



**DESHBANDHU COLLEGE**  
**(UNIVERSITY OF DELHI)**  
**KALKAJI, NEW DELHI - 110019**  
**Faculty Details Proforma for College Website**

Title	Dr.	First Name	Kiran	Last Name	Bala	Photograph
Designation	<b>Assistant Professor</b>					
Address	DDA flats, Dwarka Pocket-3 New Delhi, Delhi-110059, India					
Phone No. Office						
Residence	Delhi					
Mobile	(91) 9818123320					
Email	<a href="mailto:kiranbala2801@gmail.com">kiranbala2801@gmail.com</a>					
<b>Educational Qualifications</b>						
Degree	Institution				Year	
Ph.D.	University of Delhi, India				2011	
PG	Himachal Pradesh University, Shimla				2007	
UG	Himachal Pradesh University, Shimla				2003	
<b>Career Profile</b>						
<ul style="list-style-type: none"> <li>◆ Assistant Professor at Deshbandhu College Kalkaji, University of Delhi (July 2012 to onwards).</li> <li>◆ Assistant Professor at Sri Guru Tegh Bahadur Khalsa College, University of Delhi (January-April, 2012).</li> <li>◆ Guest Lecturer at Miranda House College, University of Delhi (August-November, 2011 and January-April, 2012).</li> <li>◆ Assistant Professor at Shivaji College, University of Delhi (March- June, 2011).</li> </ul>						
<b>Areas of Interest/Specialization</b>						
<p><b>1. Microbiology:</b> Spreading and Sterilization; Basic microbiological techniques for isolation, purification and culture media preparation; Gram Staining; Pour plating; Preparation of bacterial smear; Different types of streaking; Measurement of bacterial growth by turbidometry &amp; Serial dilution technique. Maintenance of HCH degrading and non-degrading Sphingomonads and <i>E.coli</i> strain.</p> <p><b>2. Molecular Biology:</b> Soil DNA isolation, Genomic &amp; plasmid DNA isolation from Prokaryotes, Gene Cloning and sequencing in prokaryotic system, PCR, Gel Electrophoresis, Restriction digestion of plasmid DNA, DNA-DNA Hybridization, Transformation of plasmid DNA into <i>E. coli</i>.</p> <p><b>3. Enzymology:</b> Preparation of enzyme extract, Protein expression, His-tagged protein purification by FPLC and manually. SDS-PAGE, Enzyme assays and Enzyme kinetics. Protein purification from Inclusion body. Protein refolding (on column refolding and without column) and protein dialysis.</p> <p><b>4. DNA Sequencing:</b> Designing the gene sequencing primers using Oligo Analyzer, Gene runner and Bioedit software and sequencing the 16S rRNA gene sequence by using ABI Sequence Analyzer software.</p> <p><b>5. Chromatography:</b> Thin Layer Chromatography (TLC), Column Chromatography, Gas Liquid Chromatography (GLC), Gas Chromatography-Mass Spectroscopy (GC-MS), High Performance Liquid Chromatography (HPLC) and Nuclear Magnetic Resonance (NMR) for the identification of epsilon HCH isomer and its metabolites.</p> <p><b>6. Scientific Computer Software:</b> Phylogenetic analysis (PHYLIP, TreeconW, MEGA and Etaxon), ClustalX for Multiple</p>						

sequence alignment, ClustalW, BioEdit, Sequence analyzer software for assemble the nucleotide sequence, RDP–Ribosomal Database project software, DNA-STAR and Clone Manager for sequence analysis, Vector NTI.

### Subjects Taught

Bioinformatics	Biotechnology
Chordates	Non Chordates
Cell biology	Biochemistry and Immunology

### Publications Profile

#### 1. Books/Monographs (Authored/Edited):

1. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E- lesson for Undergraduate Course under the MHRD Project entitled “**Chromosomal Mutations**” (Author).
2. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Microbial Growth Kinetics**” (Co-author).
3. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Human Genetic Disorders**” (Author).
4. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Principles of gene expression: Transcription**” (Co-author).
5. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Principles of gene expression: Translation**” (Co-author).
6. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Sequence organisation of genome**” (Co-author).
7. National Mission on Education Information Communication Technology (NME-ICT). Certificate for Developing E-lesson for Undergraduate Course under the MHRD Project entitled “**Immune response to infectious agent Fungi**” (Co-author).

#### 2. Research papers published in Refereed/Peer Reviewed Journals

1. **Bala, K.**, Sharma, P. and Lal, R. (2010) *Sphingobium quisquiliarum* sp. nov., P25<sup>T</sup> a hexachlorocyclohexane (HCH) degrading bacterium isolated from HCH contaminated soil. *Int J Syst Evol Microbiol* **60**, 429-433.

2. **Bala K.**, Geueke B., Miska M., Rentsch D., Poiger T., Lal R., Holliger C., and Kohler, H. E. P.(2012) “Enzymatic conversion of  $\epsilon$ -hexachlorocyclohexane and heptachlorocyclohexane, two neglected components of technical hexachlorocyclohexane”. *Environ. Sci. Technol.*

3. Sharma, P., Verma, M., **Bala, K.**, Nigam, A., and Lal, R. (2010) Taxonomic description of *Sphingopyxis ummariense* UI2<sup>T</sup> sp. nov., isolated from Hexachlorocyclohexane (HCH)-dumpsite in North India. *Int J Syst Evol Microbiol* **60**, 780-784.

4. Garg, N., **Bala, K.**, and Lal, R. (2011). *Sphingobium lucknowense* sp. nov., F2<sup>T</sup> a hexachlorocyclohexane (HCH) degrading

bacterium isolated from HCH contaminated soil. *Int J Syst Evol Microbiol*.

5. Anand S., **Bala K.**, Saxena A., and Lal R., (2011). “*Microbacterium amylolyticum* sp. nov., N5<sup>T</sup> a bacterium isolated from industrial waste soil.” *Int J Syst Evol Microbiol*.

6. Sharma P., Jindal S., **Bala K.**, Kumari K., Niharika N., Kaur J., Pandey G., Pandey R., Jackson J.C., Russell J. R., Oakeshott J. G and Lal R (2013). “Functional Screening of Enzymes and Bacteria for the Dechlorination of Hexachlorocyclohexane by a High-Throughput Colorimetric Assay” *Biodegradation*.

7. Lal, R., Dadhwal, M., Kumari, K., Sharma, P., Singh, A., Kumari, H., Jit, S., Gupta, S.K., Nigam, A., Lal, D., Verma, M., Kaur, J., **Bala, K.** and Jindal, S. (2008) *Pseudomonas* sp. to *Sphingobium indicum*: a journey of microbial degradation and bioremediation of Hexachlorocyclohexane. *Ind J Microbiol*, 48, 3–18.

8. Jit, S., Dadhwal, M., Kumari, H., Jindal, S., Kaur, J., Lata, P., Niharika, N., Lal, D., Garg, N., Gupta, S. K., Sharma, P., **Bala, K.**, Singh, A., Vijgen, J., Weber, R., and Lal, R. (2010). Evaluation of hexachlorocyclohexane contamination from the last lindane production plant operating in India. *Environ Sci Pollut Res Int*, 18, 586-97.

#### Participation as Paper/Poster Presentations

1. **Bala K.**, Sharma P., and Lal R. “*Sphingobium quisquiliarum* sp. nov., P25<sup>T</sup> a Hexachlorocyclohexane (HCH) Degrading Bacterium Isolated from HCH Contaminated Soil” poster presented at 49<sup>th</sup> AMI (Association of Microbiologists of India) conference, Delhi, India on 17<sup>th</sup>-19<sup>th</sup> November, 2008.

2. Kohler H. P., Jit S., **Bala K.**, Raina V., Poiger T., Rentsch D., Buser H. R., Holliger C., Geueke B. “Microbial transformation of hexachlorocyclohexane pesticides-identifying isomeric culprits” TransCon Centro Stefano Franscini, Monte Verita, Ascona, Switzerland, 12<sup>th</sup>-17<sup>th</sup> September, 2010.

3. **Bala K.**, Sharma P., Kumari K., Jit S., Geueke B., Niharika N., Garg N., Kohler H. P., Poiger T., Rentsch D., Kunz P., Holliger C., and Lal R. “Purification of  $\alpha$ -HCH (hexachlorocyclohexane); role of LinA (HCH dehydrochlorinase) and LinB (HCH haloalkane dehalogenase) in its transformation” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

4. **Niharika N.**, **Bala K.**, Kumari K., Sharma P., Uppadhyay A. K., Panda A. K., and Lal R. “Enhancing the activity of LinA (hexachlorocyclohexane dehydrochlorinase) by refolding, site -directed mutagenesis and screening its natural variants for better hch degradation potential” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

5. Anand S., **Bala K.**, Saxena A., and Lal R. “Taxonomical characterization of microbacterium sp. nov. isolated from industrial soil” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

6. **Kaur J.**, Sharma P., Kumari K., Jindal S., **Bala K.**, Niharika N., Pandey G., Pandey R., Oakeshott J., Russell R., and Lal R. “Development of high-throughput colorimetric assay for screening better Lina (dehydrochlorinase) and Linb (haloalkane dehalogenase) variants” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010 (**Received Second Best Poster Award in Enzyme technology/Protein engineering**).

7. **Jit S.**, Geueke B., Sharma P., Kumari K., **Kiran Bala**, Poiger T., Rentsch D., Kohler H. P., Holliger C., and Lal R. “Metabolism of  $\alpha$ -,  $\delta$ -, and  $\epsilon$ -hch (hexachlorocyclohexane) by HCH dehydrochlorinase: LinA1 and LinB2” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

8. **Garg N.**, Lal D., Lata P., Saxena A., Sangwan N., **Bala K.**, Jit S., and Lal R. “Bioremediation of hch contaminated soil by

biostimulation and bioaugmentation via application of HCH-degrading consortium” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

9. Singh A. K., Dwivedi V., Jit S., Lata P., Niharika N., Kaur J., **Bala K.**, Garg N., Lal R., Weber R., and Lal R. “Assessment of HCH (hexachlorocyclohexane) contamination from the last lindane production plant operating in india” poster presented at 51<sup>st</sup> AMI (Association of Microbiologists of India) conference, Birla Institute of Technology, Mesra, Ranchi, Jharkhand, India on 14<sup>th</sup>-17<sup>th</sup> December, 2010.

10. Miska M., **Bala K.**, Geueke B., Niharika N., Garg N., Poiger T., Rentsch D., Lal R and Kohler H. P. “The enzymatic degradation of epsilon-Hexachlorocyclohexane ( $\epsilon$ -HCH)” poster presented in Indo Swiss Collaboration in Biotechnology at an International Conference on Recent Trends in Developing Bioremediation Strategies for Heaxachlorocyclohexane (HCH) & Other Chlorinated Contaminants, University of Delhi, Delhi, India on 9<sup>th</sup>-11<sup>th</sup> February, 2011 (**Received Best Poster Award**).

11. Niharika N., **Bala K.**, Kumari K., Sharma P., Uppadhyay A. K., Panda A. K., and Lal R. “Enhancing The Activity Of Lina (Hexachlorocyclohexane Dehydrochlorinase) By Refolding, Site -Dircted Mutagenesis And Screening Its Natural Variants For Better Hch Degradation Potential” poster presented in Indo Swiss Collaboration in Biotechnology at an International Conference on Recent Trends in Developing Bioremediation Strategies for Heaxachlorocyclohexane (HCH) & Other Chlorinated Contaminants, University of Delhi, Delhi, India on 9<sup>th</sup>-11<sup>th</sup> February, 2011 (**Received Best Poster Award**).

12. Bala K., Sharma P., Kumari K., Jit S., Geueke B., Niharika N., Garg N., Kohler H. P., Poiger T., Rentsch D., Kunz P., Holliger C., and Lal R. “The enzymatic degradation of epsilon-Hexachlorocyclohexane ( $\epsilon$ -HCH)”. Poster presented in Indo Swiss Collaboration in Biotechnology at an International Conference on Recent Trends in Developing Bioremediation Strategies for Heaxachlorocyclohexane (HCH) & Other Chlorinated Contaminants, University of Delhi, Delhi, India on 9<sup>th</sup>-11<sup>th</sup> February, 2011.

13. Jit S., Lata P., Niharika N., Kaur J., Geuke B., Kumari K., **Bala K.**, Weber R., Poiger R., Renstch R., Kunz P., Kohler H. P., Holliger C., and Lal R. “Assessment of HCH (hexachlorocyclohexane) & it’s metabolites contamination from the last lindane production plant operating in India” poster presented in Indo Swiss Collaboration in Biotechnology at an International Conference on Recent Trends in Developing Bioremediation Strategies for Heaxachlorocyclohexane (HCH) & Other Chlorinated Contaminants, University of Delhi, Delhi, India on 9<sup>th</sup>-11<sup>th</sup> February, 2011.

14. Bala K., Sharma P., Kumari K., Jit S., Miska M., Geueke B., Niharika N., Garg N., Kohler H. P., Poiger T., Rentsch D., Kunz P., Holliger C., and Lal R. “The enzymatic degradation of epsilon-Hexachlorocyclohexane ( $\epsilon$ -HCH)” poster presented in ISCB International Symposium organized by Indo Swiss Collaboration in Biotechnology (ISCB). A decade experience in R&D and Technology Management. Symposium Hall, NASC Complex, New Delhi, India on 10<sup>th</sup>-11<sup>th</sup> March, 2011.

15. Niharika N., **Bala K.**, Kumari K., Sharma P., Uppadhyay A. K., Panda A. K., and Lal R. “Enhancing The Activity of Lina (Hexachlorocyclohexane Dehydrochlorinase) By Refolding, Site -Dircted Mutagenesis And Screening Its Natural Variants For Better Hch Degradation Potential”. Poster presented in ISCB International Symposium organized by Indo Swiss Collaboration in Biotechnology (ISCB). A decade experience in R&D and Technology Management. Symposium Hall, NASC Complex, New Delhi, India on 10<sup>th</sup>-11<sup>th</sup> March, 2011.

16. Lal D., Garg N., Prakash O., Dhadwal M., Singh A., Kumari H., Sharma P., Gupta S.K., Kumari K., Jit S., Verma S., **Bala K.**, Nigam S., Kaur J., and Lal R. “Genotyping and Isolation of Sphingomonads from HCH Contaminated Agricultural Soils and their Application in Bioremediation” (File No. 6-2/2005/Dir/NBAIM).

17. Niharika N., Sharma P., **Bala K.**, Dhiman K., Pandey R., Pandey G., Jackson C.J., Russell R.J., Oakeshott J.G., Upadhyay A.K., Singh A., Panda A.K., and LaL R. “ Kinetic and sequence-structure-function analysis of known LinA variants with different hexachlorocyclohexane isomers and purification of LinA from bacterial inclusion body” poster presented at 52<sup>nd</sup> AMI (Association of Microbiologists of India) conference, Punjab University, Chandigarh, India on 3<sup>rd</sup>-6<sup>th</sup> November, 2011.

18. Participated and poster presentation in the “INSCR International Conference (IIC-2017) On Role of Microbe-Plant-Animal Interactions in Human Health” held on September 26-28, 2017, at University of Delhi, Delhi, INDIA.

19. Received **Third Prize** in poster presentation “**Role of animal agriculture in global warming**” in the **Second National Symposium on Environment: Greener Future and Awareness** organized by Department of Zoology, Deshbandhu College, University of Delhi, held on March 19, 2016.

#### **Workshop Attended/Participated**

1. **Bala K.**, “SOP for Isolation of Bacteria from Diverse Habitats” on 30<sup>th</sup>-31<sup>st</sup> July, 2008 at Environmental Genomics Unit (EGU), NEERI, Nagpur, India.
2. Participated in the “**Training Workshop in Animal Behavior**” held in Department of Zoology, University of Delhi on 19<sup>th</sup> -25<sup>th</sup> August, 2015.
3. Participated in the “**Training the Trainers: IPR Workshop**” held on January 15, 2016 at Miranda House, Delhi University.
4. Participated in the “**Training Workshop in Bioinformatics and Biostatistics**” held on February 24-25, 2016 at Miranda House, Delhi University.
5. Participated in the “**Workshop on Microbial Genomics and Metagenomics**” held on September 22, 2016, Department of Zoology, University of Delhi.
6. Attended a National Workshop on “**Recent trends in Biochemistry and Biotechnology**” (NRTBB-2016) at Biochemistry Department in Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held on April 21-22, 2016.
7. Participated in the “**Workshop on Technical Terminology in Science Teaching**” held on October 26-27, 2017, Deshbandhu College, University of Delhi, Ministry of Human Resources Development and Department of Higher Education.

#### **Overseas Work Experience**

Visited and Worked as a Ph.D research trainee for six months in the laboratory of Dr. Hans Peter Kohler & Dr. Thomas Poiger (February–July, 2010) at Eawag (UMIK, Swiss Federal Institute of Aquatic Science and Technology), Department of Environmental Microbiology, CH-8600, Dubendorf, Switzerland & Research station Agroscope Changins-Wädenswil, Plant Protection Chemistry, Switzerland in the project entitled “Environmental Risk and Bioremediation of Hexachlorocyclohexane Isomers” under the “Indo Swiss Collaboration in Biotechnology (ISCB)”.

#### **College Study Tour**

1. Organized an educational excursion tour to Sultanpur National Park Organized by the Department of Zoology, **SGTB Khalsa College**, on 5<sup>th</sup> February, 2012 to survey migratory birds, under the aegis of DBT’s Star College Scheme.
2. Organized an educational excursion tour to Research Lab of Dr Pramod Kumar, Department of Geology, Centre for Advanced Studies on April, 2018 to give knowledge about Paleontology to the students, which is the study of fossils: their age, method of formation, and evolutionary significance.
3. Organized an educational excursion tour to Research Lab of Shashi Bhushan Tripathi, Department of Biotechnology TERI School of Advanced Studies, Vasant Kunj New Delhi- 110070, India on 31<sup>st</sup> October, 2018

to acquaint the students with the growing aspects of biotechnology.

### Extracurricular Activities in College

1. Participated in the “INSPIRE Internship Program-2012” organized by Department of Zoology, Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held from October 1-5, 2012.
2. Participated as organizing member and resource person in the “INSPIRE Internship Program-2013” organized by Department of Zoology, Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held from October 1-5, 2013.
3. Participated as organizing member and resource person in the “INSPIRE Internship Program-2014” organized by Department of Zoology, Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held from October 1-5, 2014.
4. Participated as an organizer in the “**National Symposium on Environment: Challenges and Awareness**” organized by Department of Zoology, Deshbandhu College, University of Delhi, held on November 4, 2014.
5. Participated as organizing member and resource person in the “INSPIRE Internship Program-2015” organized by Department of Zoology, Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held from October 1-5, 2015.
6. Participated as an organizer in the “**National Symposium on Reproductive Health in India: Concerns and Awareness**” organized by Department of Zoology, Deshbandhu College, University of Delhi, held from February 12, 2016.
7. Participated as an organizer in the “**Second National Symposium on Environment: Greener Future and Awareness**” organized by Department of Zoology, Deshbandhu College, University of Delhi, held on March 19, 2016.
8. Attended a National Workshop on “**Recent trends in Biochemistry and Biotechnology**” (NRTBB-2016) at Biochemistry Department in Deshbandhu College, University of Delhi & Department of Science & technology, Government of India, held on April 21-22, 2016.
9. Participated and poster presentation in the “**INSCR International Conference (IIC-2017) On Role of Microe-Plant-Animal Interactions in Human Health**” held on September 26-28, 2017, at University of Delhi, Delhi, INDIA.
10. Participated in the “**Fourth National Symposium on Environment: Green Technology for Environmental Sustainability**” held at Deshbandhu College, University of Delhi, Delhi on September 25, 2018.
11. Participated as Member of Organizing Committee in the “**Fourth National Symposium on Environment: Green Technology for Environmental Sustainability**” held at Deshbandhu College, University of Delhi, Delhi on September 25, 2018.

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.