pharmaceutical Engineering & Technology, IIT-BHU, Varanasi, UP-221005, India |
| 2016-2019 | Principal Investigator (Young Scientist Fellow, SERB) Department of Pharmaceutical Engineering & Technology, IIT-BHU, Varanasi, UP-221005, India |
| 2014-2016 | Post-Doctoral Fellow GROW Laboratory, Narayan Nethralaya Foundation, Bangalore, Karnataka, India |
| 2014-2014 | Senior Research Fellow (Extended) Department of Zoology Banaras Hindu University, Varanasi, India |

AWARDS & HONORS

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| 2011 | Best Poster award in “XXII National Symposium on Chronobiology”, Organized by Department of Zoology, Kurukshetra University, Kurukshetra, Haryana, India |
| 2010 | Oral presentation award in international conference on “Radiation, environment and human health, ICREH - 2010”, Nehru Gram Bharati University, Allahabad, UP, India. (19-21, November 2010) |
| 2010 | Selected among top best Four Posters in International School “5th Euclock and 19th European PhD School for Chronobiology”, held in Jawaharlal Nehru Center for Advance Scientific Research, Bangalore, India |
| 2011 | Senior Research Fellowship (SRF) by Indian Council of Medical Research, New Delhi, India (From: 05.08.2011 to 04.08.2014) |
| 2009 | Senior Research Fellow (SRF) in Project Funded by Council of Scientific of Industrial Research (CSIR), New Delhi, India, (From: 20.08.2009 to 31.12.2010) |
| 2007 | Junior Research Fellow (JRF) in Project Funded by Council of Scientific of Industrial Research (CSIR), New Delhi, India, (From: 27.06. 2007 to August 2009) |
| 2007 | Graduate Aptitude Test for Engineering (GATE 2007), Indian Institute of Technology, India |
| 2007 | Council of Scientific of Industrial Research-University Grant Commission (CSIR-UGC) “National Eligibility Test” Examination |

RESEARCH PUBLICATIONS

1. Prabha Rajput, **Dhanananajay Kumar** and Sairam Krishnamurthy (2023). Chronic exposure to dim artificial light disrupts the daily rhythm in mitochondrial respiration in mice suprachiasmatic nuclei. **Chronobiology International**, **40**, 938-951 ISSN: 0742-0528. <https://doi.org/10.1080/07420528.2023.2236708>; IF: **3.749**.
2. Megha Das, Tarun Minocha, **Dhanananajay Kumar**, Nitesh Kumar Mishra, Chandana Haldar and Sanjeev Kumar Yadav (2022). Continuous Exposure to Artificial Light Disrupts Central and Peripheral Reproductive Clocks Leading to Altered Uterine Physiology and Reduced Pregnancy Success in Mice. **Photochemical & Photobiological Sciences**. <https://doi.org/10.1007/s43630-022-00210-6>; IF: **3.982**.
3. Nishtala, Krishnatej, Trailokyanath Panigrahi, Rohit Shetty, **Dhanananajay Kumar**, Pooja Khamar, Rajiv R. Mohan, Vrushali Deshpande, and Arkasubhra Ghosh (2022). Quantitative proteomics reveals molecular network driving stromal cell differentiation: Implications for corneal wound healing. *International Journal of Molecular Sciences* 23(5): 2572. <https://doi.org/10.3390/ijms23052572>; IF: **5.923**.
4. Raj Naresh Gopal, **Dhanananajay Kumar**, Vinay Kumar Singh, Atanu Kumar Pati and Bechan Lal (2021). Sexual dimorphism in ultradian and 24h rhythms in plasma levels of growth hormone in Indian walking catfish, *Clarias batrachus*. **Chronobiology International**, 38; 320-327. ISSN: 0742-0528 (print), 1525-6073 (electronic); IF: **3.749**.
5. **Dhanananajay Kumar**, Sanjeev Soni, Noga Kronfeld-Schor and M. Singaravel (2020). Wheel-running activity rhythms and masking responses in the diurnal palm squirrel, *Funambulus pennantii*. **Chronobiology International**. 37 :12; 1693-1708. ISSN: 0742-0528 IF: **3.749**.
6. Sanjeev Soni, **Dhanananajay Kumar** and M. Singaravel (2020). Phase and differential dose responses of circadian clock to exogenous melatonin in a diurnal rodent, *Funambulus pennantii*. **Chronobiology International**. 37 (5); 641-651. ISSN: 0742-0528 IF: **3.749**.
7. Rajeev C, **Dhanananajay Kumar**, Pryioneel Basu and Muniyandi Singaravel (2017). Risperidone resets the circadian clock in mice. **Biological Rhythm Research**; 45; 447-454. ISSN: 1744-4179 (Online); IF: **1.362 (Equal contribution)**.
8. **Dhanananajay Kumar** and Muniyandi Singaravel (2014). Phase and Period Response curve to short light pulses in a wild diurnal rodent, *Funambulus pennanti*. **Chronobiology International**, 31; 320-327. ISSN: 0742-0528 (print), 1525-6073 (electronic); IF **3.749**.
9. **Dhanananajay Kumar**, Pryioneel Basu and Muniyandi Singaravel (2014). Variations in the rate and direction of re-entrainment to acute simulated jet-lag in the diurnal north Indian palm squirrel. **Biological Rhythm Research**; 45; 447-454. ISSN: 0929-1016 (Print), 1744-4179 (Online); Impact factor: **1.362**
10. Perumal Subramanian, Murugesan Jayakumar, Muniyandi Singaravel, **Dhanananajay Kumar**, Priyoneel Basu, Jaime Jacqueline Jayapalan, Onn Haji Hashimc. (2015). Fisetin, a dietary flavonoid, attenuates hyperammonemia and improves circadian locomotor deficits, redox balance, and astrocytic markers in rats. **Journal of Functional Foods** Vol 12; 409–419, 2015, ISSN: 1756-4646; Impact factor: **5.6**

11. Pryioneel Basu, **Dhanananajay Kumar** and Muniyandi Singaravel (2014). Slow and fast orthodromic and antidromic variants in acute 9-h jet-lagged pygmy field mice. **Indian Journal of Experimental Biology**. 52; 1-4. ISSN: 0019-5189 (Print), 0975-1009 (Online); IF: **1.165**.
12. Rushad Shroff, Rohit Shetty, **Dhanananajay Kumar**, Shivraj Kumar and Arkasubhra Ghosh. (2015). Corneal lenticules as an ex-vivo model to study keratocyte biology. **Acta Ophthalmologica**, Vol 93, Issue Supplement S255, October 2015. IF: **3.032**.
13. Smilin Bell Aseervatham, J. M. Sasikumar, **Dhanananajay Kumar** (2012). Studies on in vitro free radical scavenging activity of *Bixa orellana* l. Bark extract. **Int J Pharm Pharm Sci**, Vol 4, Issue 2, 719-726: ISSN: 0975-1491; IF: **0.55**.
14. Luci Kaveri, **Dhanananajay Kumar**, Rohit Shetty and Arkasubhra Ghosh (2016). Smile lenticule as an ex-vivo biological model; (Proceedings); 74th AIOC.
15. **Dhanananajay Kumar**, Pankaj Paliwal, Sanjeev Kumar Soni, Vivek Kumar, M. Singaravel and Sairam Krishnamurthy (2018). Circadian disruption due to chronic jet-lag/ shift-work cause cognitive deficit in mice; (Proceedings); International Conference on Trends in Biochemical and Biomedical Research: Advances and Challenges.

BOOK CHAPTERS

1. Deepti Chopra, **Dhanananajay Kumar**, Divya Dubey, Jyoti Singh, Ajeet Kumar Srivastav, and Kailash Chand Gupta (2019). UV-R and Vitamin D Synthesis. In Skin aging & cancer: Ambient UV-R Exposure, Chapter 7; Springer Singapore, Springer Nature Singapore Pte Ltd; ISSN 9811325405.
2. Saroj Kumar Amar, **Dhanananajay Kumar** (2019). Chemiexcitation of Melanin Melanoma Development Long After UVA Exposure, In Skin aging & cancer: Ambient UV-R Exposure, Chapter 8, Springer Singapore, Springer Nature Singapore Pte Ltd; ISSN 9811325405.

ABSTRACT PUBLISHED IN INTERNATIONAL/NATIONAL SYMPOSIA

1. International Abstract Published: **15**
2. National Abstract Published: **14**

MEMBERSHIP OF PROFESSIONAL BODIES

1. Indian Society for Chronobiology, Life member, date of membership: 01.11.2012.
2. Indian Photobiology Society, Jadavpur, Kolkota, Life member, date of membership: 14.08.2012.

TRAINING COURSE/WORKSHOP ATTENDED

1. International school /workshop: **5**
2. National school/workshop: **6**

PROFESSIONAL TRAINING

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| <ul style="list-style-type: none"> • Electroretinogram (ERG) recording in squirrels and rats • Cell culture of isolated cells • Western Blot • Immunohistochemistry • Reverse Transcriptase Reaction (RT-PCR) • Eye and brain dissection in rodents (Squirrel, rat & mice, hamster) • Animal handling (squirrel, rat, mice and hamster) • HPLC, LCMS/MS • Microscopy • Oxytherm (for functioning of ETC complex) | <ul style="list-style-type: none"> • Chronobiology analysis software (Clock lab, Lafayette Instruments & Cosinor Analysis software) • Real Time PCR (RT-PCR) • Pharmacokinetics • Transcardial perfusion in animals • Statistical software (SPSS 17, Graphpad Prism 8, Statistica 10, Origin 8.1) • Referencing software (Endnote X7) • Machine handling like Cryo-cut, Microtome, Vibrotome. • Behavioral mazes, EEG, ECG recording in rodents • Blood flow in rodents |
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PERSONAL STATEMENT

I am having 8.6 years of research experience in circadian rhythm, metabolism, ophthalmology and visual neuroscience. During my PhD, I discovered the phase re-setting and electrophysiology characteristic of short wavelengths of light in a diurnal model, palm squirrel. Thereafter, for my postdoctoral work in GROW laboratory, I with my team has established corneal lenticule as an ex-vivo model to study the effect of various drugs during corneal disorders. I have looked into the role of various inflammatory and fibrotic markers during corneal wound. Further, we studied quantitative tear proteomics to evaluate biomarkers of inflammation and fibrosis during early onset of corneal disorder and distinct molecular changes during in vitro corneal stromal cell differentiation. At NN and at AIIMS, I got chance to worked with a collaborative team of basic scientists, human and veterinary ophthalmologists, toxicologists, and immunologists studying corneal fibrosis, gene therapy, limbal stem cell and vision research projects. I have been actively engaged in circadian rhythm and vision research in collaboration with AIIMS, Narayan Nethralya and IIT BHU, India. I am an expert in the field of **Mammalian Circadian rhythm, Vision Biology, Cognitive Neuroscience, Mitochondrial Bioenergetics & Energy Homeostasis and Corneal Wound healing** and novel therapy development research, and have published 16 peer-reviewed journal articles and 29 scientific abstracts in National and International conferences, have co-authored book chapters, and received multiple awards from National and International organizations. I have received two grants from funding bodies like DST and SERB, New Delhi, India. Currently, I had worked on the role of ayurvedic metabolites during dysregulated circadian clock, and decoded circadian rhythm linked interventional approaches to regulate cognition and to reinstate circadian homeostasis. To answers this, we are trying to use **chrono-pharmacological**, gene therapy, and epigenetic approaches to treat various disorders like cognitive deficits, obesity and jet-lag shift work, hypertension etc. I am interested in decoding the mechanisms for circadian disruption induced various metabolic and neurological disorders, and to design a chrono-pharmacological and eco-friendly lighting schedule approach to alleviate dysregulated clock genes which ultimately regulate physiological, behavioral metabolic and neurological output in living organisms.

(Dr. Dhanananajay Kumar)

Place: Central University of Jammu.