



Dr. Sumana Annagiri

Associate Professor
Department of Biological Sciences
Indian Institute of Science Education and Research
Kolkata, India

Curriculum Vitae

Employment:

- Assistant Professor, DBS, IISER-Kolkata – 2008 –2014
- Chairman – Department of Biological Sciences, IISER-Kolkata – 2012 – 2014
- Associate Professor, DBS, IISER-Kolkata – 2014 - Current

Education:

- B.Sc. (Biochemistry, Botany & Zoology), Maharani's College, Mysore University, India, 1993
- Post Grad Diploma (Ecology & Environment), Indian Institute of Ecology and Environment, New Delhi, India, 1994
- M.Sc. (Bioscience), Mysore University, Hassan, India, 1995
- Ph.D. (Thesis: Dominance behaviour and regulation of reproduction in the primitively eusocial wasp, *Ropalidia marginata*), Indian Institute of Science, Bangalore, India, 2002
- Post Doctoral experience Tufts University, Boston, USA, 2004

Awards and Distinctions:

- First rank (M.Sc.), Mysore University, 1995
- Junior research fellowship and eligibility for lectureship awarded by the CSIR (Government of India), 1995
- Emerging nations award, Animal Behaviour Society & International Ethology congress USA, 2011

Research Interests:

- Behavioural Biology
- Evolutionary Biology

Grants:

- Developing nations research grant, Animal Behavior Society, USA, 2000
- DST fast track grant – 2012 (~ Rs 15 lakhs)

Teaching:

List of courses taught

- Introduction to Biology I (1st year Undergraduate level, Organismal Biology, class size ~190)
- Introduction to Biology II (1st year Undergraduate level, Evolutionary Biology, class size ~ 190)
- Ecology (3rd year Undergraduate level, class size ~40)
- Animal Behaviour (4th year Undergraduate level, class size ~30)
- Practical courses in Evolution, Ecology and Behaviour (1, 2, 3 and 4th year Undergraduates, class size ~ 8 to 100)
- Scientific Presentation (5th year Undergraduate level, class size ~ 15)

Students:

- Current PhD students
 - Swetashree Kolay – CSIR scholar – IISER Kolkata
 - Anoop K – UGC scholar - IISER Kolkata
 - Biswarup Paul – Integrated PhD - IISER Kolkata
 - Snigdha Mukhopadhyay – Institute fellowship – IISER Kolkata
 - Kushankur Bhattacharyya – Integrated PhD – IISER Kolkata
- Current Master's Students
 - Sandip Murmu
 - Ashina S
 - Jolly Janette Mendonza
- Former students
 - Rajbir Kaur – PhD student – 2009-2015
 - Abhinav Yadav – MS Thesis – 2013-2014
 - Bishwarup Paul – MS Thesis – 2012-2013
 - Anoop K – MS Thesis - 2012-2013
 - Kushankur Bhattacharyya – 2014-2015
- I have supervised around 17 summer fellows

Publication List

- **Sumana A.** and Gadagkar R. 2001, The structure of dominance hierarchies in the primitively eusocial wasp *Ropalidia marginata*, *Ethology Ecology & Evolution* 13:273-281

- **Sumana A.** and Gadagkar R. 2003, Queens regulate worker reproduction without physical interactions in the primitively eusocial wasp *Ropalidia marginata*, Current Science 84 (11): 101-104
- **Sumana A.** and Philip T. Starks 2004, The function of darts in the paper wasp *Polistes fuscatus*. Naturwissenschaften 91: 220-223.
- **Sumana A.** and Philip T. Starks 2004, Grooming patterns in the primitively eusocial wasp *Polistes dominulus*. Ethology 110: 825-833.
- Aviva E. Liebert, **Sumana A.** and Philip T. Starks, 2005, Diploid males and their triploid offspring in the paper wasp *Polistes dominulus*. Proceedings of the Royal Society of London, Biology Letters 1: 200–203
- **Sumana A.**, Aviva E. Liebert, Anne S. Berry, Ghislaine T. Switz, Colin M. Orians, and Philip T. Starks 2005, Nest hydrocarbons as cues for philopatry in a paper wasp. Ethology 111: 469-477.
- Kardile S.P., **Sumana A.**, Surbeck M. and Gadagkar R. 2005, Wasp who would be queen: a comparative study of two primitively eusocial species. Current Science 91(3): 332-336
- Bhadra A., Iyer P.L., **Sumana A.**, Deshpande S.A., Ghosh S. and Gadagkar R. 2007, How do workers of the primitively eusocial wasp *Ropalidia marginata* detect the presence of their queens? Journal of Theoretical Biology 246: 574–582
- **Sumana A.**, Kardile S.P, Bhadra A. and Gadagkar R. 2008, Workers of the primitively eusocial wasp *Ropalidia marginata* do not perceive their queen across a wire mesh partition. Journal of Ethology 26: 207-212
- Bhadra A., Jordan F., **Sumana A.**, Deshpande S. A. and Gadagkar R. (2009), A comparative social network analysis of wasp colonies and classrooms: Linking network structure to functioning. Ecol. Complex. 9: 48-55.
- Bang A., Deshpande S., **Sumana A.** and Gadagkar R. 2010 Choosing an appropriate index to construct dominance hierarchies in animal societies: a comparison of three indices. Animal Behaviour 79: 631-636.
- **Sumana A.**, Chandan Sona. 2012 Studies on colony relocation in the Indian queenless ant *Diacamma indicum*. Current Science 102 (10): 1373 - 1374.
- Kaur R., Anoop K. & **Sumana A.** 2012 Leaders follow leaders to reunite the colony: relocation dynamics of an Indian queenless ant in its natural habitat. Animal Behaviour 83(6): 1345 – 1353.
- Nandi A.K., Bhadra A., **Sumana A.** Deshpande S. A. & Gadagkar R. 2013 The evolution of complexity in social organization – A model using dominance-

subordinate behaviour in two social wasp species. *Journal of Theoretical Biology*. 327: 34 - 44.

- **Sumana A.** & Sona C. 2013 Key relocation leaders in an Indian queenless ant. *Behavioural Processes*. 97: 84–89.
- Kaur R & **Sumana A.** 2014 Coupled adult-brood transport augments relocation in the Indian queenless ant *Diacamma indicum*. *Insectes Sociaux*. 61(2): 141-143.
- Anjan K. Nandi, **Annagiri Sumana**, Kunal Bhattacharya (2014) Dominance network structure influences information flow in social insect colonies. *Journal of Royal Society London Interface* 11: 20140951.
- Kaur R & **Sumana A.** 2015 Influence of colony associated factors on nest selection in an Indian queenless ant. *Ecological Entomology*. 40, 78–84.
- Karunakaran Anoop & **Sumana A.** (2015) Response to a change in the target nest during ant relocation. *Journal of Experimental Biology*, 218 (6), 887-892.
- Swetashree Kolay & **Sumana A.** (2015) Dual response to nest flooding in the Indian queenless ant. *Scientific Reports*, 5, 13716.
- Swetashree Kolay & **Sumana A.** (2015) Tight knit under stress: resilience among tandem leaders during relocation in an Indian queenless ant. *Royal Society Open Science* 2: 150104.

Manuscripts under preparation:

- Rajbir Kaur and **Sumana A.** (in preparation) Balancing the investment vs. vulnerability trade-off during relocation.
- Rajbir Kaur, Joby Joseph, Anoop Karunakaran and **Sumana Annagiri.** (in preparation) Running behind does not imply falling behind – characterization of recruitment through tandem running in the context of colony relocation in an Indian ant.
- **Sumana Annagiri**, Swetashree Kolay, Bishwarup Paul and Chandan Sona (in preparation) Network approach to understanding the organization and the consequence of targeted leader removal of an end oriented task
- Bishwarup Paul, Manabi Paul and **Sumana Annagiri** (in preparation) Opportunistic brood stealing in an Indian queenless ant.

Invited Presentations:

- Invited talk - "House Hunters and Movers in Ant Colonies" Evolutionary biology in India: Looking ahead. 11th & 12th September 2009. Evolutionary & Organismal Biology Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore
- Tutorial – "Cooperation, Kin Selection and Wasp Societies" UGC-NRCNS School on Animal Behaviour & Chronobiology, 29th August 2009 to 11th September 2009. School of Biological Sciences, Madurai Kamaraj University, Madurai
- Invited Poster - "House hunter and movers – case study of an ant". Young Investigators Meeting 2010 (YIM). 8th to 12th Feb 2010, Fort Resort, Raichuk, West Bengal. Organized by NCBS Bangalore
- Invited talk "Behavioural studies of an wasp and an ant from India" 2nd June 2010, School of Life Sciences, Arizona State University, Tempe, Arizona, USA.
- Invited talk "Colony emigration is influenced by key individuals: Case study of an Indian ant". Animal Behaviour Symposium 30th & 31st October 2010. Indian Institute of Science Education and Research, Kolkata.
- Invited Poster "Ant emigration: how and why do they go from here to there?" Indo-American Kavli Frontiers of Science Symposium, 18th to 20th April 2011. IUSSTF & U S National academy of sciences. Arnold & Mabel Beckman center, Irvine, California, USA.
- Invited talk " Colony emigration dynamics in a queenless Indian ant: Role of the key tandem leader" 26th July 2011 "Behaviour 2011", Joint meeting of Animal Behaviour society & International Ethological congress, Indiana State University, Bloomington, Indiana, USA.
- Invited talk "House hunting and moving in an Indian queenless ant" 19th & 20th December 2011, Max Planck's and DST Kickoff workshop, Indian Institute of Science Education and Research – Kolkata.
- Invited talk "" Evolution and Organismal Biology Unit Symposium, JNCASR, Bangalore, India 19th & 20th January 2012
- Invited talk "Leaders follow leaders to reunite the colony: Relocation dynamics of an Indian queenless ant in its natural habitat", Center for Ecological Sciences, Indian Institute of Science, Bangalore. 21st January 2012
- Invited talk "Insect societies – House hunting challenges" 24th May 2012 KVPY summer camp, Indian Institute of Science Education and Research, Kolkata.
- Invited talk "House hunting and moving in an Indian queenless ant" 21st September 2012, University of Hyderabad.
- Invited talk " House hunting and moving in an Indian queenless ant" 28th Dec 2012 Teachers' refresher course by the Indian Academy of Science, Indian Institute of Science Education and Research, Kolkata.
- Invited talk – "House moving logistics in an Indian ant" 26th to 28th June 2013 "Being Social" Indian Institute of Science, Bangalore.
- Invited talk – "House hunting in ants" 25th June 2013, National Center for Biological Sciences, Bangalore.
- Invited talk – "House hunting in ants" 1st July 2014, Indian Institute of Science Education and Research, Pune.

- Invited talk – “Running behind does not imply falling behind – understanding tandem running recruitment in an Indian ant”. 25th Jan 2016, 2nd workshop on Population genetics and Evolution, ICTS, Bangalore.

Synergistic activities:

I have refereed for the following Journals - Proceedings of National Academy of Sciences, Animal Behaviour, Behavioural Ecology and Sociobiology, Ethology Ecology and Evolution, Plos ONE, Frontiers of Zoology, Journal of Zoology, Insectes Sociaux, Current Science, Psyche, Halteres, Asian Myrmecology, Proceedings of the Zoological Society of India

Administrative duties undertaken at Indian Institute of Science Education and Research Kolkata:

- Anti-Ragging committee member (2009-2010)
- Deputy Ladies hostel warden (2009-2011)
- Students Activities Committee (2009-2012)
- Convener of school (The Bud) committee (2009-2010)
- PhD students advisory committee member (2009 - 2013)
- Integrated Ph.D. selection committee member (2009)
- Convener Canteen Committee (2010-2011)
- Students Activities Committee (2010-2011)
- President Movie Club (2010 – 2011)
- Campus management committee member (2009-2012)
- Safety and Upkeep committee (2011-2012)
- Assistant to Dean of Student (DOS) (2012-2013)
- In Charge of “The Hut” (2009-2015)
- President Nature club (2010-2015)