




Faculty Details proforma for College Web-site



Title	Prof.	First Name	Seema	Last Name	Makhija	
Designation		Professor				
Address		Acharya Narendra Dev College University of Delhi Delhi-110007				
Phone No Office		0112629452				
Email/ Web-Page		seemamakhija@andc.du.ac.in http://andcollege.du.ac.in/?q=departments/zoology/faculty/7				
Educational Qualifications						
Degree	Institution		Year			
B.Sc (H) Zoology	Miranda House, University of Delhi		1991			
M.Sc, Zoology	Miranda House, University of Delhi		1993			
Ph.D.	Department of Zoology, University of Delhi		1998			
Career Profile						

Name of Institution	Position Held	Duration	Total Experience
Acharya Narendra Dev College	Professor (Permanent)	March 18, 2018 till date	3 years, 4 months
Acharya Narendra Dev College	Associate Professor (Permanent)	2007 to March 18, 2018	11 Years
Acharya Narendra Dev College	Assistant Professor	2003 to 2007	4 Years
S.G.T.B. Khalsa College	Assistant Professor (Ad-hoc)	July, 1997 to February, 1998 November, 2000 to March, 2003	3 Years
Miranda House	Assistant Professor (Ad-hoc)	September, 1996 to November, 1996; July, 1998 to November, 2000	1 Year and 2 Months
Administrative Assignments			
Zoology Coordinator of DBT-STAR college scheme (2017-till date).			
Co-Convener, Admission Committee (2021-2023)			
Convener, IT Committee (2020-2022)			

Co-Convener, Academic Events Committee (2018-till date)
 Co-Convener, Annual Report Committee 2021.
 Co-Cordinator of *Science Setu* Programme
 Member, Finance Committee (2016-till date)
 Member, Internal Biosafety Committee (IBSC).
 Teacher-in-charge, Department of Zoology (2010-2012)
 Member of Editorial Committee for the college magazine, annual report and prospectus
 Teacher In-charge from 2010–2012
 Enthusiastic member of the College Editorial Committee (2005-2010, 2012-2014).
 Active member of the College Proctorial Committee (2008-2010)

Areas of Interest / Specialization

Ciliate Biology/ Cell Biology

Subjects Taught

Evolutionary Biology, Biochemistry, Cell biology & Molecular biology

Research Guidance

Guided various undergraduate students for the college research projects under DBT, IEDC and ELITE. 3 Post graduate students did their internship under my mentorship

UG students present their work at several National and International conferences and bring accolades in the form of awards. List of few student who worked under my mentorship and bring laurels to the college.

Name of Student	Accolades/Awards
Senjuti Sengupta B.Sc. (H) Zoology III Year Chaitanya Raj B.Sc. (H) Physics III Year	Best paper award at National Seminar on ‘New Trends in Nanotechnology and Applications’ organized by Department of Physics, Atma Ram Sanatan Dharma College, September 2018.
Shiv Jangra Bhupender Singh, Jyoti Dagar, Khushi, Anit Kumar, Simran , Sidhanth Zutshi, B.Sc. (H) Zoology II yr Anusha, Muskan Bhatnagar, Meenu Upadhaya, B. Sc. (H) Chemistry II yr	Second Prize, oral presentation on ‘Ciliate diversity as a cellular tool to assess soil quality’, National Symposium on Man Made Diseases: An Urban Menace, Maitreyi College, Feb 11-12, 2016.

Ashish Choudhary, Manu Sankar, Vikas Ahlawat, Jeeva Susan Abraham, S. Sripoorna, Seema Makhija and Ravi Toteja	First Prize, Oral Presentation on ‘A low cost microbiotest for detecting insecticides by exploring behavioral and ecotoxicological response of fresh water ciliates’, National Symposium on ‘Recent Trends in Biology’ (RTIB) organized by Zoology Department, Maitreyi College, University of Delhi, Delhi, 25 February, 2015 under Star College Scheme, DBT
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Ph.D. supervision

- Supervisor for two Ph.D. students
- Co-Supervisor for two Ph.D. students

Ph.D. topics:

- Taxonomy, Phylogeny and Molecular Systematics of ciliates from Delhi, India
- Ciliates as cellular tool to assess heavy metal toxicity. Taxonomy,
- Microorganisms as bioindicators in diverse environment
- Use of ciliates in ecotoxicological studies

Publications Profile

1. **Seema Arora**, Renu Gupta, Swati Machwe and Gulshan Rai Sapra. (1999) Influence of cadmium on development of surface ciliary structures in the ciliate *Stylonychia mytilus* (Ciliophora, Oxytrichidae). *European Journal of Protistology* 35, 281-289.
2. **Seema Arora**, Renu Gupta, Komal Kamra and Gulshan Rai Sapra. (1999) Characterization of *Paraurostylo coronata* sp. n. including a comparative account of other members of the genus. *Acta Protozoologica* 38, 133-144.
3. Renu Gupta, Komal Kamra, **Seema Arora** and Gulshan Rai Sapra. *Stylonychia ammermanni* sp. n. a new oxytrichid (Ciliophora, Hypotrichida) ciliate from the river Yamuna, Delhi, India. *Acta Protozoologica* 40, 75-82 (2001).
4. Swati Machwe, **Seema Arora**, Renu Gupta and G.R. Sapra. (2001) Cisplatin induces modifications in the development of cell surface patterns of ciliates. *Cell Biology International* 25 (11), 1131-1138.
5. **Arora, S.**, Gupta, R., Sapra, G. R. (2002). Developmental toxicity of lithium in the ciliate, *Stylonychia*. *The Japanese Journal of Protozoology* Vol. 35 (suppl.), 42.
6. Gupta, R., **Arora, S.**, Kamra, K., Sapra, G. R. (2002). Biodiversity of genus *Oxytricha* in Delhi region of the Indian Subcontinent. *The Japanese Journal of Protozoology*, Vol. 35 (suppl.), 30.
7. Renu Gupta, Komal Kamra, **Seema Arora** and Gulshan Rai Sapra (2003). *Pleurotricha curdsi* (Shi, Warren and Song 2002) nov. comb. (Ciliophora: Hypotrichida): morphology and ontogenesis of an Indian population; redefinition of the genus. *European Journal of Protistology* 39, 275-285.
8. **Seema Makhija**, Renu Gupta and Ravi Toteja (2015) Lithium-induced developmental anomalies in the spirotrich ciliate, *Stylonychia mytilus* (Ciliophora, Hypotrichida). *European Journal of Protistology*, 51: 290–298.
9. **Seema Makhija**, Renu Gupta, Ravi Toteja, Jeeva Susan Abraham and Sripoorna

- Somasundaram (2015) Cadmium induced ultrastructural changes in the ciliate, *Stylonychia mytilus* (Ciliophora, Hypotrichida). Journal of Cell and Tissue Research, 15 (3): 5151–5157.
10. Sripoorna Somasundaram, Jeeva Susan Abraham, Renu Gupta, **Seema Makhija** and Toteja R (2015) Diverse freshwater spirotrich ciliate fauna from Okhla Bird Sanctuary, Delhi, India. Global Journal for Research Analysis, 4 (9): 37–41.
 11. Jeeva Susan Abraham, Sripoorna Somasundaram, Shiv Jangra, Khushi Yadav, Simran Singh, Siddhant Zutshi, Bhupender Singh, Jyoti Dagar, Anit Kumar, Anusha Goyal, Muskaan Bhatnagar, Upadhaya M., Ashish Choudhary, Ravi Toteja, Renu Gupta, Geetu Gambhir, **Seema Makhija** (2016) Biodiversity and community structure of soil ciliates collected from three different sites of Delhi, India to assess soil quality. Protistology, 10 (2), 5.
 12. **Seema Makhija**, Jeeva Susan Abraham, Sripoorna Somasundaram, Ravi Toteja, Renu Gupta (2016). Mapping the hidden diversity of free living fresh water ciliates from Delhi region, India. Protistology, 10 (2), 43.
 13. Sripoorna Somasundaram, Jeeva Susan Abraham, Ravi Toteja, Renu Gupta, **Seema Makhija** (2016). Molecular defence mechanisms in spirotrich ciliates to prevent heavy metal toxicity. Protistology, 10 (2), 76.
 14. Sripoorna Somasundaram, Jeeva Susan Abraham, Ravi Toteja, **Seema Makhija**, Renu Gupta (2016). Evaluation of acute toxicity of heavy metals and the activity of antioxidant enzymes in freshwater ciliates. Protistology, 10 (2), 77.
 15. Ravi Toteja, **Seema Makhija**, S. Sripoorna, Jeeva Susan Abraham and Renu Gupta (2017) Influence of Copper and Cadmium Toxicity on the Activity of an Antioxidant Enzyme, Superoxide Dismutase in Freshwater Ciliates. Indian Journal of Experimental Biology, 55: 694–701.
 16. Ashish Choudhary, Jeeva Susan Abraham, S. Sripoorna, Manu Sankar, Vikas Ahlawat, Renu Gupta, **Seema Makhija**, Ravi Toteja (2016) Evaluation of the cytotoxic effect of pesticide malathion on freshwater ciliate, *Tetmemena* sp. DU Journal of undergraduate research and innovation, 2 (1): 20–30.
 17. Ilmas Naqvi, Renu Gupta, **Seema Makhija**, Ravi Toteja, Jeeva S Abraham, S. Sripoorna and Hameed A.El-Serehy (2016) Morphology and morphogenesis of a new oxytrichid ciliate, *Notohymena limus* n. sp. (Ciliophora, Oxytrichidae) from Delhi, India. Saudi Journal of Biological Sciences, 23 (6): 789-794.
 18. Alan Warren, David J. Patterson, Micah Dunthorn, John C. Clamp, Undine E.M. Achilles-Day, Erna Aescht, Saleh A. Al-Farraj, Saleh Al-Quraishy, Khaled Al-Rasheid, Martin Carr, John G. Day, Marc Dellinger, Hamed A. El-Serehy, Yangbo Fan, Feng Gao, Shan Gao, Jun Gong, Renu Gupta, Xiaozhong Hu, Komal Kamra, Gaytha Langlois, Xiaofeng Lin, Diana Lipscomb, Christopher S. Lobban, Pierangelo Luporini, Denis H. Lynn, Honggang Ma, Miroslav Macek, Jacqueline Mackenzie-Dodds, **Seema Makhija**, Robert I. Mansergh, Mercedes Martín-Cereceda, Nettie McMiller, David Montagnes, Svetlana Nikolaeva, Geoffrey Odhiambo Ong'ondo, Blanca Pérez-Uz, Jasmine Purushothaman, Pablo Quintela-Alonso, Johana Rotterová, Luciana Santoferrara, Chen Shao, Zhuo Shen, Xinlu Shi, Weibo Song, Thorsten Stoeck, Antonietta La Terza, Adriana Vallesi, Mei Wang, Thomas Weisse, Krzysztof Wiackowski, Lei Wu, Kuidong Xu, Zhenzhen Yi, Rebecca Zufall, Sabine Agatha (2016) Beyond the “Code”: A Guide to the Description and Documentation of Biodiversity in Ciliated Protists (Alveolata, Ciliophora). Journal of Eukaryotic Microbiology, 64: 539–554.
 19. Jeeva Susan Abraham, S. Sripoorna, Ashish Choudhary, Ravi Toteja, Renu Gupta, **Seema Makhija** and Alan Warren (2017) Assessment of Heavy Metal Toxicity in Four Species of Freshwater Ciliates (Spirotrichea; Ciliophora) from Delhi, India. Current Science, 113 (11):

2141–2150.

20. Renu Gupta, Jeeva Susan Abraham, Sripoorna Somasundaram, Ravi Toteja, **Seema Makhija** and Hamed A El-Serehy (2017) Taxonomic and Morphogenetic description of freshwater ciliate *Aponotohymena isoautralis* n. sp. (Ciliophora; Oxytrichidae) isolated from Sanjay Lake, Delhi, India. *Acta Protozoologica*, 56: 93-107.
21. Sripoorna Somasundaram, Jeeva Susan Abraham, Swati Maurya, **Seema Makhija**, Renu Gupta and Ravi Toteja (2018) Cellular and molecular basis of heavy metal-induced stress in ciliates. *Current Science*, 114: 1858–1865.
22. S. Sripoorna, Jeeva Susan Abraham, Swati Maurya, Hritik Kadian, Juhi Jaiswal, **Seema Makhija**, Ravi Toteja (2017) Ultraviolet B induced protection strategies in unicellular eukaryotic microbes *Blepharisma* sp. and *Notohymena* sp. (Protista). *DU Journal of undergraduate research and innovation*, 3:60–73.
23. Jeeva Susan Abraham, S. Sripoorna, Swati Maurya, **Seema Makhija**, Renu Gupta, Ravi Toteja (2019) Techniques and tools for species identification in ciliates: A review. *International Journal of Systematic and Evolutionary Microbiology*, 003176.
24. Jeeva Susan Abraham, Sripoorna Somasundaram, Shiv Jangra, Anit Kumar, Khushi Yadav, Simran Singh, Anusha Goyal, Swati Maurya, Geetu Gambhir, Ravi Toteja, Renu Gupta, Dileep K. Singh, Hamed A. El-Serehy, Fahad A. Al-Misned, Saleh A. Al-Farraj, Khaled A. Al-Rasheid, Saleh A. Maodaa and **Seema Makhija** (2019) Soil ciliates of the Indian Delhi Region: Their community characteristics with emphasis on their ecological implications as sensitive bio-indicators for soil quality. *Saudi Journal of Biological Sciences*, 26(6): 1305-1313.
25. Sripoorna Somasundaram, Jeeva Susan Abraham, Swati Maurya, Ravi Toteja, Renu Gupta and **Seema Makhija** (2019) Expression and molecular characterization of stress-responsive genes (*hsp70* and *Mn-sod*) and evaluation of antioxidant enzymes (CAT and GPx) in heavy metal exposed freshwater ciliate, *Tetmemena* sp. *Molecular Biology Reports*, 46: 4921-4931.
26. Komal Karma, Harpreet Kaur, Jeeva Susan Abraham, Sripoorna Somasundaram, **Seema Makhija**, Ravi Toteja, Alan Warren and Renu Gupta (2020). Symposium Report: International Symposium on Ciliate Biology, India Habitat Centre, New Delhi, India, 04–06 April 2018. *Journal of Eukaryotic Microbiology*, 67: 296-299.
27. Gupta, R., Abraham, J. S., Sripoorna, S., Maurya, S., **Toteja, R., Makhija, S., ... & El-Serehy, H. A.** (2020). Description of a new species of *Tetmemena* (Ciliophora, Oxytrichidae) using classical and molecular markers. *Journal of King Saud University-Science*, 32(4), 2316-2328. <https://doi.org/10.1016/j.jksus.2020.03.009>
28. Abraham, J. S., Gupta, R., Somasundaram, S., Naqvi, I., Maurya, S., **Toteja, R., & Makhija, S.** (2020). Faunistic study on the freshwater ciliates from Delhi, India. *bioRxiv*. <https://doi.org/10.1101/2020.07.06.189001>.
29. Maurya, S., Abraham, J. S., Somasundaram, S., **Toteja, R., Gupta, R., & Makhija, S.** (2020). Indicators for assessment of soil quality: a mini-review. *Environmental Monitoring and Assessment*, 192(9), 1-22. <https://doi.org/10.1007/s10661-020-08556-z>.
30. Abraham, J. S., Somasundaram, S., Maurya, S., Gupta, R., **Makhija, S., & Toteja, R.** (2021). Characterization of *Euplotes lynni* nov. spec., *E. indica* nov. spec. and description of *E. aediculatus* and *E. woodruffi* (Ciliophora, Euplotidae) using an integrative approach. *European Journal of Protistology*, 79, 125779. <https://doi.org/10.1016/j.ejop.2021.125779>

HOLOTYPE SUBMISSION OF NEW CILATE SPECIES TO ZOOLOGICAL SURVEY

OF INDIA

- 1) Abraham J.S., Somasundaram S., Toteja R., **Makhija S.** and Gupta R. (2016). *Notohymena amiconuleata* sp. nov. Acc. No.: Pt.3220. Submitted in Zoological Survey of India, Kolkata.
- 2) Gupta, R., **Makhija, S.**, Toteja, R., Abraham, J. S. and Sripoorna, S. (2016) *Tetmemena sapraei* sp. nov. Acc. No.: Pt.3665. Submitted in Zoological Survey of India, Kolkata.
- 3) Abraham, J. S., Somasundaram, S., Maurya, S., Toteja, R., **Makhija, S.** and Gupta, R. (2019).
Euplotes aediculatus (Pt. 4641). Submitted in Zoological Survey of India, Kolkata.
- 4) Abraham, J. S., Somasundaram, S., Maurya, S., Toteja, R., **Makhija, S.** and Gupta, R. (2019).
Euplotes woodruffi (Pt. 4642). Submitted in Zoological Survey of India, Kolkata.
- 5) Abraham, J. S., Somasundaram, S., Maurya, S., Toteja, R., **Makhija, S.** and Gupta, R. (2019).
Euplotes n. sp. SLS1 (Pt. 4643). Submitted in Zoological Survey of India, Kolkata.
- 6) Abraham, J. S., Somasundaram, S., Maurya, S., Toteja, R., **Makhija, S.** and Gupta, R. (2019).
Euplotes n. sp. OBS2 (Pt. 4644). Submitted in Zoological Survey of India, Kolkata.
- 7) **Abraham, J. S.**, Somasundaram, S., Maurya, S., Toteja, R., Makhija, S. and Gupta, R. (2021). *Diaxonella multimarginata* n. sp. (Pt. 5045), *Gastrostyla indica* (Pt. 5046), *Uroleptus isogallina* n. sp. (Pt. 5047), *Anteholosticha foissneri* n. sp. (Pt. 5048), *Paraurostyla coronata* (Pt. 5049), *Aponotohymena australis* (Pt. 5050), *Sterkiella multicirrata* (Pt. 5051), *Gonostomum strenua* (Pt. 5052), *Pseudourostyla cristata* (Pt. 5053), *Pseudokeronopsis erythrina* (Pt. 5054), *Blepharisma sinusum* (Pt. 5055), *Laurentiella strenua* (Pt. 5056), *Oxytricha granulifera* (Pt. 5057), *Urostyla grandis* (Pt. 5058), *Paramecium multimicronuceatum* (Pt. 5059).

Books:

1. Renu Gupta, **Seema Makhija** and Ravi Toteja (2018). *Cell Biology Practical Manual*. Prestige Publishers.
2. Hardeep Kaur, Ravi Toteja, Seema Makhija (2021). *Text Book of Immunology*. IK Publishers. ISBN: 978-93-90620-30-2.

BOOK CHAPTER:

1. Jasmine Purushothaman, Bindu, L, **Seema Makhija**, Ravi Toteja and Renu Gupta (2017). Protozoa: Ciliophora (Ciliates). In K. Chandra, K.C. Gopi, D.V. Rao, K. Valarmathi and J.R.B. Alfred (Eds.), *Current Status of Freshwater Faunal Diversity in India* (pp 37-54). Zoological survey of India, Kolkata.
Seema Makhija (2008) Origin of Life. ([http:// nsdl.niscair.res.in/handle](http://nsdl.niscair.res.in/handle)), National Science Digital Library created by CSIR organization, National Institute of Science and Communication and Information Resources (NISCAIR).

EDUCATIONAL CONTENT IN OPEN DOMAIN

1. **Seema Makhija** (2010) Educational content on Structure and functions of Proteins <http://eduframe.net/ANDC/biology/Ravi-Bio/Ravi%20proteinsODL.htm>.
2. **Seema Makhija** (2013) Educational content on Cytochemical demonstration of DNA by Feulgen reaction. <http://eduframe.net/CamTelANDC/OpenVideo.php>

Conference / Presentations /Workshops

CONFERENCE PAPERS

International

1. **Makhija S**, Gupta R and Sapra G.R. (2000) Inhibition of membrane associated cellular functions by cadmium chloride in unicellular ciliates –**International Congress on Differentiation and Cell Biology** held in Goldcoast, Australia.
2. Gupta, R., Kamra, K., **Arora, S.**, Sapra, G.R. (2001) *Pleurotricha yamunii* n. sp., a new hypotrich ciliate: description and systematic relationships. **Proc. XI International Congress of Protozoology**, Salzburg, Austria, p.46.
3. **Arora, S.**, Gupta, R., Machwe, S., Sapra, G.R. (2001) Lithium chloride induces alterations in the ciliary pattern of ciliated protozoa, *Stylonychia*. **Proc. XI International Congress of Protozoology**. Salzburg, Austria, p.59.
4. Gupta, R., **Arora, S.**, Kamra, K., Sapra, G.R. (2001) Characterization of nine species of *Stylonychia* (including three new descriptions) from Delhi, India. **Proc. XI International Congress of Protozoology** Salzburg, Austria, p.83.
5. **Arora, S.**, Gupta, R., Sapra, G.R. (2002) Developmental toxicity of lithium in the ciliate, *Stylonychia*. **Proc. VI Asian Conference on Ciliate Biology**. Tsukuba, Japan, p.47.
6. Gupta, R., **Arora, S.**, Kamra, K., Sapra, G.R. (2002) Biodiversity of genus *Oxytricha* in Delhi region of the Indian Subcontinent. **Proc. VI Asian Conference on Ciliate Biology**. Tsukuba, Japan, p.25.
7. **Makhija, S.**, Gupta, R. and Sapra, G.R. (2007) Ultrastructural changes in *Stylonychia* (Hypotrichida; Oxytrichidae) exposed to cadmium. **International Symposium on Ciliate Biology**, S.G.T.B. College, University of Delhi.
8. **Makhija, S.**, Gupta, R. and Sapra, G.R. (2007) Modification of the cortical pattern by metals in the ciliate, *Stylonychia lemnae*. **International Symposium on Ciliate Biology**, S.G.T.B. College, University of Delhi.
9. **Makhija, S.**, Gupta, R. and Sapra, G.R. (2007) Inhibition of Membrane Associated cellular functions by cadmium in unicellular ciliates. **International Symposium on Ciliate Biology**, S.G.T.B. College, University of Delhi.
10. Gupta, R., **Makhija, S.** and Sapra, G.R. (2007) Occurrence of a new oxytrichid genus
11. (Ciliophora, Hypotrichida) from Moradabad, UP, India, **International Symposium on Ciliate Biology**, S.G.T.B. College, University of Delhi.
12. Gupta, R., **Makhija, S.**, Borgohain, P. and Sapra, G. R. (2007) Morphology and Morphogenesis of a new species of the genus *Sterkiella* (Ciliophora: Hypotrichida) from Delhi, India. **International Symposium on Ciliate Biology**, S.G.T.B. College, University of Delhi

Delhi.

13. Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja, Renu Gupta and **Seema Makhija (2013)** “**Bio-Monitoring heavy metal pollution in fresh water bodies by single celled eukaryotic microorganisms**” in Annual Conference of Association of Microbiologists of India (AMI-2013) held at Maharshi Dayanand Univesity, Rohtak Haryana, November 17-20, 2013.
14. S. Sripoorna, Jeeva Susan Abraham, **Seema Makhija**, Renu Gupta and **Ravi Toteja (2013)** “**Ciliate microbial biodiversity at Sanjay Lake, Delhi**” in Annual Conference of Association of Microbiologists of India (AMI-2013) held at Maharshi Dayanand Univesity, Rohtak Haryana, November 17-20, 2013.
15. **Seema Makhija**, Renu Gupta and Ravi Toteja (2014) “Diverse freshwater ciliate Fauna from Okhla Bird Sanctuary, Delhi, India. 3rd IRCN-BC Workshop held at Royal Holloway, University of London, U.K.
16. Renu Gupta, **Seema Makhija** and Ravi Toteja (2014) Soil ciliate (Protozoa, Ciliophora) Diversity in and around Delhi, India. 3rd IRCN-BC Workshop held at Royal Holloway, University of London, U.K.
17. Jeeva Susan Abraham, Renu Gupta, S. Sripoorna, Ravi Toteja and **Seema Makhija (2014)** Morphology, Morphogenesis and Molecular Phylogeny of *Notohymena* sp. (Ciliophora; Oxytrichidae) isolated from Sanjay Lake, Delhi, India, 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India.
18. S. Sripoorna, **Seema Makhija**, Jeeva Susan Abraham, Renu Gupta and Ravi Toteja (2014) Inferring Phylogenetic Position of an Indian Isolate *Tetmemena* sp. (Ciliophora, Oxytrichidae) Using Morphological, Morphogenetic and Molecular Markers. 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India.
19. Ravi Toteja, **Seema Makhija**, S. Sripoorna, , Jeeva Susan Abraham and Renu Gupta and (2014) Influence of Copper and Cadmium Toxicity on the Activity of an Antioxidant Enzyme, Superoxide Dismutase in Freshwater Ciliates. 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India.
20. Renu Gupta, **Seema Makhija**, Ravi Toteja, Jeeva Susan Abraham and S. Sripoorna (2014) Oxytrichid ciliate biodiversity from the river Yamuna, Delhi, India. 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India.
21. S. Sripoorna, Jeeva Susan Abraham, Renu Gupta, Ravi Toteja and **Seema Makhija (2015)** Characterization of cadmium induced hsp70 gene in *Tetmemena* n. sp. and its use as a molecular marker for heavy metal toxicity. Ciliate Molecular Biology held at Camerino, Italy, July 10-16, 2015.
22. Renu Gupta, Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja and **Seema Makhija (2015)** Morphology, morphogenesis and molecular phylogeny of two new species of class spirotrichea collected from Sanjay Lake in Delhi, India. Ciliate Molecular Biology held at Camerino, Italy, July 10-16, 2015.
23. Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja, Renu Gupta and **Seema Makhija (2015)** Metallothionein, TmMCd, induction in presence of cadmium in the spirotrich ciliate, *Tetmemena* n. sp. Ciliate Molecular Biology held at Camerino, Italy, July 10-16, 2015.
24. Jeeva Susan Abraham, S. Sripoorna, Renu Gupta, Ravi Toteja and **Seema Makhija (2015)** Phylogenetic relationships among the Spirotrich ciliates from the Indian Subcontinent inferred from small subunit rRNA gene sequence. 4th workshop sponsored by the International Research Coordination Network for Biodiversity of Ciliates held at Qingdao,

China, October 19-21, 2015.

25. S. Sripoorna, Jeeva Susan Abraham, Renu Gupta, Ravi Toteja and **Seema Makhija (2015)** Taxonomic evaluation of *Tetmemena* sp. by morphological and multiple markers to assess its phylogeny. 4th workshop sponsored by the International Research Coordination Network for Biodiversity of Ciliates held at Qingdao, China, October 19-21, 2015.
26. Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja, Renu Gupta and **Seema Makhija**. A study on freshwater hypotrich ciliates using morphological and molecular markers: an evolutionary perspective. XL All India Cell Biology Conference and International Symposium on Functional Genomics and Epigenetics held at Jiwaji University, Gwalior, from November 17-19, 2016.
27. S. Sripoorna, Jeeva Susan Abraham, Ravi Toteja, Renu Gupta and **Seema Makhija**. Use of ciliates as bioindicators to assess heavy metal pollution in freshwater bodies. XL All India Cell Biology Conference and International Symposium on Functional Genomics and Epigenetics held at Jiwaji University, Gwalior from November 17-19, 2016.
28. Renu Gupta, Jeeva Susan Abraham, S. Sripoorna, Sheeba, Tanya Bhayana, Kirti Kajal, Prachi Dadhich, Megha Singh, Sadhika Thakur, Anjali Yadav, **Seema Makhija** and Ravi Toteja. Insights into the phylogeny of *Blepharisma* sp. using small subunit ribosomal rRNA gene sequences. XL All India Cell Biology Conference and International Symposium on Functional Genomics and Epigenetics held at Jiwaji University, Gwalior, from November 17-19, 2016.
29. Jeeva Susan Abraham, Sripoorna Somasundaram, Renu Gupta, Ravi Toteja, Hamed A El-Serehy, **Seema Makhija**. Morphology and molecular taxonomy of ciliates from freshwater bodies in Delhi, India. 15th International congress of protistology held at Prague, Czech Republic, from 30th July-4th August, 2017.
30. Sripoorna Somasundaram, Jeeva Susan Abraham, Ravi Toteja, Renu Gupta, **Seema Makhija**. Cellular and molecular mechanisms to assess heavy metal toxicity in the freshwater ciliate, *Euplotes aediculatus* from Delhi, India. 15th International congress of protistology held at Prague, Czech Republic, from 30th July-4th August, 2017.
31. Ravi Toteja, Jeeva Susan Abraham, Sripoorna Somasundaram, Geetu Gambhir, Dileep K Singh, **Seema Makhija**. Soil ciliate (Protozoa; Ciliophora) diversity in and around Delhi, India and its ecological implications. 15th International congress of protistology held at Prague, Czech Republic, from 30th July-4th August, 2017.
32. S. Sripoorna, Jeeva Susan Abraham, Swati Maurya, Ravi Toteja, **Seema Makhija** and Renu Gupta. Use of ciliates in biomonitoring heavy metal pollution. Indian Network for Soil Contamination Research International Conference, Department of Zoology, University of Delhi, Delhi from 26th-28th September, 2017.
33. Renu Gupta, **Seema Makhija**, Jeeva Susan Abraham, Sripoorna Somasundaram and Ravi Toteja. Soil ecosystem –an insight into ciliate diversity from Delhi. Indian Network for Soil Contamination Research International Conference, Department of Zoology, University of Delhi, Delhi from 26th-28th September, 2017.
34. Jeeva Susan Abraham, S. Sripoorna, Renu Gupta, Ravi Toteja, Swati Maurya, Geetu Gambhir, D. K. Singh and **Seema Makhija**. Physico-chemical and biological analysis of soil samples collected from different sites in and around Delhi, India. Indian Network for Soil Contamination Research International Conference, Department of Zoology, University of Delhi, Delhi from 26th-28th September, 2017.
35. Jeeva Susan Abraham, S. Sripoorna, Swati Maurya, Ravi Toteja, **Seema Makhija** and Renu Gupta. Phylogenetic study of three spirotrich ciliates using modern biological techniques: an integrated approach. International Symposium on Ciliate Biology (ISCB), University of

- Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
36. S. Sripoorna, Jeeva Susan Abraham, Swati Maurya, Ravi Toteja, Renu Gupta and **Seema Makhija**. Molecular characterization of heat-shock protein in ciliates. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 37. **Seema Makhija**, Swati Maurya, Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja and Renu Gupta and. Molecular characterization of heat-shock protein in ciliates. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 38. Jeeva Susan Abraham, Renu Gupta, S. Sripoorna, Swati Maurya, Shiv Jangra, Anit Kumar, Ravi Toteja and **Seema Makhija**. Biodiversity of soil ciliates from in and around Delhi, India. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 39. Renu Gupta, Jeeva Susan Abraham, S. Sripoorna, Sheeba, Tanya Bhayana, Kirti Kajal, Anjali Yadav, Bhawana Kumari, **Seema Makhija** and Ravi Toteja. Molecular phylogeny of *Blepharisma* sp. based on sequence analysis of 18S rDNA and ITS gene. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 40. Harshvardhan Sahu, Vanya Garg, Khushboo, S. Sripoorna, Jeeva Susan Abraham, Swati Maurya, **Seema Makhija**, Ravi Toteja and Renu Gupta. A study on the process of regeneration in ciliate, *Tetmemena* sp. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 41. S. Sripoorna, Jeeva Susan Abraham, Swati Maurya, Hritik Kadian, Juhi Jaiswal, **Seema Makhija** and Ravi Toteja. Ultraviolet B (UVB) induced changes in eukaryotic microbe, ciliates. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 42. Swati Maurya, Jeeva Susan Abraham, S. Sripoorna, **Seema Makhija**, Renu Gupta and Ravi Toteja. Role of Ciliates to monitor the efficacy of Sewage Treatment Plant: A Review. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 43. Ravi Toteja, **Seema Makhija**, S. Sripoorna, Jeeva Susan Abraham, Swati Maurya and Renu Gupta. Transcriptomic analysis of heavy metal induced changes in gene expression in freshwater ciliates. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 44. Renu Gupta, Jeeva Susan Abraham, S. Sripoorna, Swati Maurya, Ilmas Naqvi, Ravi Toteja **and Seema Makhija**. Faunistic study on the freshwater ciliates of Delhi, India. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 45. **Seema Makhija**, Ravi Toteja, S. Sripoorna, Jeeva Susan Abraham, Swati Maurya and Renu Gupta. An overview of progression of ciliate biology research at University of Delhi. International Symposium on Ciliate Biology (ISCB), University of Delhi from 4th-6th April (2018) at India Habitat Centre, New Delhi, Delhi, India.
 46. Sripoorna Somasundaram, Jeeva Susan Abraham, Swati Maurya, Ravi Toteja, **Seema Makhija**, Renu Gupta. Genetic and molecular mechanisms to cope oxidative stress in freshwater ciliates. 5th Joint meeting of PSA/ISOP from 29th July to 2nd August, 2018 at University of British Columbia, Vancouver, Canada.
 47. Jeeva Susan Abraham, Sripoorna Somasundaram, Swati Maurya, **Seema Makhija**, Ravi

Toteja, Renu Gupta. Taxonomic description and molecular phylogeny of three species of genus *Euplotes*: First report from Delhi, India. 5th Joint meeting of PSA/ISOP from 29th July to 2nd August, 2018 at University of British Columbia, Vancouver, Canada.

48. 47. Somasundaram, S., Abraham, J. S., Maurya, S., Gupta, R., **Makhija, S.** and Toteja, R. (2021). Silico Identification and Characterization of cadmium, copper metalloproteins and cysteine-rich proteins involved in cell defense in the freshwater ciliate, In *61st International conference of AMI-INSCR*, February 03-05, 2021.
49. Abraham, J. S., Somasundaram, S., Maurya, S., Sood, U., Gupta, V., Lal, R., Gupta, R., Toteja, R. and **Makhija, S.** (2021). A study on ciliate diversity of Delhi using traditional microscopic and modern molecular methods. In *61st International conference of AMI-INSCR*, February 03-05, 2021.
50. Maurya, S., Abraham, J. S., Somasundaram, S., **Makhija, S.**, Gupta, R. and Toteja, R. (2021). A comparative study of the soil physico-chemical parameters and ciliate diversity from a Landfill and Human inhabitant site. *61st International conference of AMI-INSCR*, February 03-05, 2021.

NATIONAL CONFERENCE PAPERS

1. Gupta R, **Arora S** and Sapra GR. (1994) Morphology and morphogenesis of *S. notophora* (Ciliophora, Hypotrichida) –All India Cell Biology Conference.
2. **Arora S**, Gupta R, Sapra GR, Mehra N.K. (1996) Ultrastructural changes induced by cadmium in *S. mytilus* –All India Conference on Electron Microscopy.
3. Gupta R, **Arora S** and Sapra GR. (1997) Morphic shifts induced by changes in food size and availability in *S. notophora* (Ciliophora, Hypotrichida) –All India Cell Biology Conference.
4. **Arora S**, Gupta R and Sapra GR. (1997) Cadmium induced cortical aberration in *S. mytilus* (Ciliophora, Hypotrichida) –All India Cell Biology Conference.
5. 51. Machwe S, **Makhija S**, Gupta R and Sapra GR. (2000) Stress-induced proteins in *Stylonychia* exposed to the metals, cisplatin and cadmium. All India Cell Biology Conference.
6. **Makhija S.** and Gupta R. (2003) Relationship between sensitivity of enzymatic activities and survival to Cadmium in two species of the Ciliate Protozoan *Stylonychia* -All India Cell Biology Conference.
7. Prateek Kumar, Kritika Shukla, Parveen Atrish, Jeeva Susan Abraham, **Seema Makhija** and Ravi Toteja (2013) Use of Bioluminescent Ciliate Sensors as an Alternative Method for Measuring Heavy Metals in Fresh Water Samples. National Conference, Redefining Science Teaching: Future of Education held at University of Delhi South Campus, March 7-9, 2013.
8. Ashish Choudhary, Manu Sankar, Vikas Ahlawat, Jeeva Susan Abraham, S. Sripoorna, **Seema Makhija** and Ravi Toteja (2015). A low cost microbiotest for detecting insecticides by exploring behavioural and ecotoxicological response of freshwater ciliates. Recent trends in Biology organized by Department of Zoology, Maitreyi College, University of Delhi, New Delhi, India.
9. Renu Gupta, Jeeva Susan Abraham, S. Sripoorna, Bhawana Kumari, Shivangani Lohani, Divya Ojha, Ranjeeta Bhujbal, **Seema Makhija** and Ravi Toteja (2015) Elucidation of phylogenetic status of *Blepharisma* sp. from Delhi, India: Congruence of classical and molecular markers. Recent trends in Biology organized by Department of Zoology, Maitreyi College, University of Delhi, New Delhi, India.
10. Shiv Jangra, Khushi, Simran, Sidhanth Zutshi, Bhupender Singh, Jyoti Dagar, Anit Kumar, Anusha Goyal, Muskan Bhatnagar, Meenu Upadhaya, Jeeva Susan Abraham, S. Sripoorna,

Ashish Choudhary, Ravi Toteja, **Seema Makhija**, Geetu Gambhir and Renu Gupta (2016) A Study on physico-chemical analysis of soil samples collected from various sites in and around Delhi. National Symposium on Man-Made diseases: an urban menace organized by Department of Zoology, Maitreyi College, University of Delhi, New Delhi, India.

11. Shiv Jangra, Khushi, Simran, Sidhanth Zutshi, Bhupender Singh, Jyoti Dagar, Anit Kumar, Anusha Goyal, Muskan Bhatnagar, Meenu Upadhaya, Jeeva Susan Abraham, S. Sripoorna, Ashish Choudhary, Ravi Toteja, **Seema Makhija**, Geetu Gambhir and Renu Gupta (2016) Ciliate diversity as a cellular tool to assess soil quality. National Symposium on Man-Made diseases: an urban menace organized by Department of Zoology, Maitreyi College, University of Delhi, New Delhi, India.
12. Shiv Jangra, Khushi, Simran, Sidhanth Zutshi, Bhupender Singh, Jyoti Dagar, Anit Kumar, Anusha Goyal, Muskan Bhatnagar, Meenu Upadhaya, Jeeva Susan Abraham, S. Sripoorna, Ashish Choudhary, Ravi Toteja, **Seema Makhija**, Geetu Gambhir and Renu Gupta (2016) Community characteristics of soil ciliates collected from three different sites in Acharya Narendra Dev College, University of Delhi. Proceedings on second national symposium on Environment: Greener Future and Awareness, Department of Zoology, Deshbandhu college, University of Delhi, New Delhi, India, March 19, 2016.
13. Pranjal Sharma, Deepika Joshi, Swati Maurya, Jeeva Susan Abraham, S. Sripoorna, Ravi Toteja, Renu Gupta, **Seema Makhija** (2019) Ciliates as bioindicators of Leachate at Health: Future Prespective. Biotechnology in present era: Impact on human life and environment held at Maitreyi College, University of Delhi.
14. Ruchika Bhardwaj, Deepanshu Vats, Rajanshi Mishra, Naeem Ahmed, Shushank ,MustabinAhmed , Swati Maurya, S. Sripoorna, Jeeva Susan Abraham, Ravi Toteja, Renu Gupta, **Seema Makhija** (2019) Insight into the Genome of ciliate, *Colpoda* spto assess its role in environmental biomonitoring at Health: Future Prespective. Biotechnology in present era: Impact on human life and environment held at Maitreyi College, University of Delhi.

CONFERENCES/WORKSHOPS/SYMPOSIUM ATTENDED AND ORGANIZED

1. Organized and Attended National Symposium on **Biotechnology: Expanding Horizons** organized by Acharya Narendra Dev College and held at INSA auditorium (2003).
2. Participated in the 5th Annual Symposium on **Frontiers in Biomedical Research** held at Dr. B.R. Ambedkar Centre for Biomedical Research, University of Delhi (2004).
3. Attended the National Symposium **Biohorizons 2004** organized by Indian Institute of Technology, Delhi (2004).
4. Attended National Seminar on **Recent Trends in Chemistry** held at Maitreyi College University of Delhi (2004).
5. Attended one day **Workshop on Bioinformatics** in the Department of Botany, North Campus, University of Delhi (2005).
6. Attended one day workshop on **Delhi State Level Symposium on Forensic Science** organized by S.G.T.B. Khalsa College, University of Delhi (2005).
7. Joint Secretary and also presented papers in the International symposium on **Ciliate Biology Biodiveristy, ultrastructure, development, genome and parasitism** organized by SGTB Khalsa College, University of Delhi (2007).
8. Resource person in a ten day workshop **Understanding complexities of life from molecules to system: Concepts and tools** for undergraduate students of Biology in the college (2008).
9. Resource person in four day **Biology Laboratory Course Workshop**, B.Sc. Programme LSIII, organized by Institute of Life Long Learning, University of Delhi and Acharya Narendra Dev College (2008).

10. Participated in five day **Wikied'09 Workshop**, organized by Acharya Narendra Dev College and CEMCA (2009).
11. **Preparation of online quizzes on Life Sciences subjects**, organized by Institute of Life Long Learning (ILLL), University of Delhi (2009).
12. Part of the Organizing Committee of two day National Symposium on **Chemistry in Biology: The Future of Life Sciences** organized by Acharya Narendra Dev College, University of Delhi at India International Centre, New Delhi (2010).
13. Participated in Three week workshop entitled "**Easy Now -A Course Material Preparation Module**" held at Acharya Narendra Dev College. The course material is uploaded on website <http://eduframe.net/andc> (2010).
14. Participated in six day **Easy Now Workshop on Multimedia Content Development**, organized by Acharya Narendra Dev College and CEMCA (2010).
15. Member of the organizing committee for organizing two day workshop on **Hands on Training, Molecular Phylogenetics: Understanding Evolutionary Histories**, (Workshop for Students) on organized in Acharya Narendra Dev College (2011).
16. Attended five day workshop on **Science Education and Research** co-organized by Vidya Bhavan Society and Acharya Narendra Dev College (2012).
17. Attended one day seminar on **Use of Animals in Education and Research** held at Department of Zoology, University of Delhi (2012).
18. Coordinator of one day workshop on practical related to paper **Evolutionary Biology** to be held at SGTB Khalsa College, University of Delhi (2013).
19. Member of the organizing committee of **9th Asian Congress on Ciliate Biology and 2nd Asian Congress of Protistology** to be held at University of Kalyani, West Bengal (2014)
20. Served as a member of the organizing committee in the **International Symposium on Ciliate Biology (ISCB)** and as coordinator in the Workshop on „**Tools and Techniques Used in Ciliate Studies**“ held on 6th April 2018, at the India Habitat Centre, Delhi organized by Zoological Survey of India and ISCB 2018.
21. Organized a two day symposium on "**Safety Measures and Laboratory Ethics**" on February 21-22, 2018.
22. Organized a workshop on **Hands – on Training of ELISA Technique** on 13th February, 2019 at Acharya Narendra Dev College.
23. Served as a convenor in six day interdisciplinary workshop on **Learning Science by Doing Science** from 18th to 24th June, 2019 at Acharya Narendra Dev College, University of Delhi.
24. Organized a three day workshop on **Learning Science in collaboration with National Bal Bhavan** from 17th to 19th July, 2019 at Acharya Narendra Dev College, University of Delhi.
25. Served as a resource person in two week national summer training – cum – workshop on **Fundamentals of Microbiology (Basic)** from 27th to 12th July, 2019 at Deen Dayal Upadhyaya College, University of Delhi.
26. Organized a **Biar Initiative: A School Outreach Program for Enrichment** on 21st October, 2019 at government senior secondary school, Bani, Himachal Pradesh.
27. Organized a **Bani School Innovation Camp IV (Basic IV), 2019 Dream School** on 22nd October, 2019 at government senior secondary school, Bani, Himachal Pradesh.
28. Organized a workshop on **Molecular Biology Techniques** on 22nd November, 2019 at Acharya Narendra Dev College, University of Delhi.
29. Attended a **Global Bio- India 2019** from 21st to 23rd November, 2019 at Aerocity, New Delhi.
30. Participated in **ISW – 2020 International Summit on Women in STEM – “New Skylines”**

form 23rd to 24th January, 2020 at Indian Habitat Centre, Lodhi Road, Delhi.

31. Organized one-day seminar on “Career in Forensic Science” in the ANDC career counselling series on March 20, 2021.
32. Organized one-day seminar on ‘Studying in Europe-Interaction with seniors’ in the ANDC career counselling series on March 14, 2021.
33. Organized one-day seminar on ‘Career after MBA- exploring the unexplored’ in the ANDC career counselling series on March 7, 2021.
34. Organized three day online hands-on workshop on ‘A step-by step guide to Data mining from literature to pathways’ from March 1-3, 2021.
35. Organized Five day online National RBPT based hands-on workshop on Bioinformatics from January 9–13, 2021.
36. Organised two week national workshop (online) on ‘Tools and Techniques in Statistical Analysis’ from April 06-09, 2021.
37. Organised one-month hands-on workshop on ‘Ciliate culturing, staining and experimental techniques’ for undergraduate students from March 04- April 06, 2021.
38. Organised 61st Annual Conference ‘Microbial World: Recent Developments in Health, Agriculture and Environmental Sciences’ being organised jointly by The Energy and resources Institute , University of Delhi and IARI under the aegis of Association of Microbiologists of India (AMI) and Indian Network for Soil Contamination and Research (INSCR) from February 03-05, 2021.
39. Organized Webinar on ‘The Growth of Linnean thought: Impact of common descent and current understanding’ by Dr Himender Bharti on May 11, 2020.
40. Organized Webinar on ‘Evolution as Darwin knew as a child’ by Dr Mallikarjun Shakarad on May 22, 2020.
41. Organized Virtual Science Setu Programme on Viruses and Immunity for UG students by eminent scientists from THISTI on March 17, 2021.

Research Projects (Major Grants/Research Collaboration)

1. A study on heavy metal induced stress response at cellular and molecular level in ciliates for the development of a potential biosensor”. Sanctioned Twenty One Lakhs by Department of Science & Technology. Duration: 2012-2015
2. “Stress induced induction of metallothioneins (MTs) gene in ciliates and its use as biomarker to assess environmental pollution”. Sanctioned Nine Lakhs by University Grants Commission. Sanctioned by Department of Science & Technology. Duration: Three years: 2012-2015
3. “Use of Bioluminescent Ciliate Sensors as an Alternative Method for Measuring Heavy Metals in Fresh Water Samples”. Sanctioned One Lakh by Innovative Entrepreneurship Development Cell of Department of Science & Technology. Duration: One year: 2012-2013.

4. A low cost microbiotest for detecting insecticides by exploring behavioral and ecotoxicological response of fresh water ciliates. Sanctioned One Lakh by Innovative Entrepreneurship Development Cell of Department of Science & Technology. Duration: One year: 2014-15
5. .Ciliate diversity as cellular tool to assess soil quality. Sanctioned Six lakhs by University of Delhi. Duration: One year: 2015-16
6. DNA barcoding for ciliate species identification of Delhi, India, Sanctioned Twenty One Lakhs by DST-SERB. Duration: Three Years: 2020-2023

Awards and Distinctions

1. Awarded **Meritorious Teachers** award instituted by GNCT, Delhi in 2018.
2. She has been a subject expert of the Committee constituted by University Grants Commission to evaluate B.Sc.(H) Zoology syllabus under CBCS with LOCF by UGC.
3. **Research Peace Awards 2019** by RULA AWARDS & IJRULA for excellence in, Soil ciliates of the Indian Delhi Region: Their community characteristics with emphasis on their ecological implications as sensitive bio-indicators for soil quality.
4. Member of Advisory Committee of National Level One Week Online Faculty Training Program on “Pedagogical Training for Effective Online Teaching and Learning” organized by DEEN DAYAL UPADHYAYA COLLEGE (University of Delhi) in association with K.T.H.M COLLEGE, NASHIK from August 3 to August 10, 2020.
5. Invited for a talk on ‘Use of Ciliates as Biosensors’ in two-week National Summer training – cum – workshop on Fundamentals of Microbiology (basic) at Deen Dayal Upadhyaya College, University of Delhi from June 27-July 12, 2019.
6. Reviewed Articles of the Journals ‘Chemosphere’, ‘International Food Research Journal’, ‘Biocell’ and ‘BMC Zoology’, International Journal of Agriculture and Biology, Environmental Science and Pollution Research.
7. Co-authored a paper awarded as the **Best Poster Presentation** entitled, “Phylogenetic study of three spirotrich ciliates using modern biological techniques: an integrated approach” at International Symposium on Ciliate Biology (ISCB) organized by Delhi University colleges, Delhi, India (2018).
8. Awarded the **Best Oral Presentation** for the research paper entitled “Inferring Phylogenetic Position of an Indian Isolate *Tetmemena* sp. (Ciliophora, Oxytrichidae) Using Morphological, Morphogenetic and Molecular Markers” at 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India (2014).
9. Co-authored a paper awarded as the **Best Poster Presentation** entitled “Oxytrichid ciliate biodiversity from the river Yamuna, Delhi, India” at 2nd Asian congress of Protistology and Ninth Asian Conference on Ciliate Biology organized by Kalyani University, Kalyani, India (2014).
10. Honoured and presented with “**DISTINGUISHED TEACHER AWARD**” by University of Delhi (2009).
11. Council of Scientific and Industrial Research (CSIR)-**Research Associateship** (1999).
12. German Science Federation -**Indian Council of Medical Research fellowship** to work in Germany (1995).
13. Qualified UGC-**NET for Junior Research Fellowship** (1993).

14. Graduate Aptitude Test Examination (**GATE**) (1993)

Association With Professional Bodies

- (i) Member, **M.Phil. Committee**, Department of Zoology, university of Delhi
- (ii) Life Member, **Indian Society of Cell Biology**
- (iii) Life Member, **International Society of Protistologists**
- (iv) Life Member of **INSCR**
- (v) Life Member, **Association of Teachers in Biological Sciences.**
- (vi) Member of **IRCN-BC (International Research Coordination Network-Biodiversity of Ciliates).**

Other Activities

- (i) Resource person in the DU Pre-Entrance Summer School-2017 and 2018, University of Delhi.
- (ii) Member of Committee involved in structuring Semester Course content of B.Sc (H) Zoology.
- (iii) Member of committee for restructuring of choice based credit system syllabus of Biochemistry and Evolutionary biology (LOCF) for B.Sc. (H) Zoology course constituted by Department of Zoology, University of Delhi.
- (iv) Member of committee involved in restructuring the course contents of **Applied Biology and Biotechnology** for B.Sc. (Life Sci.) III year. (2010-11).
- (v) Organized a trip for B.Sc. (H) Zoology-III year to Animal Cell Culture Lab at IGIB, Mathura Road on April 12, 2019.
- (vi) Organized a trip for B.Sc. (H) Zoology-III year TERI-Gram Bioreactor Facility, Faridabad- Gurgaon Road, Gurugram, Haryana on February 11, 2020.
- (vii) Part of the organizing team of Educational tour to Simla and Kulu & Manali, Himachal Pradesh for B.Sc. (Hons.) Zoology students in 2007 for collection of various species of insects.
- (viii) .Organized IGIB Virtual Tour on April 17, 2021: This virtual tour gave an opportunity to the UG students to visit zebra fish culture facility, LCMS and TEM facility of the centre.
- (ix) Organized Virtual tour of Aravalli Biodiversity Park on February 10, 2021: This year we got an opportunity to virtually visit the Park and understand the great features it holds. The Park also provides for a great open-air laboratory for students and researchers. Biodiversity parks like this are ideal platforms for promoting conservation education. Especially in times of covid crisis, the virtual tours proved so efficient and helpful in understanding the entire system without having put ourselves to any risk.
- (x) Organized talks by several eminent speakers under the umbrella of Zoology Society Niche and DBT STAR COLLEGE SCHEME

Signature of Faculty Member

- You are also requested to also give your complete resume as a DOC and PDF file to be attached as a link on your faculty page.