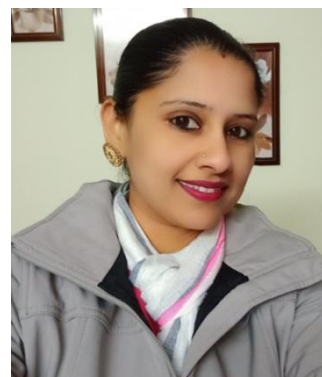


Curriculum Vitae



Dr. MADHU BALA

Assistant Professor (Stage-3)

Department of Zoology & Environmental Science

Punjabi University, Patiala – 147002 (India)

Mobile +91-9872129846

E-mail-madhubaladhakane@gmail.com, madhu_zology@pbi.ac.in

1. ACADAMIC QUALIFICATIONS

M.Sc., NET, Ph.D.

2. AREA OF RESEARCH

Insects' systematics, Forensic entomology, Drug pollution, Molecular techniques, PMI estimation

3. PROFESSIONAL INVOLMENT (Memberships)

- Punjab Academy of Sciences
- Entomological society of Korea
- Association of Entomologists
- Indian Science Congress

4. ACADAMIC HOUNER (Fellowships)

- JRF fellowship by CSIR from Dec 2006 to Dec 2008
- SRF fellowship by CSIR from Jan 2009 to Aug 2010

5. TEACHING EXPERIENCE

| S.no. | Name of the Employer | Position | Duration | Job Responsibilities |
|-------|-----------------------|----------|---------------------------|----------------------|
| 1 | JCDAV College, Dasuya | Lecturer | 19.9.2005 to 29.4.2006 | Teaching |

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|---|-----------------------------|--------------------|---------------------------|---------------------|
| | | | | |
| 2 | JCDAV College, Dasuya | Lecturer | 1.7.2006 to 22.11.2006 | Teaching |
| 3 | PGGCG-11, Chandigarh | AssistantProfessor | 19.8.2010 to 13.8.2012 | Teaching |
| 4 | Punjabi University, Patiala | AssistantProfessor | 14.8.2012 Onwards | Teaching & Research |

6. JOURNAL EDITORIAL MEMBERSHIP AND REVIEWERSHIP

- **Editorial member:** International journal of Multidisciplinary research
- **Reviewer-** Plos one, International journal of environment and climate change, Science and Justice, Journal of Threatened taxa, Annual research and review in biology, Uttar Pradesh Journal of Zoology.

7. ADMINISTRATIVE INVOLVEMENT

- Member –Women cell Punjabi University, Patiala 2007 to2010.
- President Society of Zoology and Environmental Sciences 2022-23
- Secretary Departmental Administrative committee 2023-24

8. TECHNICAL PROFICIENCY

I have been working in the field of Forensic Entomology for the last 15 years. Succession studies were carried out to collect and study the biology of locally available blow flies, flesh flies and beetles of Forensic importance that can be used in crime investigation. Morphological as well as molecular identifications of these arthropods. Some recent techniques like cuticular hydrocarbon profiling, cuticular VOC profiling, differential gene expression, cuticular MAS, micro-CT scanning to study internal structure of pupae have been applied for age determination and species identification of blowflies. Some Human case studies based on entomofauna have been done in collaboration with the local medical college. Analysis of reproductive drug contamination in water as well as milk.

9. INVITED TALKS DELIVERED/EXTENSION LECTURES

- “Forensic Entomology in Criminal investigation” at MDU Rohtak
- “Application of some recent techniques in age determination and species identification in blow flies” at MDU Rohtak
- Practical Aspect of Forensic Entomology at 2nd SERB school of Insect biology, P. U. Patiala.
- “Role of forensic entomology in crime investigation” at PGGCG sector-11 Chandigarh.
- “Role of entomology and crime investigation” DAV College Abohar.
- “Micro CT Scanning Tool for Blowfly Pupal Identification” University of Portsmouth, UK

10. PH.D. STUDENTS GUIDED / UNDER GUIDANCE:7

| S No | Name of the Student | Title of Thesis | Year of Completion |
|------|---------------------|-----------------|--------------------|
|------|---------------------|-----------------|--------------------|

| | | | |
|---|----------------|--|----------------|
| 1 | Neha Singh | Mitochondrial DNA typing for Identification of some forensically important species of beetles (Coleoptera) | Degree awarded |
| 2 | Anika Sharma | Application of some recent techniques for age determination and species identification of <i>Chrysomya megacephala</i> (Fab.) (Diptera: Calliphoridae) | Degree awarded |
| 3 | Pawandeep Kaur | Insect successional studies on Indoor, Outdoor and Submerged pig carcasses in Punjab. | Degree awarded |
| 4 | Harvinder Kaur | Studies on indoor mite fauna and forensically important Phoretic mites of Punjab. | Continuing |
| 5 | Harpreet Kaur | Assessment of Contraceptive and Fertility drugs toxicity as environmental contaminant and their impact on reproductive health of rat. | Continuing |
| 6 | Rohit Sambiyal | Ultra morphological and Taxonomic studies on immature stages and adults of flesh flies (Diptera: Sarcophagidae) from Northwest India. | Continuing |
| 7 | Shazed Fatima | Altitudinal diversity and distribution of forensically significant insect fauna from Ladakh, India. | Continuing |

10.

M.PHILL.STUDENTS GUIDED/ UNDER GUIDANCE: 4

| Sr No | Name of the Student | Title of Thesis | Year of Completion |
|-------|---------------------|---|--------------------|
| 1 | Pawandeep Kaur | Studies on Insect succession pattern and decompositional stages in case of buried piece of pork | 2014 |
| 2 | Sarabjeet Singh | Impact of Carcass Decomposition on soil beneath carcass | 2017 |
| 3 | Anita Kumari | Insect succession and decomposition pattern on rat carcasses placed in sunlit and shaded sites in Jammu region During winter and summer seasons | 2022 |
| 4 | Rashmi Rana | Distribution of Forensically important beetles from various localities of Himachal Pradesh, India | 2023 |

11. M.SC. STUDENTS GUIDED:16**12. PARTICIPATION AND TALKS IN CONFERENCES /WORKSHOPS**

1. UGC conference on recent concept of cell and animal physiology organized by PU Chandigarh (10.3. 2006 to 11.3.2006)

2. National Congress of Entomology Organized by Punjabi University, Patiala(15.3.2006 to 17.3.2006)
3. Research Interface workshop on insect diversity with particular emphasis on Microlepidoptera Organized by Punjabi University, Patiala (24.3.2007 to 25.3.2007)
4. International Conference on Entomology Organized by Punjabi University, Patiala (26.2.2009 to 28.2.2009)
5. 13th Punjab Science Congress organized by PU Chandigarh (7.2.2010 to 9.2.2010)
6. International symposium on Emerging Trends in Forensic Science organized by PUPatiala (22.2.2010 to 24.2.2010).
7. Environmental degradation and its impact on mankind Organized by Punjabi University, Patiala (19.11.2010 to 20.11.2010).
8. International Conference on Entomology Organized by Punjabi University, Patiala (17.2.2012 to 19.2.2012).
9. National Conference on Man and Environment Organized by Punjabi University, Patiala (15.10.2012 to 16.10.2012).
10. International Conference on Entomology Organized by Punjabi University, Patiala (21.2.2014 to 23.2.2014).
11. 4th Congress on Insect Science Organized by Punjab Agriculture University Ludhiana (16.4.2015 to 17.4.2015)
12. National Conference on Entomology Organized by Punjabi University, Patiala(29.10.2015 to 30.10.2015).
13. National Conference on Leveraging Biodiversity Organized by Panjab University Chandigarh (17.03.2016 to 18.03.2016)
14. XIII. International Meeting of the European Association for Forensic Entomology Organized by European Association for Forensic Entomology, Budapest, Hungary (25.5.2016 to 28.5.2016)
15. Workshop on Identification of forensically important flies with the help of 3D microscope (28.5.2016) Organized by European Association for Forensic Entomology, Budapest, Hungary
16. International Conference on Entomology Organized by Punjabi University, Patiala (3.12.2016 to 5.12.2016).
17. International Conference in Zoological Sciences Organized by Punjabi University, Patiala (26.10.2017 to 28.10.2017).
18. National conference on science in regional language, Organized by IISER, Mohali (13.10.18 to 14.10.18)
19. Two-day international webinar 18-19 May 2020 on corona virus and our future. By Sir Syed College, Taliparamba.
20. One day webinar 10th May 2020 on Forensic entomology on medicolegal investigation by Sherlock institute of forensic science, India.
21. One day webinar 5th June, 2020 "Climate Change, Environmental degradation and Pandemics" organised by Department of Zoology and Environmental Sciences, Punjabi University Patiala.
22. One day webinar 18th June,2020 "The generation and distribution of biodiversity in the east Himalaya, from trees to birds" organised by Zoological and Environmental Society, Department of Zoology and Environmental Sciences, Punjabi University Patiala.
23. One day webinar 26th June,2020 "The origins of complexity and the complexity of origins" organised by Zoological and Environmental Society, Department of Zoology and Environmental Sciences, Punjabi University Patiala.
24. One day webinar 6th July 2020 "Early adversity, Gq signaling and the programming of

- psychiatric vulnerability" organized by Zoological and Environmental Society, Department of Zoology and Environmental Sciences, Punjabi University, Patiala.
25. One day webinar 10th July 2020 "A tool to sing louder and an amplifier to hear better: the O. henry story" organized by Zoological and Environmental Society, Department of Zoology and Environmental Sciences, Punjabi University, Patiala
 26. One day webinar 23rd July 2020 "The genomic basis and spatial scale of adaptation in Atlantic cod and their consequences in a changing climate" organized by Zoological and Environmental Society, Department of Zoology and Environmental Sciences, Punjabi University, Patiala.
 27. One day webinar 23rd July 2020 "The genomic basis and spatial scale of adaptation in Atlantic cod and their consequences in a changing climate" organized by Department of Zoology and Environmental Sciences, Punjabi University Patiala.
 28. International conference by European association of forensic entomology, 10-12 June 20-21 organized by university of Portsmouth, UK
 29. National conference on Strategies and solution to achieve clean air- Punjab 24th and 25th Dec 2021, organized by Punjabi University Patiala.
 30. International conference on insect systematics and evolutionary biology, 16-18 Feb 2022 organized by Department of Zoology and Environmental Sciences, Punjabi University Patiala.
 31. Two Day workshop on Mobile Journalism and social media 24-25th March 2022 Organized by PSCST, Chandigarh
 32. International conference on growth of biological science in 21st century 3 & 4th March 2023 organized by faculty of life Sciences, Punjabi University, Patiala.

13. CARRIER ADVANCEMENT PROGRAMS ATTENDED

1. Orientation course at PU Patiala from 7.4.2014 to 3.5.2014 organized by UGC.
2. Winter school at PU Patiala from 1.12.15 to 21.12.15 organized by UGC.
3. Online Refresher course in life sciences at PU Patiala from 1.12.2020 to 14.12.2020 by UGC.
4. Online short-term course in life sciences at PU Patiala from 15.12.2022 to 20.12.2022 by UGC.

14. RESEARCH OUTCOME

Outreach article- 1

1. Singh, D. & Bala, M. 2009 Insects at the scene of crime. *Science Reporter*, September 2009: 8-13.

Book Chapters-2

1. Bala, M., & Sharma, A. 2023 Insects as Forensic Indicators and Their Utility in Crime Investigation. *In Biodiversity threats and conservation*, CRC Press, pp 13.
2. Kaur, P. & Bala, M. 2023 Insects as strong crime indicators tools in forensic Science. *In Insect diversity and ecosystem services*, CRC Press, pp 11.

15. LIST OF SCINTIFIC PUBLICATIONS

1. Singh, D. & **Bala, M.** 2007 Survival of postfeeding larvae and pupae of *Chrysomya megacephala* (Fab.) (Diptera; Calliphoridae) after submergence in oil. *Journal of Punjab Academy of Science*, 4(1-2): 95-98
2. Singh, D. & **Bala, M.** 2009 The effect of starvation on the larval behavior of two forensically important species of blow flies (Diptera; Calliphoridae). *Forensic Science International*, 193: 118-121. **Impact factor-2.67**
3. Singh, D. & **Bala, M.** 2009 Effect of medium on the pupation behavior of two species of blow flies (Diptera: Calliphoridae) *Journal of entomological Research*, 33(3): 269-272.
4. Singh, D., **Bala, M.**, Sharma, M. & Wadhawan, W. 2009 Forensic Entomology: An exhaustive review. *Annals of Entomology*, 27(1-2): 1-44.
5. Singh, D. & **Bala, M.** 2010 Studies on Larval Dispersal in Two Species of blow flies (Diptera: Calliphoridae). *Journal of Forensic Research*, 1:102 doi 10 4172/2157-7145.1000102
6. Singh, D. & **Bala, M.** 2011 Larval survival of two species of forensically important blow flies (Diptera: Calliphoridae) after submergence in water. *Entomological Research*, 41: 39-45. **Impact factor-1.35**
7. Singh, D. & **Bala, M.** 2011 Influence of photoperiod on pupation behavior of two species of blow flies (Diptera: Calliphoridae). *Journal of entomological Research*, 35(2): 147-150.
8. Singh, D. & **Bala, M.** 2013 Identification of two forensically important species of blow flies (Diptera: Calliphoridae) through banding patterns of polytene chromosomes. *Journal of Punjab Academy of Science*, 11-12(1-2): 9-12.
9. **Bala, M.** & Kaur, P. 2014 Insect Faunal Succession on Buried Piece of Pork in the State of Punjab (India): APreliminary Study. *Journal of Forensic Research*, 6:252.
10. **Bala, M.** & Kaur, P. 2015 Entomofauna on decomposed piece of pork: Study on delayed burial. *Journal of Entomological Research*, 39(1):77-84.
11. **Bala, M.** & Sharma, A. 2015 A Case Study of Decapitated 38 Years Old Male Corpse from Punjab (India). *Journal of Forensic Research*, 6:2.
12. **Bala, M.** & Singh, D. 2015 Development of two forensically important blow fly species (*Chrysomya megacephala* and *Chrysomya rufifacies*) (Diptera: Calliphoridae) at four temperatures in India. *Entomological Research*, 45, doi:10.1111/1748.5967.12110 S. **Impact Factor – 1.35.**
13. **Bala, M.** & Sharma, A. 2015 Review of some recent techniques of age determination of

blow flies having forensic implications. *Egyptian journal of forensic science*, 6,203-208.

Impact factor-1.27

14. 2015 Beetles and forensic entomology: Comprehensive review. *Journal of Entomological Research*, 39(4)293-304.
15. **Bala, M. & Singh, N.** 2016 Postmortem Interval Estimation of Mummified Body Using Accumulated Degree Hours (ADH) Method: A Case Study from Punjab (India). *Journal of Forensic Science & Criminal Investigation*. 1(1).
16. **Bala, M., Sharma, A. & Singh, N.** 2016 Case Study and PMI Estimation of Male Corpse from Ludhiana, Punjab, India: An Implication of ADH Method. *Indian Journal of Forensic Medicine & Toxicology*, 10(2)29-33.
17. Prasher, P., Kaur, M., Singh, S., Kaur, H., **Bala, M.** & Sachdeva, S. 2016 Ophthalmic manifestations of *Paederus dermatitis*. *International Ophthalmology*, DOI 10.1007/s10792-016-0352-y. **Impact Factor-2.02**
18. **Bala, M. & Singh, N.** 2017 Geographical distribution of Forensically important species of Beetles(Shilphidae: Coleoptera) from north India. *International journal of EntomologyResearch*,2(6)117-121.
19. Kaur, H. **Bala, M.** & Bansal, G. 2018 Reproductive drugs and environmental contamination: quantum, impact assessment and control strategies. *Environmental science and pollution research*.doi.org/10.1007/s11356-018-2754-z **impact factor-5.17**
20. Kaur, P. & **Bala, M.** 2018 Insect faunal succession studies on pork carrion in Punjab, India. *Journal of Entomological research*.42(2):287-294.
21. Singh, N. & **Bala, M.** 2019 Succession study from forensically important coleoptera from India: a preliminary study and its forensic implications. *Egyptian journal of forensic sciences*, 9(1):1-8. **Impact factor-1.27**
22. Kaur, P., **Bala, M.** & Galil, F. 2020 First Report of *Boettcherisca nathani* Lopes, 1961 and *Boettcherisca bengalensis* Nandi,1992(Sarchophaga: Diptera) from northwest India. *International journal of tropical insect science*.1-7. **Impact factor-1.02**
23. Kaur, P., **Bala, M.** & Galil, F. 2020 First Record of flesh fly *Sarcophaga (Liosarcophaga) ageptica* (Sarchophaga: Diptera) from India. *International journal of tropical insect science*.DOI-10.1007/S42690- 020-00347-4. **Impact factor-1.02**
24. **Bala, M. & Singh, S.** 2020 Alteration of physicochemical parameters of soil beneath rabbit carcass: consequences of carcass decomposition. *Indian Journal of Forensic Medicine and Toxicology*,14(2)138-145.
25. Sharma, A., Drijfhout, F.P., Tomberlin, J.K. & **Bala, M.** 2020 Cuticular hydrocarbons as a tool for determining the age of *Chrysomya rufifacies* (Diptera: Calliphoridae) larvae. *Journal of forensic science*, DOI-10.1111/1556-4029.14572.**Impact factor-1.7**

26. Sharma, A., Tomberlin, J.K., P. Delclos & **Bala, M.** 2020 Volatile compounds reveal age: a study of volatile organic compounds released by *Chrysomya rufifacies* immatures. *International journal of legal medicine*, DOI- 10.1007/s00414-020-02471-1. **Impact factor-2.7**
27. Nassar, M., Okely, M., **Bala, M.** et al. 2021 Spatio-Temporal analysis of Egyptian flower mantis *Blepharopsis mendica* (Order: Mantodea), with notes of its future status under climate change. *Saudi Journal of Biological Sciences*, 28(4)2049-2055. **Impact factor-4.05**
28. Sharma, A., Sayed, S., Bala, M. & Horvath, K. 2021 Study on ascending and descending vertical dispersal behavior of third instar larvae of *Chrysomya megacephala* (Fabricius) (Diptera: Calliphoridae): An evidence that blowflies survive burial. *Saudi Journal of Biological Sciences*, 28 (6), **Impact factor-4.05** doi.org/10.1016/j.sjbs.2021.03.062
29. Kumar, R., Sayed, S., **Bala, M.** et al. 2021 Ultramorphological study of immature stages and male genitalia of forensically significant flesh fly *Sarcophaga dux* Thomson, 1868 (Diptera: Sarcophagidae). *Journal of King Saud University-Science*, 33 (5): 101460. **Impact factor- 3.8** DOI;10.1016/j.jksus.2021.101460
30. Pimsler, M. L., Hjelman, C. E., Jonika, M. M., Sharma, A., Fu, S., **Bala, M.** et al. 2021 Sexual dimorphism in growth rate and gene expression throughout immature development in wild type *Chrysomya rufifacies* (Diptera: Calliphoridae) Macquart. *Frontiers in Ecology and Evolution*, 9, 368, **Impact factor- 4.49** DOI;https://doi.org/10.3389/fevo.2021.696638
31. Kaur, H., Bansal, G., K., Althobaiti, F., Aldhahrani, A., Usmani, S., **Bala, M.** 2021 Prevalence of reproductive drugs usage in humans and animals: A pilot study in Patiala city of India. *Saudi Journal of Biological Sciences*, 28 (7):3727-3734, **Impact factor-4.05** DOI 10.1016/j.sjbs.2021.04.064.
32. Babu, S., Kumar, R., Sharnouby, M., Bala. M. et al. 2022 Calliphorids as forensic indicator to facilitate PMI estimation: A case study from Chhattisgarh, India. *Journal of King Saud University-Science*, 34(1):101709, **Impact factor- 3.82** DOI: [10.1016/j.jksus.2021.101709](https://doi.org/10.1016/j.jksus.2021.101709)
33. Singh, N., Singh, D. Kesavan, A., Bala. M. et al, 2022 Cytochrome Oxidase Subunit II: Potential Marker for the Identification of Forensically Significant Species of Coleoptera—A Preliminary Study. *Diversity*, 14(5):369, **Impact factor-3.03**: DOI; [10.3390/d14050369](https://doi.org/10.3390/d14050369)
34. R, Kumar, R., Bala, M, & Galil, F. 2023 Morphological description of a new species of Genus *Sarcophaga* s. lat. (Diptera: Sarcophagidae) from Jammu and Kashmir, India, *International Journal of Tropical Insect Science*, 1-10 **Impact factor-1.02**