

Leena Thorat, PhD

CURRENT AFFILIATION: Postdoctoral Visitor
Department of Biology, Faculty of Science
York University, Toronto, ON, M3J 1P3, Canada.

RESEARCH FIELD:

- Behavioural and physiological ecology of insects under climate change stressors (*evolutionary and ecological implications of survival strategies, behaviour and metabolic physiology using insect model systems*).
- CRISPR/Cas-9 technique for gene editing in the mosquito, *Aedes aegypti* to study the consequences of drought stress by knockout of target genes.
- Behavioural and molecular investigation of the silk-woven underwater housing nest construction behaviour of chironomid midges.

EDUCATION

- **PhD (Zoology):** SP Pune University (SPPU; formerly, the University of Pune), India (2009-2015).
- **MSc (Zoology):** SPPU, India (2006-2008).
- **BSc (Zoology):** SPPU, India (2003-2006).

RESEARCH EXPERIENCE

- **Postdoctoral Fellow**, Department of Biology, York University, Canada (*Nov 2019- present*).
- **Independent Principal Investigator** as DBT-BioCARE Scientist, Department of Zoology, SPPU, India (*2017- 2019*).
- **EMBO-Short Term Fellow**, Freie Universität Berlin, Germany (June-September 2017).
- **Postdoctoral Fellow** (UGC-DSK), Department of Biotechnology, SPPU, India (*2016- 2017*).
- **Pre-doctoral Research Fellow** [(CSIR-NET) Government of India awarded Junior and Senior Research Fellow Award], Department of Zoology, SPPU, India (2009-2015).

TEACHING EXPERIENCE

- **Course Director & Lead Instructor [in-person & online/remote teaching]:**
 - Physiology of the Invertebrates (BIOL 3030), Department of Biology, York University (*Fall 2020 term*).
 - Summer Module Course in Biology, Department of Biology, York University (*Summer 2020 term*).
 - Animal Physiology (BIOL 3070), Department of Biology, York University (*Winter 2020 term*).

RESEARCH OUTPUT

- 16 peer-reviewed publications
- 1 project successfully completed as Principal Investigator
- 1 patent (filed in India)
- 3 invited reviews
- 2 invited interviews
- 2 journal cover-page credits
- 6 invited conference talks
- 20 conference presentations
- 5 conference presentation awards
- 3 gene sequence depositions

TEACHING OUTPUT

- Course Director & Lead Instructor for 3 courses
- 1 book publication on innovative science pedagogy
- 6 invited articles in science pedagogy & popularization
- 3 book chapters
- 16 invited public lectures
- 10 invited workshops
- 25 students mentored
- 1 invited guest scientist lecture

AWARDS, HONORS & DISTINCTIONS

- **2020: Invited Speaker at the Soapbox Science Toronto** (to be held in November 2020).
- **2020: Invited Judge (e-judging of projects) at the York Region Science and Technology Fair**, 19-21 May 2020.
- **2019: Invited Interview with the Society for Experimental Biology (U.K.):** "Spotlight on...Leena Thorat", *SEB*, Spring 2019 issue: 32-33.
- **2019: Invited interview with the Research Professional:** "Our Winning Proposals: EMBO's short and sweet fellowships", published online on 17 January 2019.
- **2019: Award for Oral Presentation at the Annual Meeting of the Society for Experimental Biology (SEB)**, Seville, Spain, 2-5 July 2019.
- **2019: Overseas Travel grant award (SERB-ITS, DST, India).** Funding to travel to Spain for oral presentation at the Annual Meeting of the SEB.
- **2019: Award for Best Oral Presentation by Young Scientist at the 7th International Conference on Molecular Signaling**, SPPU-NCCS, Pune, India, 23-25 January, 2019.
- **2018-present: Invited Review Editor, Frontiers in Physiology** (Invertebrate Physiology section).
- **2018: Invited Speaker & Resource Person** at the 'Workshop on Microscopy Skill Development Programme', NCL, Pune, India, 2-5 August 2019.
- **2018: Invited Speaker & Resource Person** at the '4 Days Hands-on Workshop on Microscopy', NCL Venture Centre, Pune, India, 6-9 June 2018.
- **2017: DBT Bio-CARe Women Scientist Award (Principle Investigator).**
- **2017: EMBO-Short Term Fellow Award** [Freie Universität Berlin, Germany].
- **2017: Invited talk & Co-chair for scientific session** at the 'Second World Congress on Microscopy', 10-12 Aug, 2018, Mahatma Gandhi University, Kerala, India.
- **2017: Invited Judge** at the 'Second World Congress on Microscopy', 10-12 Aug, 2018, Mahatma Gandhi University, Kerala, India.
- **2017: Invited Talk at the '20th International Symposium on Chironomidae'**, MUSE, Trento, Italy, 2-8 July, 2017.
- **2017-2018: Invited contributor** for articles on pedagogical science education in science popularization periodicals.
- **2016: University Grants Commission Postdoctoral Fellow Award (India)**
- **2014: Overseas Travel grant award (Pune University).** Funding to travel to Czech Republic for oral presentation at the 19 International Symposium on Chironomidae.
- **2013: DAAD Fellow Award** [Philipps Universität Marburg, Germany].
- **2013: Award for Best Oral Presentation by Young Scientist. A.S. Mukherjee Memorial Award** at the All India Cell Biology Conference, IISc, Bangalore, India, 21-24 December, 2013.
- **2011: Award for Best Poster Presentation.** Life Sciences Symposium, BARC, Mumbai, India, 12-14 October 2011.
- **2010: CSIR-NET Senior Research Fellow Award.**
- **2008: CSIR-NET Junior Research Fellow Award, Qualified the National Eligibility Test (Teaching & Research in India).**

INDEPENDENT RESEARCH FUNDING

- **2017-2019: DBT Bio-CARe Women Scientist Scheme (as P.I.)**
Project title: 'Biochemical and molecular investigation of aquatic silk protein from chironomid midge from biotechnological perspective'.
Total grant amount: USD 55,000.00 (Grant # BT/PR19917/BIC/101/456/2016).

COLLABORATING FOREIGN SCIENTIST

- **2018-2021: Israel Science Foundation & UGC, India Joint Research Programme**
Project title: 'Role of chironomid midge microbiome versus its intrinsic physiological factors in maintaining homeostasis under environmental stress conditions'.
Indian P.I.: Prof. B.B. Nath (SPPU, India) & Israeli P.I.: Prof. Malka Halpern (University of Haifa, Israel).

PATENT

- **Trehalosometer: an optics-based sensor for detection of trehalose** by Ravindra Sarje, Leena Thorat, B B Nath & A D Shaligram (filed in India, Nov 2019).

BOOK

- **Classroom Unplugged: Crossword Biology** by Leena Thorat & Bimalendu B. Nath. Book launch date: 20 Oct 2019; Panch Tattava Publishers (ISBN 978-81-929904-1-5).

RESEARCH

PEER-REVIEWED PUBLICATIONS

[†corresponding/co-corresponding author; *invited article; #cover page credit]

(Citation profile: <https://scholar.google.co.in/citations?user=Pe4pDXkAAAAJ&hl=en>)

16. †Leena Thorat, Emmanuel Joseph, Anuya Nisal, Ekta Shukla, Ameeta Ravikumar, Bimalendu B. Nath (2020). Structural and physical analysis of underwater silk from housing nest composites of a tropical chironomid midge. **International Journal of Biological Macromolecules** 163: 934-942. (Elsevier).
15. †Leena Thorat and B B Nath (2018) Insects with survival kits for desiccation tolerance under extreme water deficits. **Frontiers in Physiology** 9: 1843. (Lausanne: Frontiers Research Foundation, Switzerland).
14. †Leena Thorat and B B Nath (2018) Aquatic silk proteins in *Chironomus*: A review. **Journal of Limnology** 77(s1): 95-103. (PagePress, Italy).
13. Ekta Shukla, Leena Thorat, Ameya D Bendre, Santosh Jadhav, Jayanta K Pal, Bimalendu B Nath, Sushama M Gaikwad (2018) Cloning and characterization of trehalase: a conserved glycosidase from oriental midge, *Chironomus ramosus*. **3 Biotech** 8: 352-358. (Springer Berlin Heidelberg).
12. Leena Thorat, Dashrath Oulkar, Kaushik Banerjee, Sushama Gaikwad and B B Nath (2017) High-throughput mass spectrometry analysis revealed a role for glucosamine in potentiating recovery following desiccation stress in *Chironomus*. **Scientific Reports** 7: 3659-3671. (Nature Publishing Group).
11. Leena Thorat and B B Nath (2016) Quantitative assessment of larval desiccation tolerance in Oriental *Chironomus* species. **Current Science** 11: 1448-1449 (Indian Academy of Sciences).
- 10#. Leena Thorat, Dashrath Oulkar, Kaushik Banerjee and B B Nath (2016) Desiccation stress induces developmental heterochrony in *Drosophila melanogaster* following desiccation stress. **Journal of Biosciences** 41: 331-339. (Indian Academy of Sciences & Springer)
9. Ekta Shukla, Leena Thorat, Varsha Bhavnani, Ameya Bendre, J K Pal, B B Nath and S M Gaikwad (2016) Molecular cloning and *in silico* studies of physiologically significant trehalose from *Drosophila melanogaster*. **International Journal of Biological Macromolecules** 92: 282-292. (Elsevier).
8. Leena Thorat, Krishnapriya Mani, Pradeep Thankgaraj, Suvro Chatterjee and B B Nath (2015) Downregulation of *dTps1* in *Drosophila melanogaster* larvae confirms involvement of trehalose in redox regulation following desiccation. **Cell Stress and Chaperones** 21: 285-294. (Springer, Verlag).
7. Leena Thorat and B B Nath (2015) Tolerance to desiccation stress in *Chironomus ramosus* plasticity in homeostatic control. **European Journal of Environmental Sciences** 5: 86-91. (CU, Prague).
6. Ekta Shukla, Leena Thorat, Bimalendu B Nath and Sushama M Gaikwad (2015) Insect Physiological significance and potential applications. **Glycobiology** 25: 357-367. (Oxford University Press).

- 5#. **Leena Thorat** and B. B. (2013) Nath Chironomid midges: a forgotten model of developmental research. **Acta Zoologica** 94: 249-253. (John Wiley & Sons)
4. **Leena Thorat**, Sushama Gaikwad and B. B. Nath (2012) Trehalose as an indicator of desiccation *Drosophila melanogaster* larvae: A potential marker of anhydrobiosis. **Biochemical and Biophysical Research Communications** 419: 638-642. (Elsevier).
3. **Leena Thorat** and B. B. Nath (2010). Trends in Chironomid Research. **Chironomus: Journal of Chironomidae Research** 23: 34-35. (Norwegian University of Science & Technology, Norway).
2. **Leena Thorat** and B. B. Nath. (2010) Effects of water hyacinth *Eichhornia crassipes* root midge *Chironomus ramosus* larvae: a preliminary note. **Physiological Entomology** 35: 391-393. (John Wiley & Sons).
1. B. B. Nath, **Leena Thorat**, et al. (2009) Development of a new design of an insectary model and environmental assessment studies on chironomid midges. **Chironomus: Journal of Chironomidae Research** 22: 11-13. (Norwegian University of Science & Technology, Norway).

#JOURNAL COVER PAGE CREDITS

2. **Leena Thorat**, et al. (2016) **Journal of Biosciences** 41: 331-339.
Cover caption: Environmental-SEM of *Drosophila melanogaster* larvae representing desiccation-induced changes in cuticular topology followed by revival.
<https://www.ias.ac.in/listing/articles/jbsc/041/03>
1. **Leena Thorat** and B. B. (2013) **Acta Zoologica** 94: 249-253.
Cover caption: Eggs and hatched out larvae of a tropical midge *Chironomus ramosus*.
<https://onlinelibrary.wiley.com/toc/14636395/2013/94/3>

GENE SEQUENCE DEPOSITIONS

3. Bimalendu B. Nath, **Leena Thorat**, Malka Halpern and Sivan Laviad. *Chironomus ramosus* cytochrome oxidase subunit 1 (CO1) gene, partial cds submitted to NCBI GenBank (Accession No. PRJNA555776), 21-July-2019 [<https://www.ncbi.nlm.nih.gov/bioproject/555776>].
2. Shukla, E., **Leena Thorat**, Jadhav,S., Pal,J.K., Nath,B.B. and Gaikwad,S.M. *Chironomus ramosus* trehalase mRNA, partial cds submitted to NCBI GenBank (Accession No. KX857662), 14-Sep-2016 [<https://www.ncbi.nlm.nih.gov/nuccore/1139869898>].
1. Shukla E, **Leena Thorat**, Bhavnani VA, Pal JK, Nath BB and Gaikwad SM. *Drosophila melanogaster* strain Oregon K trehalase mRNA, partial cds submitted to NCBI GenBank (Ref: KU049688), 20-April-2016 [<https://www.ncbi.nlm.nih.gov/nuccore/KU049688>].

BOOK CHAPTERS (ACCEPTED, In press)

- 3 **Leena Thorat** and Bimalendu B. Nath. Demonstration of the hormonal control of metamorphosis using *Drosophila* as a model.
2. Bimalendu B. Nath and **Leena Thorat**. Visualization of Nucleolus in the larval salivary gland polytene nuclei in *Drosophila melanogaster* using light microscopy.
1. Bimalendu B. Nath and **Leena Thorat**. Allozyme variation in natural populations of *Drosophila melanogaster*.

TALKS & PRESENTATIONS AT SCIENTIFIC MEETINGS [*presenting author underlined; * invited speaker*]

- *21. **Leena Thorat**. 'Amazing ways to survive without water: the secret life of insects in the current scenario of global warming.' at the Soapbox Science Event to be held in Toronto, Canada, (scheduled for November'20).
- *20. **Leena Thorat** and BB Nath. 'Physiological plasticity under life without water: a biochemical tale of differential stress tolerance in *Chironomus* and *Drosophila*' at the Annual Meeting of the Society for Experimental Biology, Seville, Spain, 2nd-5th July, 2019.

- (Won Runner-up Award in Young Scientist category).**
19. **Leena Thorat** & BB Nath. 'Fate determining metabolic pathway in chironomid midge under desiccation stress' at the International Conference on Molecular Signaling (ICMS 2019), 23rd-25th January, 2019, NCCS & SPPU, Pune, India. (Talk).
- (Best Young Scientist Oral Presentation Award).**
- *18. Laviad-Shitrit S, Nath BB, **Leena Thorat** and Halpern, M. 'First evidence for the presence of pathogenic serogroups of *V. cholerae* in chironomids' at the 8th Conference on the Biology of Vibrios (Vibrio2019), McGill University, Montreal, Canada, 18th-20th November 2019.
- *17. **BB Nath**, Malka Halpern, **Leena Thorat**. 'Unique response patterns of chironomid midge to biotic and abiotic stress- an emerging model for stress biology studies' at the Annual Meeting of the Society for Experimental Biology, 2nd-5th July, 2019, Seville, Spain.
- *16. **Leena Thorat** and BB Nath. 'Use of advanced microscopy tools and techniques for desiccation stress studies in *Chironomus* and *Drosophila*' at the Second World Congress on Microscopy, 10th-12th August, 2018, Kerala, India.
15. **Leena Thorat**, Amey Shirolkar, Srikanth Rapole & BB Nath. 'Salivary gland proteome profile of *Chironomus ramosus*: cellular and molecular investigations with reference to aquatic silk protein' at the International Conference on Proteomics for Cell Biology and Molecular Medicine, 12th-14th December 2018, National Centre for Cell Science (NCCS), Pune, India. (Poster presentation).
14. **Leena Thorat**, Ameeta Ravikumar, Anuya Nisal & BB Nath. 'Aquatic silk protein: a unique metabolite from salivary gland cells of Indian chironomid midge' at the International Congress of Cell Biology (ICCB 2018) 'The Dynamic Cell- from molecules and networks to form and function', 27th-31st January 2018, Hyderabad, India. (Poster presentation).
13. **Leena Thorat** and **BB Nath**. 'Trehalose acts as a Redox regulator in *Drosophila* during desiccation stress' at the XV Annual meeting of the Society for Free Radical Research India (SFRR-India), 9th-12th January, 2017, BARC Mumbai, India.
- *12. **Leena Thorat**, Raju Dabhi, Srikanth Rapole, Ameeta Ravikumar, Anuya Nisal & BB Nath. 'Proteomic and biophysical analysis of aquatic silk protein from *Chironomus ramosus*' at the 20th International Symposium on Chironomidae, 2nd-8th July, 2017, Trento, Italy.
11. **Ekta Shukla**, **Leena Thorat**, BB Nath, JK Pal & SM Gaikwad. at the 11th National Research Scholars Meet in Life Sciences (NRS), 17th-18th December, 2015, ACTREC, Mumbai, India. (Poster presentation).
- *10. **Leena Thorat** & BB Nath. 'Tolerance to desiccation stress in *Chironomus ramosus* through an efficient homeostatic control' at the 19th International Symposium on Chironomidae, 17th-23rd August, 2014, Prague, Czech Republic. (Talk).
9. **Leena Thorat** & BB Nath. 'Effects of biotic and abiotic factors on survival and development of *Chironomus ramosus*' at the 19th International Symposium on Chironomidae, 17th-23rd August, 2014, Prague, Czech Republic. (Poster presentation).
8. **Ekta Shukla**, **Leena Thorat**, Varsha Bhavnani, JK Pal, BB Nath & SM Gaikwad. 'Molecular cloning of trehalase: enzyme involved in desiccation stress recovery in insects' at the NCL Science Day Symposium, 28th February 2014, NCL, Pune, India. (Poster presentation).
- *7. **Leena Thorat** & BB Nath. 'The role of chromatographic techniques in the detection of biomolecules that ameliorate desiccation stress in *Drosophila melanogaster*' at the meeting on 'Potential applications of chromatography and mass spectrometry techniques in multidisciplinary agricultural research', 17th June, 2014, National Research Centre for Grapes, Pune, India.
6. **Leena Thorat** & BB Nath. 'Desiccation stress responsive monitoring of trehalose biosynthesis in larvae of tropical midge *Chironomus ramosus*: a potential biomarker for climate change studies' at the XXXVII All India Cell Biology Conference, 21st-24th December, 2013, IISc, Bangalore, India. (Talk).
- (Won best Oral Presentation Award by Young Scientist).**
5. **BB Nath** & **Leena Thorat**. 'Life without water: signaling molecules that ameliorate anhydrobiosis in *Chironomus*' at the International Symposium on Molecular Signaling, 18th-21st February, 2013, VisvaBharati Central University, Santiniketan, India.
- *4. **Leena Thorat**. 'The desiccation stress biology of *Chironomus* and *Drosophila*' at the Weekly Seminar Series, 12th August, 2013, Institute of Tumor Biology & Molecular Biology, Philipps

- Universität Marburg, Germany.
3. **Leena Thorat**, Sushama Gaikwad & BB Nath. 'A novel stress metabolite in midges during anhydrobiosis' at the XXXVI All India Cell Biology Conference, 17th-19th October 2012, BARC, Mumbai, India. (Poster presentation).
 - *2. **Leena Thorat**, Sushama Gaikwad & BB Nath. 'Desiccation stress responsive monitoring of trehalose biosynthesis in larvae of tropical midge *Chironomus ramosus*: a potential biomarker for climate change studies' at the 4th International Symposium on the Environmental Physiology of Ectotherms and Plants, 18th-22nd July 2011, Rennes, France.
 1. **Leena Thorat**, Sushama Gaikwad & BB Nath. 'Trehalose as one of the candidate molecules used by midges during anhydrobiotic stress augmented by antioxidant enzymes' at the Life Sciences Symposium, 12th-14th October 2011, BARC, Mumbai, India. (Poster presentation). (**Won Best Poster Presentation Award**).

MEDIA OUTREACH

- **Interview with the Society for Experimental Biology (U.K.):** "Spotlight on...Leena Thorat", published by the Society for Experimental Biology (SEB), Spring 2019 issue: 32-33. [<http://www.sebiology.org/digital-magazine/Spring-2019/#p=34>].
- **Interview with the Research Professional along with fellow EMBO award winners:** "Our Winning Proposals: EMBO's short and sweet fellowships", published online on 17th January 2019.

PROFESSIONAL SERVICE

- Ad hoc reviewer for journals- Environmental Science and Pollution Research, Scientific Reports Frontiers in Physiology and Physiological Entomology.

PROFESSIONAL MEMBERSHIPS

- Early Career Scientist Member, Society for Experimental Biology, U.K. (March 2015-continuing).
- Life Member, Indian Society of Cell Biologists (since 2018).
- Life Member, Association of Teachers in Biological Sciences, (ATBS) (Regd.), India (since 2010).
- Member of the Zoological Association, SPPU, India (2006-2019).

TEACHING

TEACHING EXPERIENCE

- **Course Director & Lead Instructor at the Department of Biology, York University, Canada**
-Experience in designing undergraduate level course content, delivering in-person (classroom lectures) and remote teaching (online lectures), creating and conducting exams, developing innovative teaching activities and evaluations using platforms such as Moodle, Wooclap, Google Classroom and Crowdmark. I've taught/ am teaching the following courses at York University:
 - Physiology of the Invertebrates (BIOL 3030), Department of Biology, York University (Fall 2020 term).
 - Summer Module Course in Biology, Department of Biology, York University (Summer 2020 term).
 - Animal Physiology (BIOL 3070), Department of Biology, York University (Winter 2020 term).
- **Contributory Visiting Faculty (2015-2019)** for Masters Students at the Dept. of Zoology, Modern College, Shivajinagar, Pune, India
-Experience in conducting laboratory exercises in Taxonomy, Animal Behaviour, Ecology and Evolution, *Drosophila* Genetics and Developmental Biology and *Chironomus* Cytogenetics.
- **Teaching Assistant (2009-2019)** at the University Departments of Zoology, Biotechnology and at the Institute of Biotechnology and Bioinformatics, SPPU, Pune, India
-Involved in assisting and coordinating laboratory exercises for Bachelors and Masters Students in General & Advanced Life Sciences, *Chironomus* Cytogenetics, *Drosophila* Genetics, Microscopy and Histochemical Techniques.

- **Faculty of Science (June 2003- March 2009)** at Spectrum Education. Roles involved lecturing, conducting laboratory exercises and evaluating and preparing students for SSC (classes 9-10) and HSC Board exams (classes 11-12) in Biology and Chemistry.

MENTORING & CO-MENTORING

As Mentor

- **Biology Olympiad student finalists during their Pre-departure Camp at the Homi Bhabha Centre for Science Education (HBCSE) TIFR, India:** 16 Students who participated at the International Biology Olympiad (2011-2014) held at different venues globally [2011- Taipei, Taiwan; 2012- Singapore; 2013- Bern, Switzerland; 2014- Bali, Indonesia].
- **M.Sc. dissertations:** 4 Students (2016-2019), SPPU, India.
- **Undergraduate trainees:** 3 Students (2018-2019), SPPU, India.

As Co-mentor

- **Undergraduate research projects in Biology:** 02 students at the Department of Biology, York University.
- **Project Fellows:** 2 Research Assistants and 5 Project Fellows (2017-2019), SPPU, India.
- **M.Sc. dissertations:** 10 Students (2012-2019), SPPU, India.

INVITED ARTICLES IN PEDAGOGICAL SCIENCE EDUCATION & SCIENCE POPULARISATION

7. **Leena Thorat (2020)** Where did Animals come from? *Teacher Plus- A Magazine for the Contemporary Teacher*, November'20 issue: 28-32. [<http://www.teacherplus.org/2020/11/page/2/>]
6. **Leena Thorat (2018)** A Student's Musings. *Teacher Plus- A Magazine for the Contemporary Teacher*, September'18 issue: 34- 36. [<http://www.teacherplus.org/a-students-musings/>].
5. **Leena Thorat (2018)** What's alive? What's not? *Teacher Plus- A Magazine for the Contemporary Teacher*, April'18 issue: 27-34. [<http://www.teacherplus.org/activity-sheet/what's-alive-what's-not/>].
4. **Leena Thorat (2018)** Crosswords in Biology- Nucleic Acids: The Genetic Material. *Resonance-Journal of Science Education, (Springer)* November'18 issue. 23 (11): 1313-1316. [<https://www.ias.ac.in/article/fulltext/reso/023/11/1313-1316>].
3. **Leena Thorat (2018)** Crosswords in Biology- Basic unit of life: Cell. *Resonance-Journal of Science Education, (Springer)* October'18 issue. 23 (10): 1147-1151. [https://www.ias.ac.in/listing/bibliography/reso/Leena_Thorat/].
2. **Leena Thorat (2018)** Crosswords in Biology- Venomous animals. *Resonance-Journal of Science Education, (Springer)* September'18 issue. 23 (9): 27-34. [<https://www.ias.ac.in/article/fulltext/reso/023/09/1047-1050>].
1. **Leena Thorat (2017)** Fun ways of building word power. *Teacher Plus- A Magazine for the Contemporary Teacher*, February'17 issue: 6-8. [<http://www.teacherplus.org/2017/02/>].

ACADEMIC OUTREACH (EXTENSION ACTIVITIES)

- **Invited Visiting Expert** at the Journal Club Meeting on 'Adaptations to Extreme Environments', at the Department of Biology, Carleton University, Canada (19 October'20).
- **Invited Speaker & Resource Person** at the 'Microscopy Workshop', organized under the National Skills Development Program, NCL, Pune, India (21 August'19).
- **Invited Co-chair Person** at the 'Second World Congress on Microscopy', MG University, Kerala, India (10-12 August'18).
- **Invited Resource Person** at the '4-day Hands-on Workshop on Microscopy' organized by NCL Venture Centre, Pune, India (6-9 June'18).
- **Invited Resource Person** at the 'One-day Workshop on Microscopy: Handling & Troubleshooting' organized by Ramakrishna More College, Pune, India (31 January'18).

- **Invited Resource Person** at the 'Two-day workshop on Microscopy: Handling & Troubleshooting' organized by Modern College, Pune, India (5 & 6 January'18).
- **Co-coordinator & Invited Resource Person** on 'Good Laboratory Practices' at the 'State level Teachers Training Workshop- Teaching and Research Methodology' organized by H V Desai College, Pune, India (7 April'16).
- **Co-coordinator & Invited Resource Person** at the 'Workshop on Microscopy' organized by Modern College, Pune, India (30-31 January & 20-21 February'16).
- **Invited Resource Person** at the "Resource Generation Camp' for the preparation of science question bank for National Science Exam (NSE) organized by the Indian Association of Physics Teachers (IAPT), Pune, India (July'12).
- **Invited Resource Person** at the national-level workshop on 'Microscopy for Life Sciences' organized by the NCL Venture Centre, Pune, India (4-6 & 12-14 January'12).
- **Resource person** to conduct hands-on courses on 'Quantitative Genetics' for College Teachers under the national-level workshop on 'Modern techniques in Biology' organised by the Department of Zoology, The University of Pune, India (15-25 February'10).

INVITED TALKS (PUBLIC LECTURES)

- **Amazing ways to survive without water: the secret life of insects in the current scenario of global warming** at the Soapbox Science to be held in Toronto, Canada, 19 November'20.
- **Cracking the NET and SET exams: it's easy when you know how!** at the 'One-day workshop on Training and Guidance for NET/ SET exam', Prof. Ramakrishna More College, Pune, India (12 March'18).
- **Fluorescence Microscopy & its applications** at the 'Two-day workshop on Microscopy: Handling & Troubleshooting', Modern College, Ganeshkhind, Pune, India (5 Jan'18).
- **Tips on care-taking and troubleshooting of microscope** at the 'Workshop on Microscopy', Modern College, Shivajinagar, Pune (30 Jan & 20 Feb'16).
- **Fluorescence and Confocal Microscopy & Immunofluorescence-based detection techniques** at the 'Workshop on Microscopy', Modern College, Shivajinagar, Pune, India (31 Jan & 21 Feb'16).
- **Life skills for Graduates in Science, Arts & Commerce** at SP College, Pune, India (22 December'16).
- **21st Century Career Prospects for Science graduates** at SP College, Pune, India (7 September'16).
- **Importance of effective verbal and written English communication for Nutritionists at Dietetics and Nutrition Training Workshop** organized by One India Fitness Foundation, Solaris Gym, Pune, India (22 August'16).
- ***Drosophila*: a model for Biotechnological and Biomedical Research** at Sinhgad College of Science, Pune, India (5 August'16).
- **Importance of effective written English skills in scientific publishing** at the 'State level Teachers Training Workshop- Teaching and Research Methodology' organized by H V Desai College, Pune (6 April'16).
- **The art of Scientific Writing & Publishing** at the 'State level Teachers Training Workshop- Teaching and Research Methodology' organized by H V Desai College, Pune (5 April'16).
- **What to do with a B.Sc. degree in Zoology: Career options, resume writing & interview preparations** at Modern College, Shivajinagar, Pune (22 August'15).

