




RAM LAL ANAND COLLEGE (University of Delhi)

Faculty Details



Title	DR.	First Name	VANDANA	Last Name	GUPTA	Photograph
Designation	Associate Professor					
Address	Department of Microbiology, Ram Lal Anand college, University of Delhi, New Delhi 110021.					
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	Residence					
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Email	vandanagupta@rla.du.ac.in Vandanagupta72@rediff.com					
Web-Page						
Educational Qualifications						
Degree	Institution				Year	
Ph.D Microbiology	Department of Microbiology, University of Delhi				1993-1999	
M.Sc Microbiology	Department of Microbiology, University of Delhi				1991-1993	
B.Sc (Hons) Microbiology	Swami Shraddhanand College, University of Delhi				1988-1991	
Career Profile						
<ol style="list-style-type: none">1. Associate Professor – since 2010 Department of Microbiology, Ram Lal Anand College, University of Delhi2. Reader – 2005-2010 at Department of Microbiology, Ram Lal Anand College, University of Delhi3. Lecturer in Senior scale – 2001-2005 at Department of Microbiology, Ram Lal Anand4. Lecturer – 1998-2001 at Department of Microbiology, Ram Lal Anand College, University of Delhi						
Administrative Assignments						
Current: • Teacher Incharge, Department of Microbiology Coordinator: Research and IPR cell Member Secretary: Institutional Ethics Committee Convener, Admissions, Department of Microbiology Convener, Workload and Academic Affairs committee Co-Convener, Discipline Committee						
Previous: Worked as Convener, Co-convener or Member of various committees in the college for last 18 years of service. Worked as Deputy Superintendent of examinations for 5 semesters.						
Areas of Interest / Specialization						
<ol style="list-style-type: none">1. Currently pursuing research in Bioinformatics with specialization in virtual screening of drugs combined with drug repositioning approach against HCV, Chikungunya, MRSA, <i>E coli</i>, and other ESKAPE pathogens2. Thoroughly trained in Microbiology with strong theoretical and practical training in all						

microbiological techniques, cell culture, protein expression and purification, construction of DNA vaccines, validation of vaccines in mouse model, ELISA, ELISPOT, cytotoxicity assays, Baculovirus expression systems, Confocal Microscopy etc.

3. Specialized in research on Ectomycorrhizal Fungi during Ph.D.
4. Attained experience in construction and validation of DNA vaccine against SARS virus during Post doctoral fellowship at Singapore (2002-2005).

Subjects Taught

Genetics and Microbial Genetics, Virology, Medical Microbiology, Microbial Ecology, Bioinformatics, Microbial Diversity and Scope of Microbiology

Research Guidance

1. Actively involved in engaging B.Sc (H) Microbiology students in various projects and reviews on MRSA, E.coli, HCV etc.
2. Guided MSc Dissertation on “Virtual Screening Of Novel Inhibitors Against Methicillin-Resistant Staphylococcus Aureus: A Drug Repurposing Approach” from Dec 2018- Jun 2019
3. Guided MSc Dissertation on “*E. coli* Gyrase, An Important Target For Novel Therapeutics: In Silico Drug Repurposing” from Jan 2020- July 2020
4. Guiding B.Sc (Hons) Microbiology students under College Research Grant Scheme
5. Guided three Summer training students of M.Sc Bioinformatics from Maharishi Dayanand University, Rohtak, Haryana

Publications Profile

Patent

1. Filed provisional patent application entitled “Method of screening inhibitors against Hepatitis C virus” on March 30, 2017 (application no. 201711011516) and complete specification filed in March 2018 (reference no. R20181009113)

Publications (last 15):

1. Ghildiyal R., Prakash V., Chaudhary V.K., **Gupta V.**, Gabrani R. (2020) Phytochemicals as Antiviral Agents: pp 279-295 Recent Updates. In: Swamy M. (eds) Plant-derived Bioactives. Springer, Singapore, http://doi.org/10.1007/978-981-15-1761-7_12, **Print** ISBN 978-981-15-1760, **Online ISBN** 978-981-15-1761-7,
2. Nandi I, Gupta A, Chaudhary VK, **Gupta V**, Gabrani R, Gupta S, “Expression, purification and functional characterization of recombinant hypervariable region (HVR) of Chikungunya virus nsP3 protein” **3 Biotech**. 2019 Jun; 9(6):235.
3. Agarwal G, Gupta S, Gabrani R, Gupta A, Chaudhary VK, **Gupta V**, “Virtual screening of inhibitors against Envelope glycoprotein of Chikungunya Virus: a drug repositioning approach” **Bioinformation** 2019 Jun; 15(6): 439-447.
4. Ghildiyal R, Gupta S, Gabrani R, Joshi G, Gupta A, Chaudhary VK, **Gupta V** (2019) Chikungunya Polymerase: A Potential Target for Inhibitors- in Silico Study” **VirusDisease** 2019 Sep; 30(3): pp 394–402
5. Rajasekharan, S., Rana, J., Gulati, S., **Gupta,V.**, Gupta, S., Neuroinvasion by Chandipura virus, *Acta Tropica* (2014), <http://dx.doi.org/10.1016/j.actatropica.2014.03.028>
6. Rajasekharan S, Rana J, Gulati S, Sharma S K, **Gupta V** & Gupta S (2013). Predicting the host protein interactors of Chandipura virus using a structural similarity-based approach. (ISSN 2049-632X) **Pathogens and Disease**, 2 0, 1–7.
7. Sarethy, I.P., Saxena, Y., Kapoor, A., Sharma, M., Sharma, S.K., **Gupta, V.**, and Gupta S (2011). “Alkaliphilic Bacteria: Applications In Industrial Biotechnology”. **Journal of Industrial Microbiology & Biotechnology**. 38 (7), 769-790, [Indexed in SCOPUS, Impact factor: 2.4]

8. **Gupta V**, Tabiin TM, Sun K, Chandrashekar A, Anwar A, Yang K, Chikhlikar P, Salmon J, Brusica V, Marques ETA, Kellathur SN, August TJ (2006). **SARS coronavirus nucleocapsid immunodominant T-cell epitope cluster is common to both exogenous recombinant and endogenous DNA-encoded immunogens**. *Virology* 347(1):127-39.
9. Sun K, Anwar A, **Gupta Vandana**, Tabiin MT, Atkinson R, Chandrasekarn A, August TJ. SARS coronavirus nucleocapsid protein (NP) gene, complete cds, May 2003, Accession ID AY307165, Source Genbank License Genbank TOS
10. Kaur J., Kaur S., Dashora V., Chaudhary Y., Nijhawan P., Saini S., Dabas M., Sharma K., Aggarwal R., **Gupta V.**, Singh R., Pande P., Sharma S.K., John S., GuptaRK. Microbiological and Physico-Chemical Quality of Groundwater at a Resettlement Colony, Madanpur Khadar in Delhi, India. *DU Journal of Undergraduate Research and Innovation* Volume 1, Issue 3 pp 26-38, 2015 (ISSN: ISSN 2395 – 2334)
11. **Gupta V**, Sarethy IP, Gupta S. General characteristics of different types of Acellular Microorganisms. for virtual Learning centre, Delhi University for the undergraduate program (2015) ISSN No. 2349-154X
12. **Gupta V**, Sarethy IP, Gupta S. General characteristics of different types of Cellular Microorganisms. for virtual Learning centre, Delhi University for the undergraduate program (2015) ISSN No. 2349-154X
13. Gupta S, **Gupta V**, Aggarwal S, Diwan P. Bacteria and their cell organisation. for virtual Learning centre, Delhi University for the undergraduate program (2015) ISSN No. 2349-154X
14. **Gupta V**, Aggarwal S, Diwan P, Gupta S. Bacterial cell envelop. for virtual Learning centre, Delhi University for the undergraduate program (2015) ISSN No. 2349-154X
15. Sarethy IP, Gupta S, **Gupta V. Bacterial Systematics**. for virtual Learning centre, Delhi University for the undergraduate program (2015) ISSN No. 2349-154X
16. **Gupta V** and Gupta S (2008). Diversity of Microbial World, **National Science Digital Library**. Link : <http://nsdl.niscare.res.in/handle/123456789/137>.

Conference Organization/ Presentations (in the last three years)

1. Organizing Secretary: Webinar on Advantage IPR, an overview and implications in your field, 2nd May, 2020
2. Organizing Secretary: International Seminar on “Nanoparticles in Biology” 29th Jan, 2020 at Ram Lal Anand College, University of Delhi, New Delhi 110021
3. Organizing Secretary: One Day National Seminar on “Meta-genomics and Genome Editing” 5th February 2020 organized under Department of Microbiology, Ram Lal Anand College
4. Organizing Secretary: Microvitae (Festival of Department of Microbiology) 4th February 2020, with keynote lecture on “Synthetic Biology: from concept to applications” , Ram Lal Anand College
5. Organizing secretary: Three alumni interaction sessions under Alumni Lecture series (2019-2020).
 - i. 31-10-2019: **Dr. Chandra Prakash** (batch 1997-2000, now Associate Professor, Department of Medical Oncology, AIIMS, New Delhi).
 - ii. 11-11-2019: **Dr. Piyush Agrawal** (batch 2008-2011, now Postdoctoral Fellow, National Cancer Institute, NIH, USA) talked on “Career options and research opportunities in the field of bioinformatics”.
 - iii. 22-01-2020: **Mr. Abhilash Chakraverty** (batch 1997-2000), a business leader and author talked on “Career choices from RLA into Management, Corporate Research and Entrepreneurship” on.
6. Organizing Secretary: Workshop on “Intellectual Property Rights (IPR) and Entrepreneurship : How to kick start your start-up” 30 March, 2019.
7. Organizing secretary: Faculty development program on “Writing Research Proposals and Addressing IPR related Issues” from 29-30 March, 2019

8. Organised two days Faculty Development Programme from 29 to 30 March, 2019 On “Writing Research Proposals and Addressing IPR Related Issues”
9. Organised One day workshop for Students on “Entrepreneurship: How to kick start your startup” on March 30, 2019
10. Organised One day National seminar on Probiotics: Ameliorating the burden of lifestyle disorders” held on 1st Feb, 2019
11. Organized one day program with lectures on “Metagenomics”, “Role of Bioinformatics in Modern Biology”, and “Microbiology Poised for next leap: Genomics, Informatics and Automation”, on 10th Feb, 2016.

Invited Talks:

1. Invited talk on “Drug repurposing and applications of Bioinformatics tools in drug discovery” Conference on Translational (Engineering) and Regenerative Medicine (CoTERM 2020), organized by Department of Biotechnology and Microbiology, Noida International University, Gautam Buddha Nagar (21-23 Jan 2020)
2. Resource Person: Webinar 30th April, 2020 entitled “ Molecular Docking: A Powerful Tool for Research at College Level” organized by Department of Microbiology, Ram Lal Anand College, University of Delhi
3. Invited Talk on “Bioinformatics in Drug Discovery: HCV a case study” on the occasion of Golden Jubilee Celebration of Swami ShraddhaNand College, Department of Microbiology on 4 March 2017.

Presentations: International

1. Gandhi P, Sahu S, Lohia GK, Dwivedi V, Pratibha, Kaur K, Rajat, Niladari, Godhara SK, Diwan P, Gupta RK, Gupta S, **Gupta V** (2019) Structure based virtual screening of novel inhibitors against non-structural protein NS5B of Hepatitis C virus at International conference on Biosciences and Biotechnology held at Jaypee Institute of Information Technology, Noida from 31st – 2nd Feb, 2019 (Poster presentation)
2. Agarwal G., Verma V., Gupta S., **Gupta V.**, Gabrani R., Gupta A., Chaudhary V. K., “ Purification of domains of Chikungunya virus envelope protein” in proceedings of International Conference on Advances in Biosciences and Biotechnology (ICABB) JIIT, Noida, Asian Journal of Pharmaceutical and Clinical Research, vol. 12:2, pp.156, Feb 1-3, 2019 (Poster presentation)
3. Ghildiyal R., Gupta S., **Gupta V.**, Gupta A., Chaudhary V.K., Gabrani R., “Identification of host interactors of Chikungunya virus non-structural protein 1” in proceedings of International Conference on Advances in Biosciences and Biotechnology (ICABB) JIIT, Noida, Asian Journal of Pharmaceutical and Clinical Research, vol. 12:2, pp.71, Feb 1-3, 2019 (Oral presentation)
4. Agarwal G, **Gupta V**, Gabrani R, Gupta A, Chaudhary VK, Gupta S (2018). **Virtual Screening of Chikungunya Virus Envelop Glycoprotein Inhibitors** at International Conference on Advances in Biosciences and Biotechnology (ICABB-2018)” organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from 1st -3rd Feb, 2018 (**oral presentation**)
5. Nandi I, Gabrani R, Gupta A, Chaudhary VK, **Gupta V**, Gupta S (2018). **Expression, Purification and Functional Characterization of Recombinant Hyper Variable Region (HVR) of Chikungunya Virus NSP3 Protein** at International Conference on Advances in Biosciences and Biotechnology (ICABB-2018)” organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from 1st -3rd Feb, 2018 (**oral presentation**)
6. Ghildiyal R, **Gupta V**, Gabrani R, Gupta A, Chaudhary VK, Gupta S (2018). **Chikungunya Polymerase: A Potential Targets for Inhibitors- in silico Study** at International Conference on Advances in Biosciences and Biotechnology (ICABB-2018)” organized by Department of Biotechnology, Jaypee

Institute of Information Technology, Noida from 1st-3rd Feb, 2018

7. Rana J, Rajsekharan S, Nandi I, Gupta A, Chaudhary VK, **Gupta V**, Gupta S (2018). **Analysis of Aedes aegypti Interactome Mediated by Arboviruses** at International Conference on Advances in Biosciences and Biotechnology (ICABB-2018) organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from 1st-3rd Feb, 2018
8. Lohia G, Diwedi V and **Gupta V**. (2015). "In silico screening for inhibitors of nonstructural Protein 3 (NS3) of Hepatitis C Virus: a potential target for therapy" at International conference on "Antimicrobial Resistance, Novel Drug Discovery and Development: Challenges and Opportunities" organized by SRM University Haryana from March 2-3, 2015.
9. Sahu S, Gandhi P, Diwan P, Gupta RK, Gupta S, **Gupta V** (2015). Drug Repurposing: Virtual Screening of Inhibitors for NS2 Protease of HCV. Poster no. BIMG16 at 56th Annual Conference of Association of Microbiologists of India (AMI-2015) & International Symposium on "Emerging Discoveries in Microbiology" held from 8th to 10th Dec. 2015 at JNU.
10. Chaudhary Y, Kaur S, Dashora V, Kaur J, Nijhawan P, **Gupta V**, Pande P, Sharma S, John S, Gupta RK. Microbiological Quality of Groundwater and Associated Factors at A Resettlement Colony, Madanpur Khadar in Delhi, India. Poster no. EMP81 at 56th Annual Conference of Association of Microbiologists of India (AMI-2015) & International Symposium on "Emerging Discoveries in Microbiology" held from 8th to 10th Dec. 2015 at JNU.
11. Kaur S, Chaudhary Y, Dashora V, Kaur J, Nijhawan P, **Gupta V**, Pande P, Sharma S, John S, Gupta RK. **Assessment of Microbiological and Hydrogeochemical Quality of Groundwater in South West Zone of Delhi and adjoining areas.** Poster no. EMP102 at 56th Annual Conference of Association of Microbiologists of India (AMI-2015) & International Symposium on "Emerging Discoveries in Microbiology" held from 8th to 10th Dec. 2015 at JNU.
12. Dashora V, Singh A, Nain VK, Chaudhary Y, Kaur S, **Gupta V**, Pande P, Sharma S, John S, Gupta RK. **Impact of Sanitary Landfills on Microbiological Activity and Water Quality Index of Groundwater in Delhi, India.** Poster no. EMP107 at 56th Annual Conference of Association of Microbiologists of India (AMI-2015) & International Symposium on "Emerging Discoveries in Microbiology" held from 8th to 10th Dec. 2015 at JNU.
13. **Gupta V**, Tabiin TM, Sun K, Chandrashekar A, Anwar A, Kellathur SN, August TJ (2004). LAMP targeted SARS coronavirus DNA vaccine. 8th National University of Singapore-National University Hospital (NUS-NUH) Annual scientific Meeting, Oct. 2004.
14. Sun K, Yang K¹, Anwar A, Chandrasekaran A, **Gupta V**, Tabiin TM, August TJ. DNA Vaccine Targeting bcr-abl to Both MHC I and MHC II Antigen Presentation Pathway Induces an Enhanced Protective Immunity Against Chronic Myeloid Leukemia. 8th NUS-NUH Annual scientific Meeting, Oct. 2004.
15. Chandrasekaran, A., Anwar, A., Kai, S., Tabiin, M.T., **Gupta, V.**, Atkinson, R. and August J.T. (2003) Trafficking of severe acute respiratory coronavirus (SARS-coV)-LAMP antigens to MHC II compartments of a SARS coV DNA vaccine. 7th NUS-NUH Annual scientific Meeting, Oct. 2003.

Presentations: National

1. Dwivedi V, Lohia G, Godara SK, Gandotra V, Gupta RK, Gupta S, Gupta D, **Gupta V**. (2015), Viroporin p7 of HCV: potential target for novel therapeutics. 10th Symposium on "Frontiers in Biomedical Research" organized by Dr. BR Ambedkar Centre for Biomedical Research, University of Delhi, 29th to 31st October 2015.
2. DU Innovative Project "Inhibitors against HCV: delineated by in Silico screening" presented at Antardhvani –Feb, 2015, Organized by University of Delhi, Delhi.
3. DU Innovative Project "Virtual Screening of Inhibitors against HCV" presented at Antardhvani –Feb, 2014, Organized by University of Delhi, Delhi.
4. DU Innovative Project "Delineation of Groundwater Potential and Potable Quality in and around

South Campus (University of Delhi) Ridge Area” presented at Antardhvani -2013, 22-24th February, Organized by University of Delhi, Delhi.

5. **GuptaV**, SatyanarayanaT, and Garg S (1995). Heavy metal tolerance in Ectomycorrhizal fungi. 36th Annual Conference of the Association of Microbiologist of India, Nov. 8-10, Hisar, Haryana, India, pp.235.
6. **GuptaV**, and SatyanarayanaT (1996). Production of extracellular enzymes by ectomycorrhizal fungi. ‘National Symposium of fungal Biotechnology’. Osmania University, Hyderabad, India.
7. **Gupta V**, Garg S and Satyanarayana T (1994), Ectomycorrhizal Fungi (poster no. IM50) at 34th conference of AMI at punjab Agriculture University, Ludhiana.
8. **GuptaV**, Garg S, and Satyanarayana T. (1994). Selection of suitable Ectomycorrhizal strain for large scale inoculum production. ‘National Symposium on the Frontiers in Microbial Technology’ held at Warangal, A.P., India

Research Projects (Major Grants/Research Collaboration)

1. College Research Grant “**Combating Methicillin resistant *Staphylococcus aureus* (MRSA): A drug repurposing approach**” Jan 2020-Dec 2020
2. University of Delhi Innovation Project Code: **RLA 103 “Delineation of Groundwater Potential and potable quality in and around South Campus (University of Delhi) ridge area”**, from May 2012-May 2013
3. University of Delhi Innovation Project Code: **RLA 202 “Structure Based Virtual Screening of Novel Inhibitors of Hepatitis C virus”** from Nov. 2013 to March 2015
4. University of Delhi Innovation Project Code: **Project Code: RLA 304 “Dissemination of Antibiotic Resistance among Airborne Bacteria and its Public Health Implications”** running from Sept 2015

Awards and Distinctions

1. Awarded Post doctoral fellowship: Division of John Hopkins in Singapore, Singapore (2002-2005)
2. Awarded gold medal for standing First in Delhi University during M.Sc.
3. Third position in Delhi University during B.Sc (Microbiology, Honours)
4. Awarded All India Post Graduate Fellowship at M. Sc level
5. Qualified University Grants Commissions (UGC), Govt. of India, Research Fellowship through National Eligibility Test (NET)

Association With Professional Bodies

Life member of Association of Microbiologists of India

Life member of International Association of Medical and Pharmaceutical Virologists

Other Activities

RESEARCH

1. Reviewed a number of research articles for various national and international peer reviewed Journals of repute such as:
 - i. Current Pharmaceutical Biotechnology
 - ii. Plos Computational Biology
 - iii. *Journal of Applied Biology & Biotechnology*
 - iv. 3 Biotech (BITC)
 - v. Journal of Biomolecular Structure and Dynamics

PARTICIPATIONS

International

1. International Conference on Advances in Biosciences and Biotechnology (ICABB-2018)" organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from 1st -3rd Feb, 2018
2. 56th Annual Conference of Association of Microbiologists of India (AMI-2015) & International Symposium on "Emerging Discoveries in Microbiology" held from 8th to 10th Dec. 2015 at JNU.
3. International conference on "Antimicrobial Resistance, Novel Drug Discovery and Development: Challenges and Opportunities" organized by SRM University Haryana from March 2-3, 2015.
4. Successfully completed course on "Responsible Care and Use of Laboratory Animals", Nov 25, 2004 at Singapore
5. 8th National University of Singapore-National University Hospital (NUS-NUH) Annual scientific Meeting, Oct. 2004.
6. Successfully completed course on "Fire Safety Awareness", Aug 24, 2004 at Singapore, organized by the Training Academy of Singapore Civil Defence Force.
7. 7th NUS-NUH Annual scientific Meeting, Oct. 2003.
8. Successfully completed training course on "Basic Laboratory Safety and Basic Radiation Safety", May, 2003 at Johns Hopkins Singapore

National

1. Webinar series on MD simulations and Molecular docking Nyro Research India (April- May 2020)
2. Webinar series on "Next Generation Sequencing and metagenome analysis" 15-16th May 2020 organized by Department of Microbiology , Ram Lal Anand College
3. Webinar on "Referencing and Citation", held by Sri Aurobindo College (evening) and Ram Lal Anand College on 20 April, 2020,
4. Participated in workshop on "Emerging Trends in Target Identification and Drug Design" organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida on 31st Jan, 2018
5. Participated in 7th workshop on "Bioinformatics and Molecular Modelling in Drug Design" organized by Bioinformatics Infrastructural Facility at ACBR from March 23-25, 2017.
6. Participated and judged the scientific poster session at International conference on "INTERNATIONAL CONFERENCE ON ADVANCES IN PLANT AND MICROBIAL BIOTECHNOLOGY PMB-2017,(February 02-04, 2017) Organized by the Department of Biotechnology at Jaypee Institute of Information Technology, A-10 Sector 62, Noida.
7. Faculty Development Program on "Recent Advances in Diagnostics and Therapeutics" organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from July 18 to 23rd , 2016.
8. Participated in workshop on "Renovating Bacterial Taxonomy with Bioinformatics" Organized by ICAR-NBAIM and University of Delhi, from May 14-15, 2015.
9. 10th Sumposium on "Frontiers in Biomedical Research" organized by Dr. BR Ambedkar Centre for Biomedical Research, University of Delhi, 29th to 31st October 2015.
10. Participated in Faculty Development Program on "Nanomaterials and Its Applications" organized by Department of Biotechnology, Jaypee Institute of Information Technology, Noida from July 13 to 18, 2015.
11. Participated in 5th Workshop on Bioinformatics and Molecular Modeling in Drug Design, from 21-23 March, 2013 at Dr. BR Ambedkar Centre for Biomedical Research
12. Participated in National Conference on "Medical Biotechnology-Vision 2020" from April 16-18, 2010 Maharishi Dayanand University, Rohtak
13. Refresher course in "Biotechnology and Its Applications" At UGC-ASC CPDHE-ILLI, University of Delhi, July 21- Aug 10, 2009

14. Refresher course in "Biotechnology" at UGC-ASC Jawahar Lal Nehru University, Delhi, July30-Aug24, 2007.
15. Orientation course in "Natural Science" at UGC-ASC Jawahar Lal Nehru University, Delhi, Nov 19-Dec 14, 2001.
16. Participated and volunteered in organization of National Symposium on "Microbial Technologies for Environmental Management and Resource Recovery" from Oct 1-2, 1997 by Departments of Microbiology and Environmental Biology, University of Delhi.
17. Participated in DST sponsored Contact programme on "Application of Molecular Microbial Techniques" Jan, 1997 at JNU.
18. Participated in 38th Annual Conference of AMI, from Dec 12-14, 1997 at Jamia Millia Islamia, New Delhi.
19. Participated in Workshop on Bioinformatics "Coping with the Pace", March. 1996, at Distributed Information Sub-Centre, University of Delhi and DBT, New Delhi.
20. Successfully completed Advanced Training Program on "Research Methodologies in Mycorrhizae" from 4th to 17th Oct, 1995 at TERI.



Signature of Faculty Member