




Faculty Details proforma for DU Web-site

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Title	Prof.	First Name	Rup	Last Name	Lal	Photograph
Designation		Professor				
Address		Room No.-115, Molecular Biology Laboratory, Department of Zoology, University of Delhi, Delhi-110007				
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Web-Page		People.du.ac.in/~rlal/				
Educational Qualifications						
Degree		Institution			Year	
UG		Guru Nanak Dev University, Amritsar, India			1973	
PG		Kurukshetra University, Kurukshetra, India			1975	
Ph.D		University of Delhi, Delhi, India			1980	
P.D.F.		University of Bielefeld, Germany			1990	
Career Profile						
<p>I started my teaching career as a lecturer in Zoology at Sri Venkateswara College, University of Delhi, in 1979. I was appointed as reader at the Department of Zoology, University of Delhi in 1992. In April 2000, I became Professor in the same department. I was the Dean of the Department of Zoology (Nov, 2007-Nov, 2009) and Dean, Faculty of Science (Nov, 2007-Nov, 2009), University of Delhi. I have also served as Chairman of Board of Research Studies, Member of Academic and Executive Council, University of Delhi (2007-2010) and Coordinator UGC, SAP programme (2007-2010). I have also served as Dean, (Examination) University of Delhi (November 6, 2012 to May 28th, 2016).</p>						
Administrative Assignments						
<ul style="list-style-type: none"> ▪ Dean, Examination, University of Delhi, Delhi-110007 (November 6, 2012 to May 28th, 2016). ▪ Dean, Faculty of Sciences, University of Delhi, Delhi-110007 (November 8, 2007 to June 7, 2010). ▪ Head, Department of Zoology, University of Delhi, Delhi -110007 (November 8, 2007 to November 7, 2010). ▪ Chairman of Board of Research Studies, University of Delhi (July 31, 2008 to June 7, 2010). ▪ Member of Executive Council, University of Delhi (November 8, 2007 to June 7, 2010 and November 6, 2012 to May, 2016). ▪ Member of Academic Council, University of Delhi (November 8, 2007 to June 7, 2010 and November 6, 2012 to May, 2016). ▪ Chairman of Standing Committee Academic Council, University of Delhi (November 8, 2007 to June 7, 2010). ▪ Warden, PG Men's Hostel University of Delhi, Delhi-110007 (March 2000 to August 2001). ▪ Provost, Mansarovar Hostel, University of Delhi, Delhi-110007 (June 22, 2007 to April 28, 2015). ▪ Chairman, Governing Body of Hindu College, University of Delhi, Delhi-110007 (September 8, 2011 						

to August 2, 2013).

- Chairman, Governing Body of Swami Shraddhanand College, University of Delhi, Delhi-110007 (April 7, 2012 to June 5, 2012 and December 17, 2013 to March 22, 2015).
- Member, Governing Body of Swami Shraddhanand College, University of Delhi, Delhi-110007 (May 3, 2013 to December 17, 2013).
- Member, Governing Body of Keshav Mahavidyalaya, University of Delhi, Delhi-110007 (November 6, 2014 to November 6, 2015 and November 6, 2015- November, 2016).
- Member, Governing Body of Sri Guru Gobind College of Commerce, University of Delhi, Delhi-110007 (March 22, 2015-2017).
- Member, Governing Body Shyam Prasad Mukherji College, University of Delhi (December 29, 2015-2016).
- Chairman, Expert committee of the NER Twinning R&D program of DBT in Environmental Biotechnology (March 17, 2016 onwards).

Areas of Interest / Specialization

- Molecular Biology
- Environmental Microbiology/Biotechnology
- Microbial Genomics/Metagenomics

Subjects Taught

Principles of Gene Manipulation
Evolution and Systematics
Bioinformatics
Metagenomics

Research Guidance

Students Awarded Ph. D Thesis- 60
Currently working Ph. D students-8
Summer Trainees-120

Publications Profile

A. Books

1. Lal, R.(ed.) *Insecticide Microbiology*, Springer Verlag, Berlin & Heidelberg. 268 pp. 1984.
2. Lal, R and Lal, S. (ed.) *Pesticides and Nitrogen Cycle*, CRC Press, Florida, USA, 1988.
Vol. 1. *Ecological and Methodological Aspects*, 138 pp.
Vol. 2. *Nitrogen Mineralization*, 153 pp.
Vol. 3. *Nitrogen Fixation*, 170 pp.
3. Lal, R and Lal, S. *Crop Improvement Utilizing Biotechnology*, CRC Press, Florida, USA, 359 pp, 1989.
4. Lal, R and Lal, S. *Genetic Engineering of Plants for Crop Improvement*, CRC Press, Florida, 225 pp, 1993.
5. Lal, R. (ed.) *An Introduction to Biotechnology: A Genetic Manipulation Perspective*, I.K. International Publishing House Pvt. Ltd., New Delhi, 207 pp, 2016.

B. Research Publications

1. **Lal, R.** and Saxena, D. M. 1978. Some morphological and cytological anomalies in the aged cultures of *Stylonychia notophora* (Stokes). *Acta. Protozool.* **17**: 69-76.
2. **Lal, R.** and Saxena, D. M. 1979. Effects of DDT on growth of *Tetrahymena pyriformis*. *Arch. Protistenk.* **122**: 382-386.
3. **Lal, R.** and Saxena, D. M. 1980. Effects of DDT on cell population growth, cell division and DNA synthesis in *Stylonychia notophora* (Stokes). *Arch. Environ. Contam. Toxicol.* **9**: 163-170.
4. **Lal, R.** and Saxena, D. M. 1980. Cytological and biochemical effects of pesticides on microorganisms. *Residue Rev.* **73**: 49-86.
5. **Lal, R.**, Saxena, D.M. and Agarwal, H.C. 1981. Uptake and metabolism of DDT by the ciliate protozoan *Stylonychia notophora*. *Acta. Protozool.* **20**: 109-114.
6. **Lal, R.**, Reddy, B. V. P and Saxena, D. M. 1981. Effects of DDT on cell division and DNA, RNA and protein synthesis in a ciliate protozoan *Blepharisma intermedium*. *Acta. Protozool.* **20**: 421-427.
7. Saxena, D. M., Shivaji, S. and **Lal, R.** 1981. Effects of DDT on DNA, RNA and protein synthesis in *Tetrahymena pyriformis*. *Indian J. Exp. Biol.* **19**: 568-570.
8. Saxena, D. M. and **Lal, R.** 1981. Effects of DDT on RNA and protein synthesis in *Stylonychia notophora*. *Arch. Protistenk.* **124**: 103-109.
9. Agarwal, H. C., Saxena, D. M and **Lal, R.** 1982. Accumulation and metabolism of DDT and its metabolites by *Tetrahymena*. *Water, Air and Soil Pollution.* **18**: 441-447.
10. Saxena, D. M., **Lal, R.** and Reddy, B. V. P. 1982. DDT uptake and metabolism in *Blepharisma intermedium*. *Acta. Protozool.* **21**: 173-175.
11. **Lal, R.** 1982. Accumulation, metabolism and effects of organophosphorus insecticides on microorganisms. *Advances Appl. Microbiol.* **28**: 149-200.
12. **Lal, R.** and Saxena, D. M. 1982. Accumulation, metabolism and effects of organochlorine insecticides on microorganisms. *Microbiol Rev.* **46**: 95-127.
13. **Lal, R.** 1983. Factors influencing microbe/insecticide interactions. *CRC Crit. Rev. Microbiol.* **10**: 261-295.
14. **Lal, R.** and Dhanaraj, P. S. 1985. Cellular aspects of microbes/insecticide interactions. *Int. Rev. Cytol.* **96**: 239-262.
15. **Lal, R.**, Lal, S. and Shivaji, S. 1986. Use of microbes for detoxification and disposal of insecticides. *CRC Crit. Rev. Biotechnol.* **3**: 1-16.
16. Lal, S., **Lal, R.** and Saxena, D. M. 1987. Bioconcentration and metabolism of DDT, fenitrothion and chlorpyrifos by the blue green algae *Anabaena sp.* and *Aulosira fertilissima*. *Environ. Pollution.* **46**: 187-196.
17. Rao, V. V. S. N. and **Lal, R.** 1987. Uptake and metabolism of insecticides by blue-green algae *Anabaena* and *Aulosira fertilissima*. *Microbios Lett.* **36**: 143-147.
18. Tondon, R. S., **Lal, R.** and Rao, V. V. S. N. 1987. Effects of Malathion and endosulfan on the growth of *Paramecium Aurelia*. *Acta. Protozool.* **26**: 325-328.
19. Lal, S. and **Lal, R.** 1987. Bioaccumulation, metabolism and effects of DDT, fenitrothion and chlorpyrifos on *Saccharomyces cerevisiae*. *Arch. Environ. Contam. Toxicol.* **16**: 753-757.
20. Lal, S., Saxena, D. M. and **Lal, R.** 1987. Uptake, metabolism and effects of DDT, fenitrothions and chlorpyrifos on *Tetrahymena pyriformis*. *Pesticide Science.* **21**: 181-191.
21. Lal, S., Saxena, D. M. and **Lal, R.** 1987. Effect of DDT, fenitrothion and chlorpyrifos on growth, photosynthesis and nitrogen fixation in *Anabaena* and *Aulosira fertilissima* Agriculture. *Ecosystem and Environment.* **19**: 197-209.
22. Bhatnagar, P., Kumar, S. and **Lal, R.** 1988. Uptake and bioconcentration of dieldrin, dimethoate

- and permethrin by *Tetrahymena pyriformis*. *Water, Air and Soil Pollution*. **40**: 345-349.
23. Kumar, S., **Lal, R.** and Bhatnagar, P. 1988. Uptake of dieldrin, dimethoate and permethrin by *Cynobacteria*, *Anabaena* and *Aulosira fertilissima*. *Environ. Pollution*. **54**: 55-61.
 24. Tondon, R. S., **Lal, R.** and Rao, V. V. S. N. 1988. Interaction of endosulfan and malathion with Blue- green algae *Anabaena* and *Aulosira fertilissima*. *Environ. Pollution*. **52**: 1-9.
 25. Kumar, S., **Lal, R.** and Bhatnagar, P. 1988. Residues of organochlorine insecticides in two lakes of Jaipur, India. *Water, Air and Soil Pollution*. **42**: 57-65.
 26. Kumar, S., Dhanraj, P. S. and **Lal, R.** 1988. Effects of dieldrin, dimethoate and permethrin on growth, nitrogen fixation and photosynthesis in *Anabaena* and *Aulosira fertilissim*. *Indian J. Agri. Environ.* **5**: 30-38.
 27. Kumar, S., **Lal, R.** and Bhatnagar, P. 1989. Effects of dieldrin, dimethoate and permethrin on *Tetrahymena pyriformis*. *Environ. Pollution*. **57**: 275-280.
 28. Dhanraj, P. S., Kaushal, B. R. and **Lal, R.** 1989. Effects on uptake and metabolism of aldrin and phorate on a protozoan *Tetrahymena pyriformis*. *Acta. Protozool.* **28**: 157-163.
 29. Dhanaraj, P. S., Kumar, S. and **Lal, R.** 1989. Bioconcentration and metabolism of aldrin and phorate by the blue-green algae, *Anabaena* (Arm 310) and *Aulosira fertilissima* (Arm 68). *Agricul. Ecosys. Environ.* **25**: 187-193.
 30. **Lal, R.**, Dhanraj, P. S. and Rao V. V. S. N. 1989. Residues of organochlorine insecticides in Delhi vegetables. *Bull. Environ. Toxicol.* **42**: 45-49.
 31. Kumar, S., Saxena, R. K. and **Lal, R.** 1991. Microorganisms and synthetic pyrethroid insecticides. *Pesticide Science J.* **3**: 99-108.
 32. Dhanraj, P. S., **Lal, R.**, and Kaushal, B. R. 1991. Detoxification of aldrin and phorate by *Saccharomyces cerevisiae*. *Biomed. Lett.* **46**: 109-112.
 33. **Lal, R.**, Lal, S., Gründ, E. and Eichenlaub, R. 1991. Construction of a hybrid plasmid capable of replication in *Amycolatopsis mediterranei*. *Appl. Environ. Microbiol.* **57**: 665-671.
 34. Tandon, R. S., **Lal, R.** and Rao, V.V.S.N. 1992. Uptake and effects of malathion and endosulfan on *Saccharomyces cerevisiae*. *Biomed. Lett.* **47**: 15- 20.
 35. Dhanaraj, P. S., **Lal, R.**, Kumar, S. and Kaushal, B. R. 1992. Effects of aldrin and phorate on growth and nitrogen fixation in blue-green algae. *Biomed. Letters.* **47**: 93-98.
 36. **Lal, R.** and Lal, S. 1993. Recent trends in rifamycin research. *BioEssays*. **16**: 1-16.
 37. Johri, A. K., Saxena, D. M. and **Lal, R.** 1994. Impact of synthetic pyrethroid insecticide fenvalerate on *Tetrahymena pyriformis*. *Pesticide Research J.* **6**: 60-66.
 38. **Lal, R.**, Khanna, M., Kaur, H., Srivastva, N., Lal, S. 1995. Rifamycins: Strain improvement programme. *CRC Crit. Rev. Microbiol.* **21**: 19-30.
 39. **Lal, R.**, Lal, S., Dhanraj, P. S., and Saxena, D. M. 1995. Manipulation of catabolic genes for the detoxification of xenobiotics. *Adv. Appl. Microbiol.* **41**: 55-95.
 40. Kumar, S., Mukerji, K. G. and **Lal, R.** 1996. Molecular aspects of pesticide degradation by microorganisms. *CRC Crit. Rev. Microbiol.* **22**: 1-26.
 41. **Lal, R.**, Khanna, R., Kaur, H., Khanna, M., Dhingra, N., Lal, S. Gartemann, K. H., Eichenlaub, R. and Ghosh, P. K. 1996. Engineering antibiotic producers to overcome the limitations of classical strain improvement programme. *CRC Crit. Rev. Microbiol.* **22**: 201-255.
 42. Johri, A. K., Dua, M., Tuteja, D., Saxena, R., Saxena, D. M. and **Lal, R.** 1996. Genetic manipulations of microorganisms for the degradation of hexachlorocyclohexane. *FEMS Microbiol. Rev.* **19**: 69-84.
 43. Johri, A. K., Saxena, D. M. and **Lal, R.** 1997. Interaction of synthetic parathyroid with microorganisms. *Microbiol.* **89**: 151-156.
 44. **Lal, R.**, Khanna, R., Dhingra, N., Khanna, M. and Lal, S. 1998. Development of an improved cloning vector and transformation system in *Amycolatopsis mediterranei* (*Nocardia mediterranei*). *J. Antibiot.* **51**: 161- 169.

45. Johri, A. K., Dua, M., Tuteja, D., Saxena, R., Saxena, D. M. and **Lal, R.** 1998. Degradation of alpha, beta, gamma and delta hexachlorocyclohexane by *Sphingomonas paucimobilis*. *Biotechnol. Lett.* **20**: 885-888.
46. Khanna, M., Dua, M. and **Lal, R.** 1998. Selection of suitable marker genes for the development of cloning vectors and electroporation in different strains of *Amycolatopsis mediterranei*. *Microbiol. Res.* **153**: 205-211.
47. Tuteja, D., Dua, M., Khanna, R., Dhingra, N., Khanna, M., Kaur, H., Saxena, D. and **Lal, R.** 1999. The importance of homologous recombination in the generation of large deletions in hybrid plasmids in *Amycolatopsis mediterranei*. *Plasmid.* **43**: 1-11.
48. Singh, B. K., Kuhad, R. C., Singh, A., **Lal, R.** and Tripathi, K. K. 1999. Biochemical and molecular basis of pesticide degradation by microorganisms. *CRC Crit. Rev. Biotechnol.* **19**: 197-225.
49. **Lal, R.**, Kumari, R., Kaur, H., Khanna, R., Dhingra, N., and Tuteja, D. 2000. Regulation and manipulation of the gene clusters encoding type –I PKSs. *Trends Biotechnol.* **18**: 264-274.
50. Kaur, H., Cortes, J., Leadlay, P. and **Lal, R.** 2001. Cloning and partial characterization of presumptive rifamycin biosynthetic gene cluster from the actinomycete *Amycolatopsis mediterranei* DSM 46095. *Microbiol. Res.* **156**: 243-246.
51. Mishra, V., **Lal, R.** and Srinivasan. 2001. Enzymes and operons mediating xenobiotic degradation in bacteria. *CRC Crit. Rev. Microbiol.* **27**: 133-166.
52. Kumari, R., Subudhi, S., Suar, M., Dhingra, G., Raina, V., Dogra, C., Lal, S., Holliger, C., van der Meer, J. R. and **Lal, R.** 2002. Cloning and characterization of *lin* genes responsible for the degradation of hexachlorocyclohexane isomers in *Sphingomonas paucimobilis* strain B90. *Appl. Environ. Microbiol.* **68**: 6021-28.
53. Dhawan, S., **Lal, R.** and Kuhad, R. C. 2003. Ethidium bromide stimulated hyper laccase production from bird's nest fungus *Cyathus bulleri*. *Lett. Appl. Microbiol.* **36**: 1-3.
54. Dhingra, G., Kumari, R. M., Bala, S., Lal, S., Cullum, J. and **Lal, R.** 2003. Development of cloning vectors and transformation system for *Amycolatopsis*. *J. Ind. Microbiol. Biotechnol.* **30**: 195-204.
55. Bala, S., Khanna, R., Dhadwal, M., Prabhakaran, S. R., Shivaji, S., Cullum, J. and **Lal, R.** 2004. Reclassification of *Amycolatopsis mediterranei* 46095 as *Amycolatopsis rifamycinica*. *Int. J. Syst. Evol. Microbiol.* **54**: 1145-1149.
56. Dogra, C., Raina, V., Pal, R., Suar, M., Lal, S., Gartemann, K. H., Holliger, C., van der Meer, J. R. and **Lal, R.** 2004. Organization of *lin* genes and IS6100 among different strains of hexachlorocyclohexane degrading *Sphingomonas paucimobilis* strains: Evidence of natural horizontal transfer. *J. Bacteriol.* **186**: 2225-2235.
57. Prakash, O., Suar, M., Raina, V., Dogra, C, Pal, R. and **Lal, R.** 2004. Residues of hexachlorocyclohexane (HCH) isomers from different soil and water samples in Delhi and adjoining areas. *Current Science.* **87**: 73-77.
58. Kuhad, R. C., Kapoor, R. K. and **Lal, R.** 2004. Improving the yield and quality of DNA isolated from white-rot fungi. *Folia Microbiol (Praha).* **49**: 112-116.
59. Suar, M., van der Meer, J. R., Lawlor, K., Holliger, C. and **Lal, R.** 2004. Dynamics of multi *lin* gene expression in *Sphingomonas paucimobilis* B90A in response to different HCH isomers. *Appl. Environ. Microbiol.* **70**: 6650-6656.
60. Dhawan, S., **Lal, R.**, Hanspal, M. and Kuhad, R. C. 2005. Effect of antibiotics on growth and laccase production from *Cyathus bulleri* and *Pycnoporus cinnabarinus*. *Bioresourse Technol.* **96**: 1415-1418.
61. Pal, R., Bala, S., Dhingra, G., Prakash, O., Dadhwal, M., Kumar, M., Prabhakaran, S. R., Shivaji, S., Cullum, J., Holliger, C. and **Lal, R.** 2005. The hexachlorocyclohexane-degrading bacterial strains *Sphingomonas paucimobilis* B90A, UT26 and Sp+ having similar *lin* genes are three

- distinct species, *Sphingobium indicum* sp. nov; *S. japonicum* sp. nov; and *S. francense* sp. nov. and reclassification of [*Sphingomonas*] *chungbukensis* as *Sphingobium chungbukense* comb. nov. *Int. J. Syst. Evol. Microbiol.* **55**: 1965–1972.
62. Suar, M., Hauser, A., Poiger, T., Buser, H. R., Müller, M. D., Dogra, C., Raina, V., Holliger, C., van der Meer, J. R., **Lal, R.** and Kohler, H. P.E. 2005. Enantioselective transformation of α -HCH by dehydrochlorinases LinA1 and LinA2 from soil bacterium *Sphingomonas paucimobilis* B90A. *Appl. Environ. Microbiol.* **71**: 8514-8518.
 63. Majumdar, S. and **Lal, R.** 2006. Reclassification of *Amycolatopsis orientalis* DSM 43387 as *Amycolatopsis benzoatilytica* sp. nov. *Int. J. Syst. Evol. Microbiol.* **56**: 199-204.
 64. Pal, R., Bhasin, V. K. and **Lal, R.** 2006. Proposal to reclassify [*Sphingomonas*] *xenophaga* Stolz et al 2000 and [*Sphingomonas*] *taejonensis* Lee et al. 2001 to *Sphingobium xenophagum* gen. com. nov. and *Sphingopyxis taejonensis* gen. com. nov. respectively. *Int. J. Syst. Evol. Microbiol.* **56**: 667-670.
 65. Ninanwe, S., **Lal, R.** and Kuhad, R. C. 2006. Isolation of three Xylanase-producing strains of Actinomycetes and their identification using molecular methods. *Curr. Microbiol.* **53**: 178-182.
 66. Sharma P., Raina, V., Kumari, R., Malhotra, S., Dogra, D., Kumari, H., Kohler, H. P-E., Buser, H. R., Holliger, C. and **Lal, R.** 2006. Haloalkane Dehalogenase *LinB* is responsible for β - and δ -Hexachlorocyclohexane in *Sphingobium indicum* B90A. *Appl. Environ. Microbiol.* **72**: 5720-5727.
 67. Prakash, O. and **Lal, R.** 2006. Description of *Sphingobium fuliginis* sp. nov. a phenanthrene-degrading bacterium from a fly ash site dumping site, and reclassification of *Sphingomonas cloacae* as *Sphingobium cloacae* comb. nov. *Int. J. Syst. Evol. Microbiol.* **56**: 2147-2152.
 68. **Lal, R.**, Dogra, C., Malhotra, S., Sharma, P and Pal, R. 2006. Diversity, distribution, and divergence of *lin* genes in hexachlorocyclohexane degrading Sphingomonads. *Trends Biotechnol.* **24**: 121- 130.
 69. Prakash, O., Kumari, K. and **Lal, R.** 2007. *Pseudomonas delhiensis* sp. nov., from a fly ash dumping site of a thermal power plant. *Int. J. Syst. Evol. Microbiol.* **57**:527-531.
 70. Malhotra, S. and **Lal, R.** 2007. The Genus *Amycolatopsis*: indigenous plasmids, cloning vectors and gene transfer systems. *Indian J. Microbiol.* **47**: 3-14.
 71. Raina, V., Hauser, A., Buser, H. R., Rentsch, D., Sharma, P., **Lal, R.**, Holliger, C., Poiger, T., Müller, M. D and Kohler, H. P-E. 2007. Hydroxylated metabolites of α -, β -, γ - and δ -hexachlorocyclohexane: bacterial formation, Stereochemical configuration, and occurrence in groundwater at a former production site. *Environ. Sci. Technol.* **41**: 4292-4298.
 72. Malhotra, S., Sharma, P., Kumari, H., Singh, A., and **Lal, R.** 2007. Localization of HCH catabolic genes (*lin* genes) in *Sphingobium indicum* B90A. *Indian J. Microbiol.* **47**: 271-275.
 73. Prakash, O., Verma, M., Sharma, P., Kumar, M., Kumari, K., Singh, A., Kumari, H., Jit, S. Gupta, S. K., Khanna, M. and **Lal, R.** 2007. Polyphasic approach of bacterial classification – An overview of recent advances. *Indian J. Microbiol.* **47**: 98-108.
 74. Solanki, R., Khanna, M. and **Lal, R.** 2008. Bioactive compounds from marine actinomycetes. *Indian J. Microbiol.* **48**: 410-431.
 75. Raina, V., Suar, M., Singh, A., Prakash, O., Dadhwal, M., Gupta, S. K., Dogra, C., Lawlor, K., Lal, S., van der Meer, J. R., Holliger, C. and **Lal, R.** 2008. Enhanced biodegradation of hexachlorocyclohexane (HCH) in contaminated soils via inoculation with *Sphingobium indicum* B90A. *Biodegradation.* **19**: 27-40.
 76. Kumar, M., Verma, M. and **Lal, R.** 2008. *Devosia chinhatensis* sp. nov., isolated from hexachlorocyclohexane (HCH) dump site in India. *Int. J. Syst. Evol. Microbiol.* **58**: 861-865.
 77. Malhotra, S., Majumdar S., Kumar, M., Bhasin, V. K., Garetmann, K. H. and **Lal, R.** 2008. Nucleotide sequence of plasmid pA387 of *Amycolatopsis benzoatilytica* and construction of a conjugative shuttle vector. *J. Basic. Microbiol.* **48**: 177-185.

78. Gupta, S. K., Kumari, R., Prakash, O. and **Lal, R.** 2008. *Pseudomonas panipatensis* sp. nov., isolated from an oil-contaminated site. *Int. J. Syst. Evol. Microbiol.* **58**: 1339-1345.
79. Jit, S., Dadhwal, M., Prakash, O. and **Lal, R.** 2008. *Flavobacterium lindanitolerans* sp. nov., isolated from hexachlorocyclohexane-contaminated soil. *Int. J. Syst. Evol. Microbiol.* **58**: 1665-1669.
80. Raina, V., Rentsch, D., Geiger, T., Sharma, P., Buser, H. R., Holliger, C., **Lal, R.** and Kohler, H. P-E. 2008. New metabolites in the degradation of α and γ - hexachlorocyclohexane (HCH): Pentachlorocyclohexenes are hydroxylated to cyclohexenols and cyclohexenediols by the haloalkane dehalogenase LinB from *Sphingobium indicum* B90A. *J. Agric. Food Chem.* **56**: 6594-6603.
81. **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. *Indian J. Microbiol.* **48**: 3-18.
82. Scott, C., Pandey, G., Hartley, C. J., Jackson, C. J., Cheesman, M. J., Taylor, M. C., Pandey, R., Khurana, J. L., Teese, M., Coppin, C. W., Weir, K. M., Jain, R. K., **Lal, R.**, Russell, R. J and Oakeshott, J. G. 2008. The enzymatic basis for pesticide bioremediation. *Indian J. Microbiol.* **48**: 65-79.
83. Sharma, P., Kumari, H., Kumar M., Verma M., Kumari K., Khurana, J. and **Lal, R.** 2008. From bacterial genomics to metagenomics: Concept, tools and recent advances. *Indian J. Microbiol.* **48**: 173-194.
84. Singh, A. and **Lal, R.** 2009. A novel hexachlorocyclohexane degrading bacterium *Sphingobium ummariense* sp. nov., isolated from HCH contaminated soil. *Int. J. Syst. Evol. Microbiol.* **59**: 162-166.
85. Gupta, S. K., Lal, D. and **Lal, R.** 2009. *Novosphingobium panipatense* sp. nov. and *Novosphingobium mathureense* sp. nov., from oil contaminated soil. *Int. J. Syst. Evol. Microbiol.* **59**: 156-161.
86. Dadhwal, M., Singh, A., Prakash, O., Gupta, S. K., Kumari, K., Sharma, P., Jit, S., Verma, M., Holliger, C. and **Lal, R.** 2009. Proposal of biostimulation for hexachlorocyclohexane (HCH)-decontamination and characterization of culturable bacterial community from high-dose point HCH-contaminated soils. *J. App. Microbiol.* **106**: 381-392.
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C. Chapter In Books

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5. Lal, R. and Agnihotri, N.P. 1984. Experimental, methodological and analytical approach to the study of microbe-insecticide interactions in *Insecticide Microbiology* (Editor: Lal, R.) Springer Verlag, Berlin. 41-57.
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D. Other Publications/ Reports/ Editorials/ News and Views

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2. Lal, R. 2005. Gross Violation (Investigation). *Down to Earth*, 36-38.
3. Lal, R. 2006. "Editorial" *Indian. J. Microbiol.* 46:(i).
4. Lal, R. 2006. Editorial on "11th ISME meeting, Vienna, August 2006." *Indian. J. Microbiol.* 46:(i).
5. Lal, R., Jit, S., Verma, M., Dadhwal. M., Singh, A., Prakash, O., Sharma, P. and Khanna, M. 2006. Nanoorganisms: Smallest form of life got smaller. *Indian. J. Microbiol.* 46: 413.
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9. Lal, R. 2007. Editorial on "Publishing Indian Journal of Microbiology in cooperation with Springer: a milestone for the Association of Microbiologists of India". *Indian J. Microbiol.*

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 16. Lal, R. 2009. Editorial on “Two years of Springer-IJM association” *Indian J. Microbiol.* 49:1.
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 20. Kaur, J. and Lal, R. 2009. Cold drink cans contaminated with rat urine can kill. (News and Views). *Indian J. Microbiol.* 49:294.
 21. Lal, R. 2010. Editorial on “Microbiology in Space”. *Indian J. Microbiol.* 50:1
 22. Garg, N. and Lal, R. 2010. “Synthetic Biology: Bacteria overtake computers” (News and Views). *Indian J. Microbiol.* 50:113.
 23. Kaur, J. and Lal, R. 2010. “Nematode worms or deadly insecticides!” (News and Views). *Indian J. Microbiol.* 50:115.
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 25. Anand S. and Lal, R. 2010. “The dawn of the era of synthetic life” (News and Views). *Indian J. Microbiol.* 50:249.
 26. Lal, R. 2010. Editorial on “Microbiology and Biotechnology Education in India” *Indian J. Microbiol.* 50:251-252.
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 28. Saxena, A., Dua, A., Sangwan, N. and Lal, R. 2010. “Bacterial nanowires: a new mode of communication”. (News and Views). *Indian J. Microbiol.* 50:144.
 29. Dwivedi, V. And Lal, R. 2011. “Gut-Brain Communication is Influenced by Gut Microbes.”(News and Views). *Indian J. Microbiol.* 51:239.
 30. Lal, R. 2011. Editorial on “Human Body: A virtual zoo of Bacteria”. *Indian J. Microbiol.* 51:1.
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 32. Lal, D. and Lal, R. 2011. “Wrong sequences in Databases: Whose Fault?.”(News and Views). *Indian J. Microbiol.* 51:413.
 33. Lal, D. and Lal, R. 2011. “Discovering Metabolic Products of Cryptic Biosynthetic Pathways.”(News and Views). *Indian J. Microbiol.* 51:414.
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 35. Lal, D and Lal, R. 2011. Opinion article on “The Rise of Open Access”. *Indian J. Microbiol.* 51:416-417.
 36. Lal, R. 2012. Editorial on “Individual Genome Assembly from Metagenome : Resolving the Unknown Genotypic Microdiversity at the Sharpened Focus” *Indian J. Microbiol.* 52:1-2.

37. Negi, V., Kumar, R., Verma, H., Sangwan, N., Lal, R. 2012. News and Views on “ Titan Cells: Barriers to Phagocytosis”. *Indian J. Microbiol.* 52: 516
38. Ahmad, S., Anand, S., Lal, R. 2012. News and Views on “Skin commensals regulate skin immunity”. *Indian J. Microbiol.* 52:517-518.
39. Saxena, A., Mukherjee, U., Dua, A and Lal, R. 2012. India Losing Battle against Multi Drug Resistant Tuberculosis. News and Views. *Indian J. Microbiol.* 52:713.
40. Lal, D., Nayyar, N., Kohli, P., and Lal, R. 2013. News and Views on "*Cupriavidus metallidurans*: A Modern Alchemist". *Indian J. Microbiol.* 53:114-115.

Conference Organization/ Presentations (in the last three years)

Training Courses/ International Conferences Organized

1. **2015:** Organized National workshop on Renovating Bacterial Taxonomy with Bioinformatics at Department of Zoology, University of Delhi in collaboration with National Bureau of Agriculturally Important Microorganisms (NBAIM), Mau, Uttar Pradesh on 14th-15th April, 2015.
2. **2016:** Organized National Workshop on Microbial Genomics and Metagenomics at Department of Zoology, University of Delhi under the aegis of IUMS-INSA (International Union of Microbiological Societies-Indian National Science Academy), AMI Delhi Unit, University of Delhi and INSCR (Indian Network for Soil Contamination Research) on September 22, 2016.
3. **2016:** Organized Bani School Innovation Camp (BaSIC)-2016 (Dream School) at Government Senior Secondary School (GSSS), Bani, Hamirpur (H.P.) under the aegis of University of Delhi, INSA Outreach Program and DBT Star College Project, Ramjas College, on December 23-24, 2016.
4. **2017:** Organized Pre-conference workshop on “Hands on to Computational Biology for (Meta)Genomic analysis” under the aegis of International Society for Microbial Ecology (ISME), Department of Zoology University of Delhi and Indian Network for Soil Contamination Research (INSCR) at Department of Zoology University of Delhi on September 26, 2017.
5. **2017:** Organized INSCR International Conference 2017 (IIC-2017) on “Role of Microbe-Plant-Animal Interactions in Human Health” under the aegis of Department of Zoology University of Delhi, Indian Network for Soil Contamination Research (INSCR) and Amity University, Noida at Department of Zoology University of Delhi from September 26-28, 2017.
6. **2017:** Organized AMI-INSCR Workshop on “Beginner’s Computational Tools for Genome and Metagenome Analysis” under the aegis of Association of Microbiologists of India (AMI) and Indian Network for Soil Contamination Research (INSCR) at Department of Zoology University of Delhi on October 13, 2017.
7. **2017:** Organized ISME-AMI-INSCR Pre-conference workshop -2017 on “Hands on Computational Biology for (Meta) Genomics Analysis” under the aegis of Association of Microbiologists of India (AMI), Indian Network for Soil Contamination Research (INSCR), and International Society for Microbial Ecology (ISME) at Babasaheb Bhimrao Ambedkar University, Lucknow on November 16, 2017.
8. **2017:** Organized a workshop on ““Hands on to Computational Biology for (Meta) Genomics Analysis” jointly organized under the aegis of Department of Environmental

Studies and Department of Zoology at Department of Zoology University of Delhi on November 22, 2017.

9. **2018:** Organized Bani School Innovation Camp(BaSIC II)-2018 (Dream School) at Government Senior Secondary School (GSSS), Bani, Hamirpur (H.P.) under the aegis of University of Delhi, INSA Outreach Program, Association of Microbiologists of India (AMI), DBT Star College Project, Ramjas College, on March 7, 2018.

Workshops Organised in Capacity of Ambassador to Indian Ocean Region, American Society for Microbiology (ASM)

1. **2013** Organized workshop on Scientific Writing and Publishing at Sri Venkateswara College, University of Delhi, Delhi on 20th February, 2013.
2. **2013** Organized workshop on Culture of responsibility and Scientific Writing and Publishing at Maitreyi College, University of Delhi, Delhi on 2nd September, 2013.
3. **2013** Organized workshop on Culture of responsibility and Art of Science Communication at Convention Centre, Jawaharlal Nehru University (JNU), Delhi on 3rd September, 2013.
4. **2013** Organized workshop on Art of Science Communication at Ramjas College, University of Delhi, Delhi on 4th September, 2013.
5. **2013** Organized workshop on Art of Science Communication at CSIR-Institute of Genomics and Integrative Biology, Mall Road, Delhi on 25th October, 2013.
6. **2013** Organized workshop on Art of Science Communication at Maharishi Dayanand University, Rohtak, Haryana on 17th November, 2013.
7. **2013** Organized workshop on Art of Science Communication at Panjab University, Chandigarh, Panjab on 4th December, 2013.
8. **2013** Organized workshop on Art of Science Communication at Goa University, Goa on 7th December, 2013.
9. **2014** Organized workshop on Art of Science Communication at Modern College of Arts, Science and Commerce, Shivajinagar, Pune on 22nd January, 2014.
10. **2014** Organized workshop on Art of Science Communication at Indian Institute of Technology (IIT) Roorkee, Uttarakhand on 8th February, 2014.
11. **2014** Organized workshop on Art of Science Communication at Sardar Patel University, Ahmedabad, Gujrat on 22nd February, 2014.
12. **2014** Organized workshop on Art of Science Communication at Maharishi Dayanand University, Rohtak, Haryana on 4th March, 2014.
13. **2014** Organized workshop on Art of Science Communication at International Guest House, University of Delhi, Delhi on 31st March, 2014.
14. **2014** Organized workshop on Art of Science Communication at Indian Institute of Toxicological Research, Lucknow on 12th September, 2014.
15. **2014** Organized workshop on Art of Science Communication at Department of Zoology, University of Delhi, Delhi on 22nd September, 2014.
16. **2014** Organized workshop on Art of Science Communication at NIIT University, Neemrana, Rajasthan on 30th September, 2014.
17. **2014** Organized workshop on Art of Science Communication at Tamil Nadu Agricultural University, Coimbatore, India on 12th November, 2014.
18. **2014** Organized workshop on Art of Science Communication at KIIT University, Bhubhneswar, Odisha, India on 13th December, 2014.
19. **2015** Organized workshop on Art of Science Communication at Indian Institute of Home Economics, University of Delhi, India on 13th April, 2015.

20. **2015** Organized workshop on Art of Science Communication at Department of Botany, Gauhati University Guwahati, Assam, India on 20th April, 2015.
21. **2015** Organized workshop on Art of Science Communication at Thapar University, Patiala, India on 25th April, 2015.
22. **2015** Organized workshop on Art of Science Communication at Department of Biotechnology, Jammu University, Jammu, India on 20th June, 2015.

Presentations

1. **Lal, R.** “Production of rifamycin analogs by genetic manipulation of rifamycin polyketide biosynthetic gene cluster of *Amycolatopsis mediterranei* to overcome the problem of MDR strains of *Mycobacterium tuberculosis*”. Presented at Chemistry department, University of Delhi, Delhi, India on January 8, 2013.
2. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities & Misconceptions”. Presented in a workshop on “Techniques in Biotechnology” held at Miranda house, University of Delhi, Delhi, India on January 9, 2013.
3. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities & Misconceptions”. Presented in the occasion of Zoology festival 2013, at Hansraj College, University of Delhi, Delhi, India on Feb 4, 2013.
4. **Lal, R.** “Application of Genetics, Genomics and Metagenomics for Hexachlorocyclohexane Bioremediation”. Presented in the National Conference 2013 by Department Of Botany at Deen Dayal Upadhyay college, University of Delhi, Delhi, India on February 4, 2013
5. **Lal, R.** “Rifamycin Analogs by Genetic Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei*”. Presented in National Symposium on "Recent Trends in Innovative Research" organized by at Sri Venkateswara College, University of Delhi, Delhi, India on February 6, 2013.
6. **Lal, R.** “Application of Genetics, Genomics and Metagenomics for Hexachlorocyclohexane Bioremediation”. Presented in the Eco Club Meet at Rajdhani College, University of Delhi, Delhi, India on March 21, 2013.
7. **Lal, R.** “Rifamycin Analogs by Genetic Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei*”. Presented in National Conference on “Applications of Natural Products for Human Health & Bioremediation of Pollutants” at Department of Zoology, University of Rajasthan, Jaipur, India on March 23, 2013.
8. **Lal, R.** “How Indian Youth can Exploit opportunities in the 20th Century”. Presented at Ahlcon International Public School, Mayur Vihar, Delhi, India on April 19, 2013.
9. **Lal, R.** “Biotechnology: A discipline that primarily belongs to Chemists”. Presented at Short term course on “Advance Techniques in Material Characterization” organized by Department of chemistry at Hamirpur, India from May, 20-24, 2013.
10. **Lal, R.** “Production of Rifamycin Analogs by Genetic Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei* To Overcome the Problem of MDR Strains of *Mycobacterium tuberculosis*”. Presented at institute of Pharmaceutical Science in University of Freiburg on July 10, 2013.
11. **Lal, R.** “Problems posed by Hexachlorocyclohexane: Applications of Genetics, Genomics and Metagenomics for Hexachlorocyclohexane bioremediation“. Presented at Helmholtz Centre for Environmental Research-UFZ, University of Leipzig on July 15, 2013.
12. **Lal, R.** “Hexachlorocyclohexane: Toxicity, Exposure and Application of Genetics, Genomics and Metagenomics for Bioremediation”. Presented at 8th Biyani International Conference, Biyani Girls College, Jaipur, India on September 23, 2013.
13. **Lal, R.** “Role of Genetics, Genomics and Metagenomics for Hexachlorocyclohexane Bioremediation at the HCH Dumpsite” and “Production of Rifamycin analogues by Genetic

- Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei*". Presented at the department of Biotechnology and Bioinformatics Centre, Himachal Pradesh University, Shimla, India on October 5, 2013.0
14. **Lal, R.** "Production of Rifamycin Analogs by Genetic Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei* To Overcome The Problem Of MDR Strains Of *Mycobacterium tuberculosis*". Presented at University School of Biotechnology, Guru Gobind Singh Indraprastha University, Delhi, India on October 23, 2013.
 15. **Lal, R.** "Production of Rifamycin Analogs by Genetic Manipulation of Rifamycin Polyketide Biosynthetic Gene Cluster of *Amycolatopsis mediterranei*". Presented in the 54th Annual Conference of Association of Microbiologists of India (AMI) held at MDU, Rohtak, Haryana, India from November 17-20, 2013.
 16. **Lal, R.** Presented on "Community-wide insights from the seldom microbial dynamics enriched across the Himalayan hot springs". Presented in the 54th Annual Conference of Association of Microbiologists of India (AMI) held at MDU, Rohtak, Haryana, India from November 17-20, 2013.
 17. **Lal, R.** "Community microbial dynamics enriched across the Himalayan hot springs at Manikaran, Himachal Pradesh". Presented at Department of Microbiology, Panjab University, Chandigarh, India on December 4, 2013.
 18. **Lal, R.** "Community microbial dynamics enriched across the Himalayan hot springs at Manikaran, Himachal Pradesh". Presented at Department of Biotechnology, Goa University, Goa, India on December 7, 2013.
 19. **Lal, R.** "Hexachlorocyclohexane contamination and solutions: emerging model to study evolution of catabolic genes and molecular phylogenetics". Presented at Asian congress on Biotechnology held under the aegis of Asian Federation of Biotechnology, hosted by Indian Institute of Technology (IIT), Delhi, India on December 18, 2013.
 20. **Lal, R.** "Community Wide Insights from the Seldom Microbial Dynamics Enriched across the Himalayan Hot Springs at Manikaran" presented at IIT Roorkee, Uttarakhand, India on February 8, 2014.
 21. **Lal, R.** "Community Genomics of the Himalayan Hot Springs at Manikaran" presented at Sardar Patel University, Ahmedabad, Gujrat, India on February 22, 2014.
 22. **Lal, R.** "Community Wide Insights from the Seldom Microbial Dynamics Enriched across the Himalayan Hot Springs at Manikaran" presented at IIT Roorkee, Uttarakhand, India on February 8, 2014.
 23. **Lal, R.** "Production of rifamycin analogs by genetic manipulation of rifamycin polyketide biosynthetic gene cluster of *Amycolatopsis mediterranei* to overcome the problem of MDR strains of *Mycobacterium tuberculosis*" presented at Chemistry Department, University of Delhi, Delhi, India on 4th March, 2014.
 24. **Lal, R.** "India Now and Then" presented at Deshbandhu College, University of Delhi, Delhi, India on 12th March, 2014.
 25. **Lal, R.** "Metagenomics of the Himalayan Hot Springs at Manikaran" presented at Deshbandhu College, University of Delhi, Delhi, India on 12th March, 2014.
 26. **Lal, R.** "Community Genomics of the Himalayan Hot Springs at Manikaran" presented at Amity Institute of Microbial Technology, Amity University, Noida, Uttar Pradesh, India on 26th March, 2014.
 27. **Lal, R.** "Modification of Rifamycin Polyketide backbone in *Amycolatopsis mediterranei* leads to production of new RifamycinB analogs with an improved Drug activity against Rifampicin-Resistant *Mycobacterium tuberculosis* strains" presented at 9th Symposium on Frontiers in Biomedical Research (FBR-2014) at Conference hall, University of Delhi, Delhi, India on 14th April, 2014.
 28. **Lal, R.** "Isolating the natural existing hexachlorocyclohexane dehydrochlorinase (linA) & haloalkane dehalogenase (linB) variants from hexachlorocyclohexane contaminated dumpsite by

- using metagenomic approach” presented at ‘Life Sciences-DST Meeting’ at University of Hyderabad, Hyderabad, India on 11th May, 2014.
29. **Lal, R.** “Modification of Rifamycin Polyketide backbone in *Amycolatopsis mediterranei* leads to production of new RifamycinB analogs with an improved Drug activity against Rifampicin-Resistant *Mycobacterium tuberculosis* strains” Presented at Indian Institute of Toxicology Research, Lucknow, India on 12th September, 2014.
 30. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities & Misconceptions”. Presented at Department of Zoology, Miranda House, University of Delhi, Delhi, India on 17th September, 2014.
 31. **Lal, R.** “Modification of Rifamycin Polyketide backbone in *Amycolatopsis mediterranei* leads to production of new RifamycinB analogs with an improved Drug activity against Rifampicin-Resistant *Mycobacterium tuberculosis* strains” Presented at Department of Zoology, University of Delhi, Delhi, India on 22nd September, 2014.
 32. **Lal, R.** “Modification of Rifamycin Polyketide backbone in *Amycolatopsis mediterranei* leads to production of new RifamycinB analogs with an improved Drug activity against Rifampicin-Resistant *Mycobacterium tuberculosis* strains” Presented at NIIT University, Neemrana, Rajasthan, India on 30th September, 2014.
 33. **Lal, R.** “Community wide insights of stressed niches using metagenomic approach” Presented at BRD School of Biosciences, Vidyanagar, Gujarat, India on 11th October, 2014.
 34. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities and Misconceptions” Presented at Dolphin (P.G.) Institute of Biomedical and Natural Sciences, Dehradun, Uttarakhand, India on 16th October, 2014.
 35. **Lal, R.** “Genetic manipulations of *Amycolatopsis mediterranei* polyketide synthase gene cluster for the production of a novel rifamycin analogue, 24-desmethylrifamycin effective against MDR strains of *Mycobacterium tuberculosis*” Presented at Panjab University, Chandigarh, India on 31st October, 2014.
 36. **Lal, R.** “Modifying rifamycin polyketide backbone in *Amycolatopsis mediterranei* to produce a novel analog, 24-desmethylrifamycin effective against MDR strains of *Mycobacterium tuberculosis*” Presented at 55th Annual Conference of Association of Microbiologists of India (AMI) held at Tamil Nadu Agricultural University, Coimbatore, India on 13th November, 2014.
 37. **Lal, R.** “Community Genomics of the Himalayan Hot Springs at Manikaran” Presented at KIIT University, Bhubneshwar, Odisha, India on 13th December, 2014.
 38. **Lal, R.** “Production of rifamycin analogs by genetic manipulation of rifamycin biosynthetic gene cluster of *Amycolatopsis mediterranei* S699” Presented at 4th meeting in BioWorld series BIOWORLD 2014: Proteins structure and Function held at Kusuma School of Biological Sciences, IIT Delhi, India on 14th December, 2014.
 39. **Lal, R.** “Genetic manipulation of the polyketide synthase gene cluster of *Amycolatopsis mediterranei* S699 to produce Rifamycin B analogues” Presented at the National Conference on understanding the mechanism and challenges of complex diseases held at Shaheed Rajguru College of Applied Sciences for Women, University of Delhi, Delhi, India on 30th December, 2014.
 40. **Lal, R.** “Community wide insights of stressed niches using Metagenomic approach” Presented at Panjab University on 22nd January, 2015.
 41. **Lal, R.** “Community wide insights of stressed niches using Metagenomic approach” Presented at KIIT University, Bhubaneshwar, Odisha as a keynote speaker on 9th

February, 2015.

42. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities & Misconceptions” Presented at Christ College, Rajkot, Gujarat on 22nd February, 2015.
43. **Lal, R.** “Biotechnology: Introduction, Application, Opportunities & Misconceptions” Presented at Maitrey College, University of Delhi, Delhi on 26th February, 2015.
44. **Lal, R.** Plenary lecture on “Microbial diversity: Polyphasic Approach and Beyond! A journey from Taxonomy to Genomics to Metagenomics” at training course Microbial Systematics: Soil to Sequences organized by MTCC and CSIR-IMTECH, Chandigarh on 9th March, 2015.
45. **Lal R.** “Discovery and development of a novel analog of rifamycin B effective against MDR strains of *Mycobacterium tuberculosis*” Presented at UGC sponsored workshop at the Department of Biotechnology, Maharshi Dayanand University, Rohtak, Haryana on 26th March, 2015.
46. **Lal R.** “Introduction, Application, Opportunities & Misconceptions” Presented at Basic Sciences Refresher Course at Jamia Milia Islamia University, Delhi on 20th May, 2015.
47. **Lal R.** “Scientific Literature and Communication Skills” Presented at Basic Sciences Refresher Course at Jamia Milia Islamia University, Delhi on 20th May, 2015.
48. **Lal, R.** “Predator-Prey Dynamics of Novel Genotypes Enriched Across Arsenic Rich Himalayan Hot Springs”. Presented in the “World Congress and Expo on Applied Microbiology” held at Frankfurt, Germany from August 18-20, 2015.
49. **Lal, R.** “Genetic Manipulation of Polyketide Synthase Gene Cluster of *Amycolatopsis mediterranei* S699 to Produce Rifamycin B Analogs”. Presented in National Seminar on “Innovative Advance Research in Biomedical & Environment Dynamics” held at Dyal Singh College, University of Delhi, Delhi, India on October 10, 2015.
50. **Lal, R.** “Community Wide Insights of Stressed Niches Using Metagenomic Approach”. Presented at 56th Annual Conference of Association of Microbiologists of India (AMI) held at Jawaharlal Nehru University, Delhi, India on December 7, 2015.
51. **Lal, R.** “Community Wide Insights into Stressed Niches using Metagenomics Approach”. Presented at Anand, Gujarat, India on February 10, 2016.
52. **Lal, R.** “India Now and Then” Presented at Central Institute of Medicinal and Aromatic Plants, Lucknow under INSA (India National Science Academy) Lucknow Chapter on February 26, 2016.
53. **Lal, R.** “Microbial Diversity: Polyphasic Approach and Beyond! A Journey from Taxonomy to Genomics to Metagenomics to System Biology” at Microbial Type Culture Collection (MTCC), Chandigarh, India on March 8, 2016.
54. **Lal, R.** “Extreme Environments Spearheading Metagenomics” at Institute of Soil Science, Chinese Academy of Sciences, Nanjing, China on July 13, 2016.
55. **Lal, R.** “Biotechnology: Realization of the Dream of Geneticists, Applications, Opportunities and Misconceptions” in National Symposium on Nanobiotechnology and Microbial Technology held at Chandigarh college of Technology, Mohali, Punjab & Association of Microbiologists of India, Chandigarh unit on August 23, 2016.
56. **Lal, R.** "Community wide insights into stressed niches using metagenomic approach". Presented as a keynote speaker at BISMIS (Bergey's International Society for Microbial Systematics) 2016 at MCC, Pune on September 13, 2016.
57. **Lal, R.** "Genomics to metagenomics". Presented at a workshop on Microbial Genomics and Metagenomics held under the aegis of IUMS-INSA (International Union of Microbiological Societies-Indian National Science Academy) and AMI Delhi Unit, University of Delhi and INSCR (Indian Network for Soil Contamination Research) held at Department of Zoology, University of Delhi on September 22, 2016.
58. **Lal, R.** “Extreme Environments: A Suitable Target to Genomics and Metagenomics” at Vellore Institute of Technology (VIT), Vellore on October 17, 2016.
59. **Lal, R.** “Taxo-genomics: Moving beyond polyphasic approach” presented in International

Symposium on “Microbial Resource Center and Conservation of Microbial Diversity” held at MTCC, CSIR-IMTECH, Chandigarh on November 8, 2016.

60. **Lal, R.** “The Microbiome Revolution: Vision for Future” presented in National Conference on “Evolving New Horizons of Zoological Sciences in Human welfare” held at Kurukshetra University, Kurukshetra on November 23, 2016.
61. **Lal, R.** “Biotechnology: From Genes to Genomics and metagenomics” presented at Himachal Pradesh University, Shimla on November 14, 2016.
62. **Lal, R.** “Development of 24-desmethylrifamycin B – a novel analog of Rifamycin B effective against Multi-Drug Resistant Mycobacterium tuberculosis” at the ASM-AMI joint session in the 57th AMI (Association of Microbiologists of India) Annual Conference-2016 held at Gauhati University, Guwahati, Assam on November 25, 2016.
63. **Lal, R.** “Microbial genomics to metagenomics: A paradigm shift” presented as a keynote speaker at the 57th AMI (Association of Microbiologists of India) Annual Conference-2016 held at Gauhati University, Guwahati, Assam on November 26, 2016.
64. **Lal, R.** “Biotechnology: From genes to genomics and metagenomics” presented in session “CADD: Computer aided drug designing” at NIT and N.S.C.B.M. Government College, Hamirpur, H.P. on December 12, 2016.
65. **Lal, R.** “India now and then” presented in Bani School Innovation Camp (BaSIC)-2016 (Dream School) held under University of Delhi, INSA Outreach Program and DBT Star College Project, Ramjas College at Government Senior Secondary School, Bani, Hamirpur, H.P. on December 23-24, 2016.
66. **Lal, R.** “New twist in study of plant and animal biology in the light of metagenomics: vision for future” presented as a keynote speaker at the International Conference and Outreach program on “Environment and Ecology; Sustainability and Challenges (ENCON-2017)” held at Conference Center, University of Delhi and Organised by SV College, University of Delhi, Delhi on January 4, 2017.
67. **Lal, R.** “Scientific Innovations that Changed the World and INDIA: Then (Before 1990) and Now” presented a inspiring talk in DST sponsored 7th INSPIRE Program at Asian Educational Institute, Patiala on January 10, 2017.
68. **Lal, R.** “Scientific Innovations that Changed the World and INDIA: Then (Before 1990) and Now” presented an inspiring talk in DST State Govt. Jammu & Kashmir sponsored program for undergraduate students at Jammu University, J & K on January 20, 2017.
69. **Lal, R.** “Unlimited world of microbes with limitless applications” presented an inspiring talk in Gargi College on February 8, 2017.
70. **Lal, R.** “Scientific Innovations that changed the world” and “India: Then and Now” presented as guest speaker in NASI-BHU Teacher’s Training workshop held at Banaras Hindu University, Varanasi on February 10, 2017.
71. **Lal, R.** “Microbiology: Then and Now” presented as subject lecture in Deen Dayal Upadhyaya College, University of Delhi, Delhi on February 15, 2017.
72. **Lal, R.** “Insights into microbial interactions using metagenomics: Discerning Ally and Foe” presented as invited talk in International Conference on Microbial Biotechnology (Microcon 2017: The Science Spring) at Punjab University, Chandigarh, India on February 17, 2017.
73. **Lal, R.** “Insights into microbial interactions using metagenomics: Discerning Ally and Foe” presented as subject lecture in Department of Microbiology at Guru Nanak Dev University, Amritsar on February 20, 2017.
74. **Lal, R.** “New Horizons in Microbial Interactions through Metagenomics Revolutions” presented as Plenary lecture in National Symposium on Issues and Challenges in Ecological Sciences (ICES-2017) at Department of Botany, Institute of Science, Banaras Hindu University, Varanasi on February 23, 2017.
75. **Lal, R.** “Persuit of Bacterial Taxonomy, Genomics and Metagenomics” presented as guest lecture at Faculty of Life Sciences and Biotechnology at South Asian University, Delhi on March

3, 2017.

76. **Lal, R.** “Recognizing and Evading Publishing in Predatory Journals: Our Experience” presented in National Seminar on “Identifying and Avoiding Publishing in Predatory Journals: A lesson of Researchers” at Department of Botany, University of Delhi on March 18, 2017.
77. **Lal, R.** “Biotechnology: Introduction, Advances and Career Options” presented as Expert lecture in National Conference on “Advances in Basic and Applied Sciences (ABAS-2017)” at School of Basic and Applied Science, Career Point University, Hamirpur on April 7, 2017.
78. **Lal, R.** “Combating antibiotic resistance against Tuberculosis” presented as Guest Lecture in one day ASM-CME on “Antibiotic Resistance: Renewed Fears” at Multipurpose Hall, India International Centre, New Delhi on April 16, 2017.
79. **Lal, R.** “Unlimited World of Microbes with Limitless Applications” presented as Chief Guest Address in Add on Course on "Biotechcellence: Insights and Innovations" at Gargi College, University of Delhi, on August 23, 2017.
80. **Lal, R.** “New twist in microbiology in the light of metagenomics: Vision for Future” and “A journey from bacterial polyphasic approach to genomics and metagenomics” presented as in MSM Metagenome informatics workshop organized by the Malaysian Society for Microbiology from 13th -16th September, 2017 at the School of Biosciences and Biotechnology, Universiti Kebangsaan, Malaysia.
81. **Lal, R.** “Can we do biology without microbiology” delivered a lecture at Miranda House College, University of Delhi, on September 18, 2017.
82. **Lal, R.** “Metagenomic analysis of stressed bacteria and genes from the hexachlorocyclohexane (HCH) dumpsite and Manikaran hot springs” presented as plenary lecture in INSCR International Conference 2017 at University of Delhi, on September 27, 2017.
83. **Lal, R.** “Reaching the Unreached through Genomics and Metagenomics” presented as guest lecture in National Conference on Biotechnology: Exploring through Innovations (BETI)- 2017 at Department of Biotechnology, Central University of Haryana, Mahendergarh, on November 13, 2017.
84. **Lal, R.** “Reaching the Unreached through Genomics and Metagenomics” presented a lecture in DBT sponsored Short Term Training Course on “Application of metagenomic tools for bioremediation towards environmental restoration” at Amity Institute of Biotechnology on November 14, 2017.
85. **Lal, R.** “Role of Computational Biology and Bioinformatics in Microbiology” presented in ISME-AMI-INSCR Pre-conference workshop at Babasaheb Bhimrao Ambedkar University, Lucknow on November 16, 2017.
86. **Lal, R.** “Metagenomic approaches to evaluate soil biodiversity and productivity” presented as invited talk in 58th Annual Conference of Association of Microbiologists of India (AMI-2017) & International Symposium of Sustainable Development: Scope and Applications (MSDSA-2017) at Babasaheb Bhimrao Ambedkar University, Lucknow on November 18, 2017.
87. **Lal, R.** “Genetic manipulation of polyketide synthase gene cluster of *Amycolatopsis mediterranei* S699 produce rifamycin B analogs” presented as keynote lecture in 86th Conference of Society of Biological Chemists at Convention Centre, Jawaharlal Nehru University, New Delhi on November 19, 2017.
88. **Lal, R.** “Reaching the Unreached through Genomics and Metagenomics” presented as plenary lecture in 2nd Himachal Pradesh Science Congress (HPSC) 2017-18. Science and Technology for Sustainable Livelihood in Indian Himalayan Region organized by Himachal Pradesh Council for Science, Technology and Environment (HIMCOSTE) at Shimla on November 20, 2017.
89. **Lal, R.** “Scientific Innovations that changed the world and India: Then (Before 1990) and Now” presented as invited lecture (Mentor) in 6th DST INSPIRE Internship Camp at Punjab University Campus, Chandigarh on November 21, 2017.
90. **Lal, R.** “Role of Computational Biology and Bioinformatics in Microbiology” in workshop on “Hands on to Computational Biology for (Meta) Genomics Analysis” jointly organized under the

aegis of Department of Environmental Studies and Department of Zoology at Department of Zoology University of Delhi on November 22, 2017.

91. Lal, R. "Exploring the Unseen and Unreached through Genomics and Metagenomics" presented in Continuing Education Program on "Genomics and Proteomics: Methods and Applications" at Department of Molecular Biology, Defence Institute of Physiology and Allied Sciences, DRDO, Delhi on November 28, 2017.
92. Lal, R. "Exploring the Unseen and Unreached through Genomics and Metagenomics" presented as inaugural lecture in a training course on "Microbial Systematics V2.0" organized by Microbial Type Culture Collection and Gene Bank (MTCC) located at CSIR-Institute of Microbial Technology (CSIR-IMTECH) on December 11, 2017
93. Lal, R. "Microbiome: Exploring the role of microbiota in environmental cleaning, bio-product formation and human health" presented as plenary talk in UGC National Conference on "Current Trends in Biological Sciences-II (CTBS-2018)" organized by Post Graduate Department of Biosciences, Sardar Patel University, Gujarat on February 9, 2018.
94. Lal, R. "Role of Computational Tools in Biology: Can we do biology without Computational Tools and Microbiology?" presented in the workshop titled "Computational biology and its role in genomics and metagenomics" organized by Life Sciences Society by Hansraj College, University of Delhi, Delhi on February 15, 2018.
95. Lal, R. "Microbiome: Exploring the role of microbiota in environmental cleaning, bio- product formation and Human health" presented as invited lecture in 30th All India Congress of Zoology and National Seminar on 'Advances in Zoology for Sustainable Development' organized by Department of Zoology, Kurukshetra University, Kurukshetra on February 16, 2018.
96. Lal, R. "Management of Research, Laboratory, and Students: Our Experience." presented in Symposium on "Safety measures and Laboratory Ethics", organized by Acharya Narendra Dev College, under DBT Star College scheme on February 21-22, 2018.
97. Lal, R. "Beyond DNA Barcoding: Microbial Fingerprints through Genomics and Metagenomics" presented as inaugural lecture in "Hands on Training on "DNA Barcoding in Assessment of Faunal Diversity" organized by Zoological Survey of India, Headquarters, Kolkatta on March 5, 2018.
98. Lal, R. "Major Discoveries in Science and their Impact on Daily life" presented in Bani School Innovation Camp II (BaSIC-II) 2018 held under University of Delhi, INSA Outreach Program, Association of Microbiologists of India (AMI), DBT Star College Project, Ramjas College at Government Senior Secondary School.
99. Lal, R. "The Emergent Microbiome: A Revolution in Biological Sciences" presented as resource person in "Recent Trends in Biology- 2018" organized by Department of Zoology, Savitribai Phule Pune University, Ganeshkhind, Pune- 411007, (M.S.) India.
100. Lal, R. "Role of Microbiome in Human Health, Environment Cleaning and Tapping Exceptionally Unusual Microbial Diversity from Hot Springs" presented in Annual Festival "ZOOPHORESIS", Insectopedia, organized by Ramjas College, University of Delhi on March 24, 2018

Research Projects (Major Grants/Research Collaboration)

Current Research Projects

1. Project investigator of "Production of rifamycin analogues against multi-drug resistant (MDR) strain *Mycobacterium tuberculosis* by the manipulation of rifamycin polyketide biosynthetic gene cluster *Amycolatopsis mediterranei* S699 and understanding the changes in human microbiome under anti-tubercular treatment regimen in patients suffering from tuberculosis". Sponsored by Department of Biotechnology (DBT) from October 2015 to September 2018. Funds: 64 Lacs.

2. Project investigator of Exploring diversity, functional dynamics and biotechnological application of bacterial communities inhabiting hot water spring atop the Himalayan ranges at Manik, Himachal Pradesh, India.”. Sponsored by Department of Biotechnology (DBT) from February 2016 to January 2020. Funds: 52.2 Lacs.
3. Project investigator of “All India Network Project on Soil-Biodiversity Biofertilizers (XIth Plan)”. Sponsored by Indian Council of Agricultural Research (ICAR) (March 2017-March 2020) Funds: 22 Lacs.
4. Project Investigator of “To study the microbial diversity associated with fish gut by using culture dependent and independent approaches”. Sponsored by AMAAS and National Bureau of Agriculturally Important Microorganisms (NBAIM). Funds: 19.5 Lacs
5. Project Co-investigator of “Characterization of Free Living Ciliated Protists as indicators of pollution and their impact on the micro-ecology of Yamuna River flowing through National Capital Region (NCR), Delhi, India”. Sponsored by Department of Science & Technology (DST) from 2016-2019. Funds-Rs 50.00 Lacs.

Research Projects Completed

International

1. **2004-2007:** Project investigator of Indo-Swiss Collaboration in Biotechnology (ISCB): “Bioremediation of HCH and PNP Contaminated soil by Bioaugmentation: Proof of Concept at Pilot Scale”. Sponsored by the ISCB, Swiss Federal Institute of Technology, Switzerland (Mar 2004 - Aug 2007).
2. **2007-2010:** Project Investigator of Indo-Australian Collaboration in Biotechnology (IACB) project entitled, “Enabling Technologies for the Enzymatic Bioremediation of Cyclic Organochlorine Residues”. Sponsored by Department of Biotechnology, Govt. of India (Jul 2007 - Jul 2010).
3. **2008-2010:** Project Investigator of Indo-Swiss Collaboration in Biotechnology (ISCB) Phase III: “Environmental Risk and Bioremediation of Hexachlorocyclohexane Isomers”. Sponsored by the ISCB, Swiss Federal Institute of Technology, Switzerland (Sep 2008 - Sep 2010).
4. **2001-2004:** Project Leader in DST-DAAD Programme: “Genomic Mapping of the Chromosome and Development of a System for the Generation of Rifamycin Analogs in *Amycolatopsis mediterranei*”. Sponsored by Department of Science and Technology, Govt. of India (May 2001 - May 2004).
5. **2012-2014:** Project investigator of “Mining *linA* and *linB* variants for the development of enzymatic bioremediation of Hexachlorocyclohexane”. Sponsored by Department of Science & Technology (Jul 2012 - Sep 2014).
6. **2013-2015:** Project Investigator of personnel exchange programme entitled “Assessing Natural and Stimulated Biodegradation of the Pesticide Hexachlorocyclohexane (HCH) at Contaminated Field Sites Using Compound-Specific Stable Isotope Analysis (CSIA)”. Sponsored by Department of Science & Technology-Deutscher Akademischer Austausch Di (German Academic Exchange Service) (DST-DAAD) (Apr 2013 – Apr 2015).

7. **2014-2016:** Collaborator in Project entitled “Tracking biotransformation of Hexachlorocyclohexane isomers by Compound-Specific isotopy Analysis” with Dr. Hans-Peter Kohler and Dr. Thomas Hofstelter. Sponsored by Swiss National Science Foundation.

National

1. **1981-1984:** Co-investigator of project: “Accumulation, metabolism and effects of organo-chlorine insecticides on microorganisms”. Sponsored by Ministry of Forests and Wild Life, Govt. of India. (Jan 1981- Jun 1984).
2. **1983-1986:** Principal Investigator of a project: “Accumulation, metabolism and effects of organophosphorus insecticides on microorganisms”. Sponsored by the Ministry of Wild Life and Forests, Government of India (Jun 1983 - Nov 1986).
3. **1987-1990:** Principal Investigator of a project: “Effects of pesticides on Rhizobium-legume symbiosis”. Sponsored by the Ministry of Wild Life and Forests, Government of India (Jan 1987 - May 1990).
4. **1987-1990:** Co-investigator of a project: “Survey of pesticide residues from food commodities in Delhi and surrounding areas”. Sponsored by Ministry of Health, Government of India and WHO (Jan 1987 - Dec 1990).
5. **1987-1990:** Co-ordinator of project: “College Science Improvement programme (COSIP)”. Sponsored by University Grants Commission, New Delhi (Jul 1987 - Jun 1990).
6. **1992-1997:** Principal Investigator of the Project: “Indigenization and Genetic Manipulations of Rifamycin Production in *Amycolatopsis mediterranei* (*Nocardia mediterranei*)”. Sponsored by Department of Biotechnology, Govt. of India (Dec 1992 - Nov 1997).
7. **1993-1996:** Principal Investigator of the Project, “Manipulation of Catabolic Genes for Detoxification of Xenobiotics”. Sponsored by the Ministry of Environment and Forests, Govt. of India from (Apr 1993 - Sep 1996).
8. **1997-2000:** Principal Investigator of the Project, “Cloning and Characterization of rifamycin biosynthetic genes and development of a system for the generation of hybrid antibiotics”. Sponsored by Department of Biotechnology, Govt. of India (Apr 1997 – Jun 2000).
9. **1997-2000:** Principal Investigator of the Project: “Cloning and characterization of catabolic genes of gamma-HCH and its isomers in *Sphingomonas paucimobilis*”. Sponsored by the Department of Biotechnology, Govt. of India (Apr 1997 - Mar 2000).
10. **1999–2003:** Principal Investigator of the Project: “Microbial Biodiversity of Indigenous Actinomycetes Germplasm”. Sponsored by the Department of Biotechnology, Govt. of India (Jul 1999 - Jul 2003).
11. **1999-2003:** Co-Investigator of the Project: “Cloning and Characterization of Ligninase/laccase genes from White Rot- Fungus”. Sponsored by Department of Biotechnology, Govt. of India from (Apr 1999 - Mar 2003).
12. **2001-2004:** Principal Investigator of the Project: “Genetic Engineering of Rifamycin gene Cluster in *Amycolatopsis mediterranei* for the production of Rifamycin Analogs”. Sponsored by Department of Biotechnology, Govt. of India (Apr 2001 - Mar 2004).
13. **2001-2005:** Project Investigator of the project “Development of suitable probes for tracking the

- organisms released for biodegradation of soil contaminated with chlorinated and nitro pesticides”. Sponsored by Department of Biotechnology, Govt. of India from (Aug 2001 - Mar 2005).
14. **2003-2004:** Project Investigator of the project “Characterization and molecular analysis of some PAHs (Phenanthrene, Pyrene and Benzo (a) pyrene) degrading pathways by bacteria through metabolic Engineering” .Sponsored by Department of Biotechnology, Govt. of India (Apr 2003 - Mar 2006).
 15. **2004-2007:** Project Investigator of the project “Decontamination and Microbial diversity of HCH, p-Nitrophenol and Chloropyrifos contaminated soils from dumping sites”. Sponsored by Department of Biotechnology, Govt. of India (Apr 2004 - Mar 2007).
 16. **2005-2008:** Project Investigator of “Improvement and Development of Cloning Vector transformation system for species of *Amycolatopsis*”. Sponsored by Department of Science and Technology, Govt. of India (Jan 2005 - Jan 2008).
 17. **2004-2008:** Project Investigator of “Genome Sequencing of Rifamycin Producing Actinomycete *Amycolatopsis mediterranei* S699”. Sponsored by Department of Biotechnology, Govt. of India (Apr 2004 - Mar 2008).
 18. **2005-2008:** Project Investigator of the Indo-Swiss Joint Research Project (ISJRP), “Isolation, Characterization and Mutagenesis of Long-range acting bacterial transcription regulators with receptor domains in aromatic compounds (acronym: TRAROMAT)”. Sponsored by Department of Science and Technology, Govt. of India (Dec 2005 - Dec 2008).
 19. **2007-2011:** Project investigator of “Screening for Bio-molecules from Microbial Diversity Collected from Different Ecological Niches”. Sponsored by Department of Biotechnology, Govt. of India (Oct 2007 - Mar 2011).
 20. **2008-2012:** Project investigator of “Construction of Bacterial Biosensors for Detection of Aromatic Hydrocarbons”. Sponsored by Department of Biotechnology, Govt. of India (Apr 2008 - Mar 2011).
 21. **2008-2012:** Co-Project investigator of “Molecular Analysis of Agrocin Producing Agrobacterium radiobactor for Biological Control of Crown Gall in Stone Fruits”. Sponsored by Indian Council of Agricultural Research (ICAR) (Apr 2008 - Mar 2012).
 22. **2009-2012:** Project investigator of “Understanding Individual & Community Genomes of Bacteria using New Generation Sequencing Technologies”. Sponsored by University of Delhi under DU/ DST – PURSE Grant (Dec 2009 - Sep 2013).
 23. **2007-2014:** Project Investigator of “Genotyping and Isolation of Sphingomonads from HCH contaminated Agricultural soils and their application in Bioremediation”. Sponsored by National Bureau of Agriculturally Important Microorganisms (NBAIM) (ICAR) (April 2007 - March 2014).
 24. **2012-2015:** Project investigator of “Understanding Genome Organisation and Gene Expression in Response to Different Hexachlorocyclohexane (HCH) Isomers in HCH Degrading Bacteria and the HCH Dumpsite”. Sponsored by Department of Biotechnology (DBT) (Apr 2012 - Mar 2015).
 25. **2012-2015:** Project investigator of “Isolating the Natural Existing Hexachlorocyclohexane Dehydrochlorinase (LinA) & Haloalkane Dehalogenase (LinB) Variants from Hexachlorocyclohexane Contaminated Dumpsite by using Metagenomic Approach”. Sponsored by Department of Science & Technology (Jun 2012 - May 2015).
 26. **2014-2017:** Project investigator of “Microbial metagenomic analysis of hot spring situated atop the Himalyan ranges at Manikaran, Himachal Pradesh, India”. Sponsored by National Bureau of

Agriculturally Important Microorganisms (NBAIM) (ICAR) (April 2014 to March 2017) Funds: 48.637 Lacs.

27. **2007-2017:** Project investigator of “All India Network Project on Soil-Biodiversity Biofertilizers (XIth Plan)”. Sponsored by Indian Council of Agricultural Research (ICAR) (April 2007 to March 2017) Funds: 22 Lacs.

Awards and Distinctions

1. Received Kuldeep Dhatwalia Excellence Award-2017 from Chaman Seva Sansthan, Himachal Pradesh for exemplary work, achievements, commitment and contributions in the development of the nation.
2. Ambassador of ISME (International Society for Microbial Ecology), The Netherlands (March 2012 onwards)
3. Prof. B.N. Johri Award on Microbial diversity (Biannual) by the Association of Microbiologists of India (AMI) for the year 2016.
4. Received the Moselio Schaechter Distinguished Service Award-2016 from American Society for Microbiology (ASM) for exemplary leadership and commitment towards the substantial furthering of the profession of microbiology in research, education or technology in the developing world.
5. Prof. S.R.Vyas Memorial Award (Biannual) by the Association of Microbiologists of India (AMI) for the year 2014.
6. Honoured by Himachal Kalyan Sabha (Regd.), Delhi for his contribution for development of Rifamycin B analogue: 24-desmethylrifamycin B by genetic manipulation of Rifamycin producer *Amycolatopsis mediterranei* S699 on November 23, 2014 President of the Association of Microbiologists of India (2013).
7. Ambassador to Indian Ocean Region, American Society for Microbiology (ASM) (2012-2015).
8. General Secretary, Indian Network for Soil Contamination and Research (INSCR).

Elected Fellow of Academies

1. Fellow of Indian National Science Academy (FNA)
2. Fellow of National Academy of Science (FNASc)
3. Fellow of National Academy of Agricultural Sciences (FNAAS)
4. Fellow of Association of Microbiologists of India (FAMI)

Fellowships Awarded

1. Alexander von Humboldt Fellowship. Worked at the University of Bielefeld, Gentechnologie/Mikrobiologie, and Federal Republic of Germany. (July 1998 - Aug. 1998).
2. Awarded Senior Alexander von Humboldt Research Fellowship. Worked at the University of Bielefeld, Gentechnologie, on the project, “Cloning of Rifamycin biosynthetic genes in *Amycolatopsis mediterranei*”. (May 1995 - July 1995).
3. Awarded Short Term Alexander von Humboldt Research Fellowship. Worked at the University of Bielefeld, Gentechnologie, Germany (July 1st – 15th, 2008), on the project entitled, “Annotation of genome of *Amycolatopsis mediterranei* S699”.
4. Awarded Short Term Alexander von Humboldt Research Fellowship. Worked at the University

of Bielefeld, Gentechnologie, Germany (June 1st - July 30th, 2004), on the project entitled “Genome sequence and analysis and annotations”.

5. Awarded Alexander von Humboldt Fellowship. Worked at the University of Freiburg, Institute of Pharmaceutical Sciences, Pharmaceutical Biology and Biotechnology. (July, 2013– August, 2013).
6. Awarded DBT Short-term Overseas Associateship to work with Prof. John Cullum at the Department of Genetics, University of Kaiserslautern, Germany (May 11th - Oct 31st, 2000).
7. Awarded Indo-US professorship for the year 2008-09 by American Society for Microbiology to conduct research on “Genetic Manipulations of *Amycolatopsis mediterranei* S699 for the production of rifamycin analogs”, with Dr. Taifo Mahmud at the Oregon State University, Corvallis (May 18th –June 14th, 2009).
8. Awarded Alexander von Humboldt Fellowship. Worked at University of Freiburg, Germany (6th Jul - 22nd Aug, 2013).
9. Awarded short-term Alexander von Humboldt Research Fellowship. Will work at Helmholtz Centre for Environmental Research, UFZ, Leipzig, Germany. (Jun – Jul, 2017).

Association With Professional Bodies

Memberships of Academic Societies/Committees

- Member of NAAC Peer team for accreditation visit to KIIT University, Bhubaneswar, from April 11-14, 2016.
- Member of Research Advisory Board of NIIT University, Neemrana, Rajasthan from February 2016.
- Member of Research Advisory Committee of National Institute of Biotic Stress Management (NIMBSM), Raipur from May 26th 2015-2018.
- Member of IMTECH-JNU Academic Committee, from May 2015.
- Member of Area Advisory Board, Amity Institute of Biotechnology, Amity University, Noida from April 2015.
- Member of Mid Term Monitoring Committee of the University of Hyderabad by UGC, from 2012-2017.
- Member of Departmental Research Committee (DRC) in the Department of Microbiology, University of Delhi, South Campus, from August 2nd, 2014 to 2016.
- Representative, Department of Biotechnology (DBT) in the Institutional Biosafety Committee (IBSC) of Institute of Molecular Medicine (IMMD), New Delhi from May, 2014 onwards.
- Member, Departmental Research Committee (DRC), Department of Zoology, Maharshi Dayanand University, Rohtak, Haryana from September 2013 onwards.
- Member of Internal Screening Committee, IASST, Guwahati under modified Modified Flexible Complementing Scheme (MFCS) from 23rd June, 2014 to till date.
- Life Member, Association of Microbiologists of India (AMI)
- Member, All India Biotech Association (AIBA)
- Member of Board of Research Studies (BRS) in the Faculty of Medical Sciences, from August 2012 to 2014.
- Member of Departmental Research Committee (DRC) in the Department of Anthropology, from August 2012 to 2014.
- Member of Task Force in the area of “Environmental Biotechnology” from May, 2014-May 2017.

- Member of advisory committee, Independent Evaluation of DBT HRD programs, implemented by BCIL, 2013 onwards.
- Member of Expert Committee under STAR college scheme, Department of Biotechnology, Govt. of India, 2012 to 2014.
- Member of the Expert Committee for Women Scientists (Bio-CARE programme), Department of Biotechnology, Govt. of India, from May 2011 to August 2014.
- Member of Regional Level Expert Committee on Reviewing of Performance for INSPIRE Fellows under INSPIRE Fellowship component of INSPIRE Program, Department of Science & Technology from May 2012 onwards.
- Member of the Expert Committee for HRD, Department of Biotechnology, Govt. of India, from October 2010 onwards.
- Coordinator UGC-SAP Programme (March 2008 – March 2011).
- Chairman of working group of National Institute of Science Communication and Information Resources (NISCAIR), from March 2005 to 2007.
- Member, Review Committee on Genetically Modified Organisms (RCGM), from 2000 to 2002.

Member of Committees (International)

- Member of the Review Committee for the ASM-IUSSTF Indo-US Professorship in Microbiology from April 2009 to May.
- Ambassador of the International HCH and Pesticide Association (IHPA), from May 2005 onwards.
- Member of International Education Committee (IEC), American society of Microbiology (ASM), 2013 onwards.
- Member of American Society of Microbiologist (ASM).

Editor in-Chief/ Editor/Editorial Board Member

- Editor-in-Chief of Indian Journal of Microbiology (INJM), from January 2006 - 2013, published by Springer, India Ltd.
- Editor of mSystems, published by American Society for Microbiology (ASM), USA (2016 onwards).
- Editorial Board Member of Journal of Bioscience & Bioengineering (JBB), published by Society for Biotechnology, Japan (July 2015 onwards).
- Editorial Board Member of Environmental Microbiology (EM), published by Society for Applied Microbiology (sfam) in UK (February 2014 onwards).
- Editorial Board Member of Environmental Microbiology Reports (EMIR) published by Society for Applied Microbiology (sfam) in UK (February 2014 onwards).
- Associate Editor and Editorial Board member of the journal BMC Biotechnology, published by BioMed Central Ltd., UK (2008 onwards).
- Associate Editor and Editorial Board member of the journal BMC Biochemistry, published by BioMed Central Ltd., UK (2008 onwards).
- Editorial Board Member for OA Biotechnology, published by OA Publishing, London (2012 onwards).
- Editor of Indian Journal of Microbiology (INJM), published by Springer, India Ltd. (April 2013

onwards).

- Editorial Board Member of Microbial Biotechnology published by Society for Applied Microbiology (sfam) in UK (March, 2015 onwards).

Other Activities

Visiting Scientist/Meeting Participations Abroad

- Visiting Scientist at the Department of Biochemistry, University of Cambridge. (Feb 9th - May 1st, 1998).
- Visiting Scientist at the Department of Genetics, University of Kaiserslautern, Germany. (Nov-Dec, 2001).
- Visiting Scientist at the Department of Genetics, University of Kaiserslautern, Germany (Jun-Jul, 2002).
- Visiting Scientist at the Department of Genetics, University of Kaiserslautern, Germany (May, 2004).
- Short term visit under ISCB collaborative project to Lausanne (EPFL) and Zurich (EAWAG) (11th-18th, Jul, 2004).
- Short term visit under Indo-Swiss Joint Research Program (ISJRP) to Department of Fundamental Microbiology (DMF), University of Lausanne (UNIL) (May 4th- Jun 8th, 2007).
- Attended the first kick-off meeting of the Indo-Swiss Collaboration in Biotechnology (ISCB) project “Environmental Risk and Bioremediation of Hexachlorocyclohexane Isomers” held at EAWAG, Zurich (10th - 11thJul, 2008).
- Visit to Cairns, Australia to attend 12th International Symposium on Microbial Ecology (ISME) on “Microbial Diversity- Sustaining the Blue Planet” (17th – 22nd, Aug, 2008).
- Short term visit under Indo- Australian Collaboration in Biotechnology (IACB) project to CSIRO, Canberra, Australia (Aug 23rd - Sept 8th, 2008).
- Visit to Gothenburg, Sweden to attend 3rd Congress of European Microbiologists - FEMS 2009 conference (Jun 28th – Jul 2nd, 2009).
- Visit to Brno, Czech Republic to attend 10th International HCH and Pesticides Forum (Sept 7th – 10th, 2009).
- Attended third coordination meeting of the Indo-Australian Collaboration in Biotechnology (IACB) project “Enabling Technologies for Enzymatic Bioremediation of Cyclic Organochlorine Residues” held at CSIRO, Canberra, Australia (20th- 24th, Oct, 2009).
- Attended general meeting of ASM at San Francisco (17th Jun - 19th June, 2012).
- Visit to Washington DC to attend International Education Committee (IEC) Planning Meeting (14th – 16th Oct, 2013).
- Visit to Germany under exchange programme sponsored by Department of Science & Technology-Deutscher Akademischer Austausch Di (German Academic Exchange Service) (DST-DAAD) (1st-24th July, 2014).
- Short term visit under Indo-Swiss Joint Research Program (ISJRP) to The Swiss Federal Institute of Aquatic Science and Technology (EAWAG) (4th- 24th August, 2014).
- Visit to Germany under exchange programme sponsored by Department of Science & Technology-Deutscher Akademischer Austausch Di (German Academic Exchange Service) (DST-DAAD) (1st-31st August, 2015).

Patents

1. Lal, R. (1999) Cloning vector and a process for the preparation thereof. US patent No 005985560A page 1-25.

2. Lal, R and Mahmud, T. (2012) Lal, R and Mahmud, T. (2012) Antibacterial compounds against drug resistant bacteria. PCT/IB2014/059989. (Being patented in Russia and China)



Signature of Faculty Member