



**DESHBANDHU COLLEGE
(UNIVERSITY OF DELHI)
KALKAJI, NEW DELHI - 110019**

Faculty details proforma for College Website

Title	Dr.	First Name	Sandhya	Last Name	Rai	Photograph
Designation	Assistant Professor					
Address	Department of Zoology, Deshbandhu College, University of Delhi, New Delhi-110019					
Email	sandhyarai1901@gmail.com					
Educational Qualifications						
Degree	Institution				Year	
Ph.D.	University of Delhi				2010	
M.Phil.	University of Delhi				2005	
PG	University of Delhi				2004	
UG	University of Delhi				2002	
Any other qualification	Net Lectureship 2003 CSIR-JRF NET 2004				2003 2004	
Career Profile						
Ad-hoc Assistant Professorship: <ul style="list-style-type: none">• Working as Assistant Professor in Deshbandhu College, University of Delhi from 10-8-2013 till date.• Four months one week teaching experience in Zakir Husain Delhi College, University of Delhi from 07-08-2012 to 15-12-2012.• One and a half year teaching experience in Gargi College, University of Delhi from 03-08-10 till 03-01-2012.• Four months teaching experience in Zakir Husain College, University of Delhi from 01-08-2009 to 30-11-2009.						
Administrative Assignments <ul style="list-style-type: none">• Convenor, Biodiversity Club, Department of Zoology, Deshbandhu College (Year 2021-till date)• Member, Department Report Compilation and Website Updating, DBT Star College Scheme, Deshbandhu College (Year 2021-till date)• Member, Prospectus Committee, Deshbandhu College (Year 2020-21)						

- **Staff Advisor, Chimaera Zoology Department Annual Festival, Deshbandhu College (Year 2015-16)**
- **Member, Admission Committee, Deshbandhu College (Year 2014 & 2015)**

Areas of Interest / Specialization

Research work highlights on:

- **Analysis of environmental DNA for specific gene pools (16SrDNA and *nifH* gene)**
- **Soil microbial community diversity analysis using metagenomic approaches**
- **To find the relationship between microbial community structure and ecosystem functioning**
- **Microbiome studies**

Subjects Taught:

Evolutionary Biology, Perspectives in Ecology, Principles of Ecology, Biotechnology: Microbes to Animals, Concepts and Mechanisms of Evolution, Human Physiology, Medical Diagnostics, Cell Biology, Genetics, Genomics and Biotechnology, Molecular Biology

Publications Profile

Research papers published in Refereed/Peer Reviewed Journals: 6

- 1) **Sandhya Rai** and Kumar, A. (2021). **Bacteriophage therapeutics to confront multidrug-resistant *Acinetobacter baumannii*-a global health menace. Environmental Microbiology Reports.** (Impact Factor- 3.541; ISSN No 1758-2229). doi.org/10.1111/1758-2229.12988
- 2) **Sandhya Rai**, Singh, D.K. and Kumar, A. (2021). **Microbial, environmental and anthropogenic factors influencing the indoor microbiome of the built environment. Journal of Basic Microbiology, Volume 61, Issue 4, 267-292.** (Impact Factor- 1.909; ISSN No 1521-4028). doi.org/10.1002/jobm.202000575
- 3) **Sandhya Rai**, Dileep K. Singh and K. Annapurna. (2015). **Dynamics of soil diazotrophic community structure, diversity and functioning during the cropping period of cotton (*Gossypium hirsutum*). Journal of Basic Microbiology, Volume 55, Issue 1, p-62-73.** (Impact Factor- 1.909; ISSN No 1521-4028). DOI: [10.1002/jobm.201300867](https://doi.org/10.1002/jobm.201300867)

4) **Sandhya Rai**, Dileep K. Singh and K. Annapurna. (2014). **Evidence of diazotrophic community structure in cotton agroecosystem.** Indian Journal of Applied Research. Volume 4, Issue 2, p. 3-6. (Impact Factor- 6.03 (SJIF); ISSN No 2249 –555X).

5) **Sandhya Rai**, Dileep K. Singh and K. Annapurna. (2013). **Diazotrophic Community Structure and Functioning in the Soil of Crop Plants (Legumes Versus Non-Legumes) at Two Depths.** International Journal of Scientific Research. Volume 2, Issue 11, p. 511-514. (Impact Factor- 5.711 (SJIF); ISSN No 2277 – 8179)

6) **Sandhya Rai**, Dileep K Singh, K Annapurna. (2010). **Dynamics of soil microbial community structure and activity during the cropping period of cotton.** In: Gilkes RJ, Prakongkep N, editors. Proceedings of the 19th World Congress of Soil Science; Soil Solutions for a Changing World; **ISBN 978-0-646-53783-2**; Published on DVD; <http://www.iuss.org>; Symposium 4.1.1; Valuing the soil’s natural capital; 2010 Aug 1-6. Brisbane, Australia: IUSS; 2010, pp. 5-8.

Chapters Written:

1. **Sandhya Rai**, Kumar, A., Singh, I. K. and Singh, A. 2020. Seed borne diseases and its management. In Tiwari A. K. (eds.), Advances in Seed production and Management. Springer, (eBook ISBN 978-981-15-4198-8; DOI: 10.1007/978-981-15-4198-8).
2. Developed E-lesson for post-graduate course entitled “Epigenetics” for NME-ICT (National Mission on Education Information Communication Technology) in Zoology under MHRD Project (2016).

Sequences submitted to NCBI:

- 43 sequences are submitted to NCBI (National Center for Biotechnology Information) with Accession Numbers from HM063700 to HM063742.

Conference Organization/ Presentations :

List against each head (If applicable)

1. Organization of a Conference:

- Organizing member in Lecture-Cum-Virtual Lab Visit on “Synthetic Biology And Biotechnology- A Tool For Shaping Human Future” organized by Department of Zoology,

Deshbandhu College, University of Delhi under the aegis of IQAC & DBT Star College Scheme on October 31, 2020.

- Organizing member in e-National Symposium on “Food Safety and Health” organized by Deshbandhu College, University of Delhi on September 19, 2020.
- Organizing member in the "International Conference on Natural Products and Human Health-2020 (ICNPHH- 2010)", organized by Deshbandhu College held at University of Delhi, Delhi from February 27-29, 2020.
- Organizing member in the National Conference on "Insect-Plant Biology in 21st Century", organized by Department of Zoology, Deshbandhu College held at Deshbandhu College, University of Delhi from November 4-5, 2019.
- Organizing member in the Fourth National Symposium on “Environment: Green Technology for Environmental Sustainability”, organized at Deshbandhu College, University of Delhi on September 25, 2018.
- Organizing member in Third National Symposium on “Environment: Challenges *Generation Next*”, organized at Deshbandhu College, University of Delhi on March 31, 2017.
- Organizing member in Second National Symposium on “Environment: Greener Future and Awareness” organized at Deshbandhu College, University of Delhi on March 19, 2016.
- Organizing Member in National Symposium on “Reproductive Health in India: Concerns and Awareness” organized at Deshbandhu College, University of Delhi on February 12, 2016.
- Organizing Member in National Symposium on “Vector Biology and Vector Management” organized at Deshbandhu College, University of Delhi on February 12, 2015.
- Organizing Member in the National Symposium on “Environment: Challenges and Awareness” organized at Deshbandhu College, University of Delhi on November 5, 2014.

2. Participation as Paper/Poster Presenter:

Papers presented in International Conference:

1. **Hypoxia: decoded at molecular level.** S. Sharma, **Sandhya Rai**, M. Sengar. International Conference on "Natural Products and Human Health (ICNPHH-2020)" organized by Deshbandhu College, University of Delhi, Delhi on February 27-29, 2020. OTH0039, P-120. ISBN: 9-788194-428237

2. **Birds of Delhi: ‘A lost cause’?** A. Dwivedi, **Sandhya Rai**, A. Chakraborty and K. Sarkar. International Conference on “Changing Environment: Understanding the Emerging Challenges and their Management Strategies (ICKC 2019)” organized by Kalindi College, University of Delhi, Delhi on April 11-12, 2019. PP 6.
3. **Leopards and humans: co-existence or conflict?** A. Chakraborty, **Sandhya Rai**, A. Dwivedi and K. Sarkar. International Conference on “Changing Environment: Understanding the Emerging Challenges and their Management Strategies (ICKC 2019)” organized by Kalindi College, University of Delhi, Delhi on April 11-12, 2019. PP 9.
4. **Dynamics of soil *nifH* community structure and function in the cotton rhizospheres.** **Sandhya Rai**, D.K. Singh, and K. Annapurna. INSCR International Conference (IIC-2017) on ‘Role of Microbe-Plant-Animal Interactions in Human Health’ held at University of Delhi, Delhi from September 26-28, 2017.
5. **Optimization of soil DNA extraction: a comparative study.** **Sandhya Rai**, Amod Kumar, D.K. Singh, and K. Annapurna. 49th Annual Conference, Association of Microbiologists of India: International symposium on ‘Microbial Biotechnology, Diversity, Genomics and Metagenomics’ held at University of Delhi from November 18-20, 2008. PP 6.
6. **Genetic diversity analysis of *nifH* gene pools in soils cultivated with different crop plants.** **Sandhya Rai**, D.K. Singh, and K. Annapurna. 49th Annual Conference, Association of Microbiologists of India: International symposium on ‘Microbial Biotechnology, Diversity, Genomics and Metagenomics’ held at University of Delhi from November 18-20, 2008. PP 20.

Papers presented in National Symposium:

1. “Environmental Economics and Carbon Footprinting: The Light at the End of the Tunnel”. Aritra Chakraborty, **Sandhya Rai** in Fourth National Symposium on Environment: Green Technology for Environmental Sustainability organized at Deshbandhu College, University of Delhi on September 25, 2018. OP 25.
2. “Microorganisms: A promise in Cleaning Environment Arsenic Contamination”. **Sandhya Rai** and Amod Kumar. Workshop on “Skill Development to Build a Clean

India” organized by Deshbandhu College, University of Delhi in collaboration with CSR, Oil and Natural Gas Corporation Ltd. held on June 7-8, 2018. PP 25.

3. Paper presented with students “Lost Wings of Delhi”. Kaushik Sarkar, **Sandhya Rai** and Nikhil Sharma in Third National Symposium on “Environment: Challenges *Generation Next*” organized at Deshbandhu College, University of Delhi on March 31, 2017. PP 5.
4. Oral Presentation with students “Man-Animal Conflict: A battle with the elephants”. Kaushik Sarkar, Nikhil Sharma and **Sandhya Rai** in Third National Symposium on “Environment: Challenges *Generation Next*” organized at Deshbandhu College, University of Delhi on March 31, 2017. OP 11.
5. “Microwave assisted synthesis of potent metal complexes of Schiff bases derived from carbazole moiety: a green approach”. Gajender Singh, Sanjay Kumar, **Sandhya Rai**, et al., (2016). National Conference on Emerging Trends and Future Challenges in Chemical Sciences, University of Delhi, 3-4 Feb. 2016. PP 32.

Research Projects (Major Grants/Research Collaboration)

- **Delhi University Innovation Project (2015-16) DBC-304:** “Microwave Assisted Synthesis of potent metal complexes of Schiff bases derived from carbazole moiety: a Green Approach”. Gajendra Singh, Sandhya Rai and Sanjay Kumar, funded by University Grant Commission
- **To Predict the Knowledge, Attitude, Behaviour and Practice of Vitamin D and Sunlight among the students and Spread Awareness** (Minor project under DBT Star College Scheme, September 2019; Status: Ongoing)

Awards and Distinctions

- Awarded with Junior Research Fellowship by Council of Scientific and Industrial Research under the scheme: CSIR-JRF NET in 2004
- Awarded with Senior Research Fellowship by Council of Scientific and Industrial Research under the scheme: CSIR-JRF NET in 2006

Association With Professional Bodies

Memberships

- Life membership of **Association of Microbiologists of India**
- Life membership of **Indian Network for Soil Contamination Research**
- Life membership of **Association of Teachers in Biological Sciences**

Other Activities

Resource person in student related field-based study visits:

- Organized a field-based study visit to “Yamuna Biodiversity Park”, Delhi for the undergraduate students on September 24, 2017
- Organized a field-based study visit to “Sultanpur National Park”, Gurugram, Haryana for the undergraduate students on October 27, 2018
- Organized a field-based study visit to “Aravalli Biodiversity Park”, Delhi for the undergraduate students on September 26, 2019
- Organized a Virtual field-based study visit to “The Hessaraghatta Grasslands, vanishing grasslands of Bengaluru” for undergraduate students on January 16, 2021

Faculty Development Programmes completed:

- Completed One-Week Online **Faculty Development Programme** on “Environmental Audit” organized by Kirori Mal College (DBT-star college scheme) in collaboration with Ministry of Human Resource Development Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching, Mizoram University, Aizwal from June 28 to July 2, 2021.
- Completed and obtained Grade A in a 2-Week **Faculty Development Programme** on "Research Methodology" organized by Teaching Learning Centre, Ramanujan College, University of Delhi under the aegis of Ministry of Human Resource Development Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching from October 1- 15, 2020.
- Completed One-Week Online **Faculty Development Programme** on “Development and Delivery of MOOCs and E-Content” jointly organized by Central University of Haryana, Mahendergarh under the aegis of Pandit Madan Mohan Malaviya National Mission on

Teachers and Teaching (PMMMNMTT) and IQAC, Deshbandhu College, University of Delhi, New Delhi from June 26 to July 1, 2020.

Conferences attended:

- Participated in Webinar “International Yoga Festival- Yog Mantrana 2021” organized by Department of Physical Education & Sports Sciences, Deshbandhu College under the aegis of IQAC on June 21, 2021
- Participated in Webinar “International Immunology Day” organized by Department of Zoology, Kirori Mal College, University of Delhi under the aegis of DBT Star College Scheme on April 29, 2021
- Participated in Invited Lecture on “Importance of Natural & Synthetic Compounds in Human Life” organized by Chemical Society, Department of Chemistry, Deshbandhu College on April 13, 2021
- Participated in International Webinar on “Infectious Diseases Preparedness: a special focus on COVID-19 Challenges and Opportunities” organized by Sikkim Manipal Institute of Medical Sciences, Research Unit Sikkim, India on November 20, 2020
- Participated in Lecture-Cum-Virtual Lab Visit on “Synthetic Biology And Biotechnology- A Tool For Shaping Human Future” organized by Department of Zoology, Deshbandhu College, University of Delhi under the aegis of IQAC & DBT Star College Scheme on October 31, 2020
- Participated in the Webinar on “Search, Research and Publication Ethics” organized by Deshbandhu College, University of Delhi on July 24, 2020.
- Attended the National Webinar on “World Environment Day” organized by Deshbandhu College, University of Delhi on June 6, 2020.
- Participated in *Science Setu* initiative of Transitional Health and Technology Institute (THSTI), Faridabad organized at Kirori Mal College, University of Delhi held on September 20, 2018.

- Convener, Poster Presentation Session in the Fourth National Symposium on “Environment: Green Technology for Environmental Sustainability”, organized at Deshbandhu College, University of Delhi on September 25, 2018.
- INSCR International Conference (IIC-2017) on ‘Role of Microbe-Plant-Animal Interactions in Human Health’ held at University of Delhi, Delhi from September 26-28, 2017.
- Organizing member in Third National Symposium on “Environment: Challenges *Generation Next*”, organized at Deshbandhu College, University of Delhi on March 31, 2017.
- Participated in SYSCON 2016- “Recent Advances in Biomedical Research: Strategies and Innovation” at All India Institute of Medical Sciences on May 26-27, 2016.
- Participated in National Symposium on “Vector Biology and Vector Management” organized at Deshbandhu College, University of Delhi on February 12, 2015.
- Attended National Conference on “Recent Trends in Molecular Virology - 2014” organized at Centre for Interdisciplinary Research in Basic Sciences, Jamia Milia Islamia, New Delhi: November 17-19, 2014.
- Attended National Seminar “Teaching Redefined: Open Access to Education” organized at Acharya Narendra Dev College, University of Delhi on November 1, 2011.
- Indo-Swiss collaboration in Biotechnology (ISCB) International Conference “Recent trends in developing bioremediation strategies for Hexachlorocyclohexane (HCH) & other chlorinated contaminants”: February 9-11, 2011.
- Participated in Association of Microbiologists of India 49th Annual Conference “International symposium on Microbial Biotechnology, Diversity, Genomics and Metagenomics”: November 18-20, 2008.

Workshops attended:

- Online training programme on BSL-3 Laboratory Training and Handling Practices for Mycobacterium tuberculosis Biosafety level III Facility, Department of Biochemistry, University of Delhi South Campus, New Delhi July 19-25, 2021.

- Participated in Online Hands-on Workshop on “Research Methodology” organized by Deshbandhu College, University of Delhi from April 1-5, 2021.
- Attended DBT sponsored National Workshop on “Molecular Docking in Drug Design” organized by Department of Microbiology, Ram Lal Anand College, University of Delhi from March 31 to April 1, 2021.
- Attended Online Workshop on “Role of a Citizen in Biodiversity Conservation” organized by Deshbandhu College, University of Delhi on May 13, 2020.
- Resource person in "INSPIRE Internship Programme- 2019" organized by Deshbandhu College, University of Delhi held from December 17-21, 2019.
- Organizing member in "INSPIRE Internship Programme- 2019" organized by Deshbandhu College, University of Delhi held from December 17-21, 2019.
- Participated in DBT sponsored workshop on “The Foldscope” organized by Kalindi College, University of Delhi held at University of Delhi, Delhi on April 10, 2019.
- Participated in workshop on “Skill Development to Build a Clean India” organized by Deshbandhu College, University of Delhi in collaboration with CSR, Oil and Natural Gas Corporation Ltd. held on June 7-8, 2018.
- Resource person in INSPIRE Internship Programme- 2017 organized at Deshbandhu College, University of Delhi from December 18-22, 2017.
- Participated in National Workshop “Technical Terminology in Science Teaching” of Commission for Scientific and Technical Terminology held at Deshbandhu College, University of Delhi from October 26-27, 2017.
- Participated in the workshop on “Microbial Genomics and Metagenomics” held at Department of Zoology, University of Delhi on September 22, 2016.
- Participated in the National workshop on “Recent Trends in Biochemistry and Biotechnology; NRTBB-2016” organized at Deshbandhu College, University of Delhi from April 21-22, 2016.
- Participated in the workshop on “Science Setu: DNA Fingerprinting” held at Hindu College, University of Delhi on January 22, 2016.
- Resource person in INSPIRE Internship Programme- 2015 organized at Deshbandhu College, University of Delhi from December 14-18, 2015.

- Participated in the workshop on “Renovating bacterial Taxonomy with Bioinformatics” held at Department of Zoology, University of Delhi on May 14-15, 2015.
- Resource person in INSPIRE Internship Programme- 2014 organized at Deshbandhu College, University of Delhi from October 8-12, 2014.
- Participated in “Workshop on Data Acquisition and Analysis” organized at Department of Zoology, University of Delhi on September 15, 2014.
- Participated in Indo-German Workshop on “Microbial Ecology and Application of Inoculants in Biocontrol” at Indian Agricultural Research Institute, New Delhi from April 7-9, 2014.
- Resource person in INSPIRE Internship Programme, 2013 organized at Deshbandhu College, University of Delhi from December 16-20, 2013.
- Certificate of Completion of ASM Virtual Workshop on “The Culture of Responsibility: Biosafety & Biosecurity” organized at Maitreyi College, University of Delhi on September 2, 2013.
- Certificate of Appreciation as Staff Organizer of Workshop on Youth Connect; Life skills for adolescents organized at Ramjas College, University of Delhi on March 21, 2013.
- Certificate of Completion of ASM Virtual Workshop on Scientific Writing and Publishing organized at Sri Venkateswara College, University of Delhi on February 6, 2013.
- Participated in the two-day Hands-on Training on “Molecular Phylogenetics: Understanding Evolutionary Histories” organized at Acharya Narendra Dev College, university of Delhi on June 15-16, 2011.
- Attended National Workshop on “Evolutionary perspectives in modern biological teaching and research” jointly organized by Institute of Life Long Learning and Acharya Narendra Dev College, University of Delhi on May 9-10, 2011.
- Organized and participated in the workshop cum seminar on “immunodiagnostics and immunofluorescence” organized by Department of Zoology, Gargi College under star college programme on March 11, 2011.

Signature of Faculty Member

- You are also requested to give your complete resume as a Word or PDF file to be attached as a link on your department page.