

Dr. Anupama Ronad

Scientific Officer (E)

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Academic Background:

- B. Sc. (Microbiology): Mumbai University
- M. Sc. (Microbiology): Mumbai University
- Ph. D (Zoology): Savitribai Phule Pune University

Professional Experience:

Position held: Scientific Officer at HBCSE (TIFR): 2000 – till date

Working as Scientific Officer in the Biology Olympiad Cell of Homi Bhabha Centre for Science Education (HBCSE) which is a National Centre of the Tata Institute of Fundamental Research. Involved in the selection and training of students to represent India at the International Biology Olympiad. Have been involved in designing challenging experimental and theoretical tasks which can be used in teaching at the undergraduate level. Also involved in a National Initiative on Undergraduate Science (NIUS) programme where students are nurtured to carry out proto-research in various areas of biology.

Teacher Workshops Conducted:

- Teacher Exposure Camps are regularly conducted for Undergraduate teachers under the Olympiad and the NIUS programs.
- Workshops for teachers of high school and undergraduate colleges are held regularly to familiarize and update them with hands-on skills in various areas of biology such as plant and animal sciences as well as biochemistry and molecular biology.

Camps conducted for students:

- Orientation cum Selection Camp (OCSC) for students is held every year in June as part of the orientation and selection of students to represent India at the International Biology Olympiad held annually and hosted by one of the participating country each year.
- The NIUS Nurture Camp for undergraduate students is held every year to orient students to research in biology and enhance their hands-on skills.
- Workshops in Molecular Biology for undergraduate students of colleges under the DBT Star College Scheme. The workshop involved orientation students to molecular biology techniques such as nucleic acid extraction from various sources, hands-on training in agarose gel electrophoresis as well as Polymerase chain reaction (PCR).
- Several camps are conducted by our Cell for students at the high school and undergraduate levels.

19th International Biology Olympiad (IBO)

The 19th International Biology Olympiad (IBO) was held in Mumbai, India in July, 2008. The event was hosted by HBCSE for 60 participating countries. Was part of the core group in hosting the event. Experimental tasks in four areas of biology were designed, developed and conducted for the 220 students who participated in the event ([Link to the tasks: file:///C:/Users/BioGuest/Downloads/IBO%202008%20Practicals_CCL%20\(3\).pdf](file:///C:/Users/BioGuest/Downloads/IBO%202008%20Practicals_CCL%20(3).pdf)). Two theory tests were also designed and administered to the students as part of the IBO.

Mentoring of Undergraduate Research Projects:

As part of the NIUS program, am mentoring proto-research projects of undergraduate students from various institutions and colleges across the country. Few of the projects are

- Visual cue perception in the larvae of *Drosophila*.
- Sensing chemical cues in the larvae of *Chironomus* wherein a simple experimental set-up has been designed to study the response of larvae to various chemical cues. This set-up can prove useful and hence can be extended for studies involving aquatic systems using other chemicals and small-sized invertebrates.
- Behavioral changes on exposure to hypoxia in the larvae of *Chironomus*.

Research Experience:

As part of my doctoral work under the guidance of Prof. B. B. Nath, I worked on the hemoglobin of the larva of Indian midge species *Chironomus ramosus*. My work involved identification and purification of the predominant monomeric isoform of the larval hemoglobin as well as studying the alterations in the hemoglobin levels in response to hypoxia.

Publications:

- Vartak R. and Ronad A. (2018). 'Evaluation of Students' Cognitive Skills using Objective Type Questions' In S. Ladage & S. Narvekar (Eds.), *Proceedings of epiSTEME 7 — International Conference to Review Research on Science, Technology and Mathematics Education*, p. 341 - 346. India: Cinnamon Teal
- Ronad Anupama and Nath B. B. (2017) 'Design and fabrication of a hypoxia-inducing chamber for simulation studies in environmental biomonitoring using *Chironomus* larva'; *Journal of Zoological Sciences*; Volume 5, Issue 2, pp 45 – 51.
- Ronad Anupama (2017) 'Observations in animal behavior using the Siamese fighting fish'; *ATBS eNewsletter Biome*; Vol. 5 Issue1; Pages 2 – 4.
- Rekha Vartak, Anupama Ronad and Vikrant Ghanekar (2013); Enzyme assay: an investigative approach to enhance science process skills; *Journal of Biological Education*; Volume 47 Issue 4; 253 – 257.

Books:

- Indian National Biology Olympiad -Theory Papers (2002-2004), Rekha Vartak and Anupama Ronad
- Indian National Biology Olympiad -Theory Papers (2005-2007), Rekha Vartak and Anupama Ronad.

Participation in Conferences and International Events:

- DAE-BRNS Life Sciences Symposium 2011 (LSS 2011) on 'Advances in Molecular and Cell Biology of Stress Response from October 12-14, 2011.
- XXXVIII Annual Conference of Environmental Mutagen Society of India (EMSI) and National Conference on 'Current Perspectives on Environmental Mutagenesis and human health' held from 28th – 30th January, 2013.
- 6th Annual Meeting of the Proteomics Society of India and International Proteomics Conference held from 6th - 10th December, 2014.
- 'Investigations in the Biochemistry Lab: An opportunity to enhance student engagement with method of science and procedural understanding' by Vartak Rekha and Ronad

Anupama was presented as a poster at the conference on New Horizons in Biochemistry and Molecular Biology Education held at the Weizmann Institute of Science from September 6 to 8, 2017 in Rohovot, Israel.

- Have accompanied the Indian team to IBO events in the following years: IBO 2005 in Beijing, P. R. of China, IBO 2007 in Saskatoon, Canada, IBO 2012 in Singapore, IBO 2015 in Aarhus, Denmark, IBO 2016 in Hanoi, Vietnam, IBO 2017 in Coventry, United Kingdom.

Affiliations:

- Member of Editorial Board of 'Biome', the e-newsletter of the Association of Teachers in Biological Sciences (ATBS).
- Executive Committee (EC) member of the Association of Teachers in Biological Sciences (ATBS).