DEPARTMENT OF ZOOLOGY
DYAL SINGH COLLEGE, UNIVERSITY OF DELHI
FACULTY DETAIL

Title	Dr.	First Name	Roopa Rani	Last Name	Samal	Photograph
Designation	Assistant Professor					
Address	Department of Zoology Dyal Singh College University of Delhi Lodhi Road, New Delhi-110003					
Phone No Office	___					
Residence	+91-8586002069					
Mobile	___					
Email	roopasamal.zoology@dsc.du.ac.in					
Web-Page	___					

Educational Qualifications

Degree	Institution	Year
Ph.D. Zoology	Department of Zoology, University of Delhi	2021
M.Sc. Zoology	Department of Zoology, Kururkshetra University, Kurukshetra	2013
B.Sc. (Hons) Zoology	Acharya Narendra Dev College, University of Delhi	2011
CSIR-JRF NET	Council of Scientific and Industrial Research (Life Science) (AIR-64)	2015
GATE	Graduate Aptitude Test in Engineering (Ecology and Evolution) (AIR-124)	2014

Career Profile

1. Assistant Professor, Permanent Faculty in Dyal Singh College, University of Delhi from 07-06-2024
2. Assistant Professor, Guest Faculty in Dyal Singh College, University of Delhi from 07-01-2022 to 06-06-2024
3. Assistant Professor, Temporary Faculty in Govt Girl's College, Sec-14 Gurgaon, Maharshi Dayanand University from 15-01-2014 to 05-11-2015

Administrative Assignments (From 1st July 2019 onwards)

1. Member of Centre of Knowledge System (An Initiative of IQAC, Dyal Singh College)-2024
2. Member of College Functions Organizing Committee (2024-2025)
3. Zoology Department Coordinator of DBT STAR College Scheme Project
4. Convenor of Zoological Society-DSC (2024-2025)
5. Co-Convenor of Practical Examinations Committee-(2024-2025)
6. Co-Convenor of Zoology Laboratory Maintenance- DSC (2024-2025)
7. Member of Purchase Committee-DSC (2024-2025)
8. Member of Admission Committee- DSC (2024-2025)
9. Member of Departmental Store Committee- DSC (2024-2025)

Areas of Interest / Specialization

Medical Entomology, Toxicology, Animal Diversity, Human Physiology

Subjects Taught

1. Non-Chordates-Protists to Pseudocoelomates
2. Non-Chordates-Coelomates
3. Human Physiology
4. Animal Behaviour
5. Agrochemical and Pest Management
6. Biology of Insecta
7. Apiculture
8. Sericulture –I, II, III

Research Guidance

1. **M.Sc. Anthropology Dissertation on** "Antenatal Care (ANC) of Women in rural areas of district Mau, UP". **Student: Mr. Divyanshu Jaiswal from IGNOU (2024)**
2. **M.Sc. Anthropology Dissertation on** "Study on Diabetic Patients from villages of Mau District Uttar Pradesh"**. Student: Mr. Divyanshu Jaiswal from IGNOU (2024)**
3. **M.Sc. Environmental Dissertation on** "Impact of Fossil Fuel on Global Warming and Public Health"**. Student: Mrs. Pooja Bharadwaj from IGNOU (2024)**
4. **M.Sc. Environmental Dissertation on** "To Investigate the Solid Waste Management in Delhi NCR"**. Student: Ms. Shalu Jain from IGNOU (2023)**
5. **M.Sc. Environmental Dissertation on** "Characterization of Urban Heat Island and Modelling of Secondary Pollutants Formation at Urban Hotspots"**. Student: Ms. Simranjeet Kaur from IGNOU (2023)**
6. **M.Sc. Environmental Dissertation on** "Waste Management Solutions: An Overview of Strategies and Practices"**. Student: Mr. Nitish Nandan from IGNOU (2023)**

Publications Profile

(Mention total no. and details from 1st July 2019 onwards only) Total=39 and Since 2019 = 35

1. Sharma, A., Mishra, M., **Samal, R. R.,** Dagar, V.S., Kumar, M., Shukla, A and Kumar, S. **(2024)** Influence of *Cassia occidentalis* Leaf and Stem Extracts on the Life Parameters of *Aedes aegypti* (Linnaeus, 1762). Journal of Natural and Applied Science. 16 (2), 752-761. https://doi.org/10.31018/jans.v16i2.5642

2. Lanbiliu, P., **Samal, R.R.,** Panmei, K and Kumar, S. **(2024)** Relative survival and detoxification enzyme activity in *Dysdercus koenigii* (Hemiptera: Pyrrhocoridae) exposed to beta-cyfluthrin alone and its nanometric emulsion. Phytoparasitica. 52:38, 1-14. https://doi.org/10.1007/s12600-024-01156-4

3. Kumar, S., Sharma, A., **Samal, R.R.,** Verma, V., Sagar, R., Singh, S.P., Raghvendra, KM. **(2024)** "Development of deltamethrin-laced attractive toxic sugar bait to control Aedes aegypti (Linnaeus) population". Journal of Tropical Medicine. (2024) Article ID 6966205 https://doi.org/10.1155/2024/6966205

4. Lanbiliu, P., **Samal, R.R.,** Panmei, K and Kumar, S. **(2023)** "Beta-cyfluthrin-induced alterations in the total and differential haemocytes count in the red cotton bug, *Dysdercus koenigii* Fabricius". Journal of the Entomological Research Society. 25(1), 215-227. https://doi.org/10.51963/jers.v25i1.2315

5. Gautam, D., **Samal, R.R.,** Kumar, S., Hooda, S and Dheer, N. **(2023)** One pot chemical co-precipitation preparation of magnetic graphene oxide-deltamethrin nanoformulations for management of *Aedes aegypti*". Journal of Natural and Applied Science. 15 (1), 194-202. https://doi.org/10.31018/jans.v15i1.4305 (Holds equal authorship with first author)

6. Kumar, S., Sharma, A., **Samal, R.R**., Kumar, M., Verma, V., Sagar, R.K., Singh, S.P. and Raghvendra, K. **(2023) "**Laboratory evaluation of the efficacy of deltamethrin-laced attractive toxic sugar bait formulation on *Anopheles stephensi".* Malaria Journal. 22 (1), 1-11. https://doi.org/10.1186/s12936-023-04524-3

7. **Samal, R.R.,** Panmei, K., Lanbiliu, P and Kumar, S. **(2022)** Metabolic Detoxification and ace-1 Target Site Mutations Associated with Acetamiprid Resistance in *Aedes aegypti* L. Frontiers in Physiology. https://doi.org/10.3389/fphys.2022.988907

8. Kumar, S., Sharma, A., **Samal, R.R.**, Kumar, M., Verma, V., Sagar, R.K., Singh, S.P., Kamaraju, R **(2022)** "Attractive Sugar Bait Formulation for Development of Attractive Toxic Sugar Bait for Control of *Aedes aegypti* (Linnaeus)", Journal of Tropical Medicine, vol. 2022, Article ID 2977454, 10 pages, 2022. https://doi.org/10.1155/2022/2977454

9. Yadav, K.S, **Samal, R.R.,** Sahgal, A. and Kumar, S **(2022)** Indigenous plants demonstrating effective antioxidant properties. Biology Bulletin. 48 (Suppl. 3), S62-S72. (Holds equal authorship with first author) (ISSN No-1608-3059). (published on 29th-March-2022) https://doi.org/10.1134/S1062359022010162

10. **Samal, R.R**., Panmei, K., Lanbiliu, P and Kumar, S **(2022)** Reversion of CYP450 monooxygenase-mediated

acetamiprid larval resistance in dengue fever mosquito, Aedes aegypti L. Bulletin of Entomological Research. 1-10. https://doi.org/10.1017/S0007485321001140

11. Lall, Y., **Samal, R.R.** and Kumar, S **(2021)** Formulation of *Clitoria ternatea* leaves-mediated silver nanoparticles as a novel control agent of *Aedes aegypti* larvae: An eco-safe strategy. Journal of Communicable Diseases. 53 (3), 190-200.

12. Gupta, D., **Samal, R.R**., Gautam, D. Hooda, S. and Kumar, S **(2021)** Multifunctional activity of graphene oxide-based nanoformulation against the disease vector, *Aedes aegypti*. Journal of Natural and Applied Science. (Corresponding author). 13(4), 1265-1273. https://doi.org/10.31018/jans.v13i4.3018

13. Panmei, K., **Samal, R.R.**, Lanbiliu, P. & Kumar, S **(2021)** Influence of lufenuron on the nutrient content and detoxification enzyme expression in *Aedes aegypti* L. (Diptera: Culicidae). International Journal of Tropical Insect Science. 41, 2965–2973. https://doi.org/10.1007/s42690-021-00481-z

14. Gupta, A., **Samal, R.R.** and Kumar, S. **(2021)** Physiological and reproductive fitness cost in Aedes aegypti on exposure to toxic xenobiotics in New Delhi, India. *Journalof Applied and Natural Science,* 13(1): 71-78. https://doi.org/10.31018/jans.v13i1.2470

15. **Samal, R.R.** and Kumar, S. **(2021)** Cuticular Thickening Associated with Insecticide Resistance in Dengue Vector, *Aedes aegypti* L. *International Journal of Tropical Insect Science.*41: 809-820. doi: https://doi.org/10.1007/s42690-020-00271-z

16. Aggarwal, D., **Samal, R. R.** and Kumar, S. **(2020)** Comparative larvicidal efficacy of α-cypermethrin alone and α-cypermethrin/*Citrus sinensis* peel extract binary mixtures against *Aedes aegypti* L. *Romanian Journal of Biology-Zoology*, 65 (1-2): 83-98.

17. **Samal, R.R.**, Gupta, S. and Kumar, S. **(2020)** An overview of the factors affecting dengue transmission in Asian region and its predictive models. *Journal of Advance and Natural Science,* 12(3): 560-570. https://doi.org/10.31018/jans.v12i3.2360

18. **Samal, R.R**., Panmei, K., Lanbiliu, P. and Kumar, S. **(2020)** Biochemical characterization of Acetamiprid resistance in Laboratory-bred population of *Aedes aegypti* L. larvae. *Advances in Biological Science Research (Proceedings of the International Conference and the 10th Congress of the Entomological Society of Indonesia.*8:169-176.doi: https://doi.org/10.2991/absr.k.200513.030.

19. Panmei, K., Lanbiliu, P., **Samal. R.R**., and Kumar, S. **(2020)** Lufenuron: A potential chitin synthesis inhibitor against *Aedes aegypti* L". *Advances in Biological Science Research (Proceedings of the International Conference and the 10th Congress of the Entomological Society of Indonesia.* 8:154-160. doi: https://doi.org/10.2991/absr.k.200513.027.

20. Lanbiliu, P., **Samal, R.R.,** Panmei, K and Kumar, S **(2020)** Assessment of toxicity and growth regulatory effects of beta-cyfluthrin against Red Cotton Bug, *Dysdercus koenigii* (Fabr.) *Research (Proceedings of the International Conference and the 10th Congress of the Entomological Society of Indonesia.*8:148-153. doi: https://doi.org/10.2991/absr.k.200513.026

Book Chapter:

1. **Roopa Rani Samal** and Rita Rath **(2024).** Biological Control of Mosquito, In: Mosquito the Vector: Mosquito-Borne Diseases and Mosquito Management, Cambridge Scholars Publishing, UK (Accepted).

2. Sarita Kumar, **Roopa Rani Samal** and Aarti Sharma **(2024)**. Arthropods of Medical Importance. In: Mosquito the Vector: Mosquito-Borne Diseases and Mosquito Management, Cambridge Scholars Publishing, UK (Accepted)

3. **Roopa Rani Samal**, Kungreiliu Panmei, P. Lanbiliu, Abhay Pratap Singh, Manu Sankar and Sarita Kumar **(2024)**. Insecticides: Ecological consequences and Health Hazards. In: Insecticides-Detection, Management and Environmental Impact. Nova Science Publishers (Accepted)

4. Sarita Kumar, Aarti Sharma and **Roopa Rani Samal** (2024). Management of Agricultural Pests: Strategies and Constraints, In: Impact and Management of Insecticide Resistance in Agricultural Pests, Agricultural Sciences, IntechOpen. ISBN: 978-1-83769-889-9 (Corresponding Author)

5. Laishram Saya, **Roopa Rani Samal**, Kungreiliu Panmei, P. Lanbiliu, Divya, Drashya Gautam, Sarita Kumar and Sunita Hooda **(2024)**. Gellan gum-based hydrogels as useful biomedical material. In: Gellan Gum as Biomedical Polymer. Elsevier Ltd., USA Ed(s). Amit Kumar Nayak, Md Saquib Hasnain; Elsevier Science; ISBN: 978-0-32391-815-2. (Hold Equal Authorship with First Author)

6. **Roopa Rani Samal,** P Lanbiliu, Kungreiliu Panmei and Sarita Kumar **(2023)**. *Mentha piperita* essential oil as an effective biopesticide against mosquitoes. Book: Agricultural Research Updates. Volume 43. Nova Science Publishers, Inc pp-207-233. ISBN: 979-8-88697-550-5

7. **Roopa Rani Samal**, Drashya, Kungreiliu Panmei, P Lanbiliu, Laishram Saya, Sunita Hooda, Geetu Gambhir and Sarita Kumar **(2022)**. Evolution in Graphene Oxide-based Materials Characterization and Modeling. Book: Comprehensive Materials Procesing, 2E. Elsevier Ltd., USA, pp-11. https://doi.org/10.1016/B978-0-323-96020-5.00017-0. ISBN: 978-0-12-803581-8

8. **Roopa Rani Samal,** Aarti Sharma and Sarita Kumar **(2020)**. Multiple Insecticide Resistance in *Culex quinquefasciatus*: Impact and Associated Mechanisms. Book: Advances in Animal Science and Zoology. Volume 15. Nova Science Publishers, Inc pp-73-132. ISBN: 978-1-53618-254-5

9. Sarita Kumar and **Roopa Rani Samal (2020)** Status of Pyrethroid Resistance and Mechanism in the Dengue Vector *Aedes aegypti* L. (Diptera: Culicidae). Book: Pyrethroids: Exposure, Applications and Resistance. Nova Science Publishers, Inc. pp-123-181. ISBN: 978-1-53618-198-2

E-Chapters (eGyanKosh-IGNOU)

1. Subject: Immunology**, Unit 4: Antibodies**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (In Press)

2. Subject: Immunology**, Unit 6: Major Histocompatibility Complex**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (In Press).

3. Subject: Immunology**, Unit 8: T cell responses**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (In Press)

4. Subject: Molecular Cell Biology MZO-001**, Unit-10 Cell Cycle regulation**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (May-2024) ISBN: 978-93-6106-192-9.

5. Subject: Molecular Cell Biology MZO-001**, Unit-8 Neurotransmitters Secretion**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (May-2024) ISBN: 978-93-6106-192-9.

6. Subject: Molecular Cell Biology MZO-001, **Unit-13 Extracellular Matrix and Cell Junction**, Self-learning material (SLM) of eGyankosh (M.Sc. Zoology Course book), School of Sciences, IGNOU, New Delhi. (May-2024) ISBN: 978-93-6106-199-8

Conference Organization/Presentations (From 1st July 2019 onwards)

1. Shraddha Upreti, Ananya, Rita Rath, Neeraja Sood, Sadhna Gupta, Sanjiv Mullick Neetu Bhattacharya and **Roopa Rani Samal (2024)** Acoustic Oceanography: Impact of Sound on Marine Animal Life. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024.

2. Bikramaditya Behera, Biswarupa Swain, Pritam, Shreshth Kohli, Rita Rath and **Roopa Rani Samal (2024)** Bee-lieving in Bees: The Art and Science of Bee Keeping. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024. **(AWARDED AS THE CONSOLATION PRIZE)**

3. Ananya, Shraddha Upreti, Rita Rath, Neeraja Sood, Sadhna Gupta, Sanjiv Mullick and **Roopa Rani Samal (2024)** Bioplastic Innovations: Towards Sustainable Solutions. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024. **(AWARDED AS THE BEST POSTER)**

4. Abhirami Laison, Sandra P, Shreshth Kohli, Shubham, P.V. Arya, **Roopa Rani Samal** and Dharmendra Singh **(2024)** Diving into the Fish Culture. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024.

5. Bikramaditya Behera, Shreya Singh, Shubham, Rita Rath, Neeraja Sood, Sadhna Gupta, Sanjiv Mullick and **Roopa Rani Samal (2024)** Exploring the Rich Tapestry: A depth Look into Insect Biodiversity in New Delhi, India. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024.

6. Anjali Mishra, Anushka Tiwari, Chhavi Khandelwal, Neeru Kumari, Rita Rath, Biji Balan and **Roopa Rani Samal (2024)** Introduction to Lac Culture and Cultivation. Science Fair 2024. Organized by Dyal Singh College, University of Delhi, New Delhi, India. February 28-29, 2024.

7. Apoorva, Manu Sankar, Divya, **Roopa Rani Samal** and Sarita Kumar **(2022)** Use of synergistic combination of β-cyfluthrin and PBO against *Aedes aegypti* larvae to alleviate effects on human and environment. 2nd International Conference on Natural Products and Human Health-2022. Organized by Deshbandhu College, University of Delhi, New Delhi, India. November 4-6, 2022.

8. Deepa, Raunak Dhanker, **Roopa Rani Samal** and Sarita Kumar **(2021)** Biocompatible Metal Nanoparticles from Kitchen Waste and Its Characterization. World Environment Summit -2021 (WES 2021), Indian International Centre, New Delhi organized by Environment and Social Development Association, Delhi, October 3, 2021.

9. Sarita Kumar and **Roopa Rani Samal (2020)** Acetamiprid resistance in *Aedes aegypti*: Evaluation of metabolic detoxification and target site mutations as defense mechanism. International Conference on Natural Products and Human Health, Department of Zoology, Deshbandhu College, University of Delhi, Delhi, 27-29th February 2020.

10. Manu Sankar, **Roopa Rani Samal** and Sarita Kumar **(2020)** Knockdown and Irritability Response to Deltamethrin in the Susceptible and Deltamethrin-resistant adults of *Culex quinquefasciatus.* International Conference on Natural Products and Human Health, Department of Zoology, Deshbandhu College, University of Delhi, Delhi, 27-29th February 2020.

11. **Roopa Rani Samal** and Sarita Kumar **(2019)** Characterization of Acetamiprid resistance in the laboratory population of *Aedes aegypti* L. National Conference on Vector-Borne and Zoonotic Diseases, Zoological Survey of India, Kolkata, 25-26 November 2019.

12. Devina Agarwal, **Roopa Rani Samal**, Narendra Sharma and Sarita Kumar **(2019)** Enhanced larvicidal potential of α-cypermethrin against *Aedes aegypti* L. when synergized with citrus peel extract. National Conference on Vector-Borne and Zoonotic Diseases, Zoological Survey of India, Kolkata, 25-26 November 2019.

13. **Roopa Rani Samal**, Aarti Sharma, Kungreiliu Panmei, P Lanbiliu and Sarita Kumar **(2019)** Development of Acetamiprid Resistance in *Aedes aegypti* L.: Correlation with Growth and Reproductive Fitness. National Conference on "Insect Plant Biology in 21st century" organized by Deshbandhu College, University of Delhi 4th and 5th November 2019. **(AWARDED AS THE BEST POSTER)**

14. Kungreiliu Panmei, **Roopa Rani Samal**, P Lanbiliu and Sarita Kumar **(2019)** Lufenuron: A Potential Agent to Control Insecticide Resistant Population of *Aedes aegypti* L. National Conference on "Insect Plant Biology in

21st century" organized by Deshbandhu College, University of Delhi 4th and 5th November 2019

15. P Lanbiliu, Kungreiliu Panmei, **Roopa Rani Samal** and Sarita Kumar **(2019)** Bioefficacy of Beta-Cyfluthrin against Red Cotton Bug, *Dysdercus köenigii* (Heteroptera: Pyrrhocoridae). National Conference on "Insect Plant Biology in 21st century", Deshbandhu College, University of Delhi 4th and 5th November 2019.

16. Devina Aggarwal, Aarti Sharma, **Roopa Rani Samal**, Vinay Singh Dagar and Sarita Kumar **(2019)** Phyto-mediated Silver Nanocomposites as a Control Agent of *Aedes aegypti* L.: Optimal Formulation with *Citrus limetta* Peel Extract. National Conference on "Insect Plant Biology in 21st century" organized by Deshbandhu College, University of Delhi 4th and 5th November 2019

17. **Roopa Rani Samal** and Sarita Kumar **(2019)** Biochemical characterization of Acetamiprid resistance in Laboratory-bred population of *Aedes aegypti* L. larvae. International Conference and the 10th Congress of the Entomological Society of Indonesia **ICCESI** Bali, Indonesia, 6th to 9th September 2019.

18. Mamta, Sapna Yadav and **Roopa Rani Samal (2019)** Climate Change influence on Forests to Adaptation: Challenges and Restoration, National Conference on Recent Trends in the field of Environmental Science and Engineering **(RTIFESE-2019)**, Hissar, Haryana, India, 20th -21st September 2019.

19. **Roopa Rani Samal** and Sarita Kumar **(2019)** Variation in the Insecticide-Resistance Spectrum of *Aedes aegypti* L. after Selection with Acetamiprid. 14th International Conference Vector and Vector Borne Diseases **ICOV-14** Bhubaneswar, India 9th to 11th January 2019.

Research Projects (Major Grants/Research Collaboration) (From 1st July 2019 onwards)

Principal Investigator for Summer Internship Project for Undergraduate students of University of Delhi in Dyal Singh College, University of Delhi. Topic: Investigation of the Efficacy of Botanical Extracts on Mosquito Larvae Population in New Delhi, India. Duration: 2 Months; Student interns: 8 (Shreya Singh, Shubham, Bikramaditya Behera, Ansh Rai, Tisha Arora, Anamika Maurya, Nitu Kumari, Shivangi Dubey)

Awards and Distinctions (From 1st July 2019 onwards)

- **Received CSIR International Travel Grant** for Poster Presentation in International Conference and 10th Congress of Entomological Society of Indonesia, 2019 held from 6th to 9th October, 2019 at Bali, Indonesia**.**
- **Received Best Poster Award (2017)** in 44th Annual Convention Biochemistry and Molecular Biology: from Niche to the Nation, Philippines, 27th - 30th November, 2017 for the paper on Impact of acetamiprid on the survival, morphology and development of *Aedes aegypti* l. (Diptera: Culicidae),

Association With Professional Bodies

NA

Other Activities like MOOCs/ Patents etc. (From 1st July 2019 onwards)

Resource Person

- A Talk on **"Mosquito Vectors and Diseases"** on 21 March 2024, for undergraduate students of Sri Venkateswara College, University of Delhi on visit to Insect Pest and Vector Laboratory of Department of Zoology Acharya Narendra Dev College.

- Seminar on **"What after Science Degree? Sciences and Sustainable Livelihoods?"** on 28 February 2024, Science Fair-2024, Organized by Dyal Singh College, University of Delhi

Coordinator

- **Coordinator for "Short One-Day Internship Training Program on Microbiological Techniques"** on 29th August 2024, Organized by Department of Microbiology, AIIMS, New Delhi in collaboration with Department of Zoology, Dyal Singh College, University of Delhi, Sponsored by SERB, Scientific Social Responsibility.

- **Co-Coordinator** for "**One week National Faculty Development Program and Training Program for Laboratory Staff"** on Apiculture from 10 October to 16 October 2023. Organized by Dyal Singh College in collaboration with Miranda House, AICRP- HB&P, GAD-TLC, SGTB Khalsa College, Ministry of Education, PMMMNMTT, Govt of India.

- Coordinator for **Workshop on Butterfly counting** to assess biodiversity and environment to Lodhi Garden on 21st September 2022, organized by Department of Zoology, Dyal Singh College, University of Delhi

Signature of Faculty Member