




## Faculty Details proforma for DU Web-site

<b>Title</b>	<b>Prof.</b>	First Name	<b>Yogendra</b>	Last Name	<b>Singh</b>	<b>Photograph</b>
Designation	<b>Professor</b>					
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<b>Educational Qualifications</b>						
Degree	Institution				Year	
PhD	<b>V.P. Chest Institute, University of Delhi</b>				<b>1983</b>	
MSc	<b>G.B. Pant University of Agriculture &amp; Technology</b>				<b>1977</b>	
B.Sc	<b>Gorakhpur University</b>				<b>1974</b>	
<b>Career Profile</b>						
<ul style="list-style-type: none"> <li>• Professor, Department of Zoology, 2015- Present.</li> <li>• Chief Scientist, CSIR-Institute of genomics and Integrative Biology, Sept. 2016- Oct. 2015.</li> <li>• Sabbatical, NIAID, National Institutes of Health (NIH), USA, June 2008- June 2009.</li> <li>• Professor (On EOL), B R Ambedkar Centre for Biomedical Res., University of Delhi, May- Oct. 2002</li> <li>• Scientist F, CSIR-Institute of Genomics and Integrative Biology, Sept. 2001- Aug. 2006</li> <li>• Scientist EII, CSIR-Institute of Genomics and Integrative Biology, Sept. 1996- Aug. 2001.</li> <li>• Scientist EI, CSIR-Institute of Genomics and Integrative Biology, Sept. 1991- Aug. 1996.</li> <li>• NRC Research associate, National Institutes of Health, USA, Oct.1989- July 1991.</li> <li>• NRC Research Associate, US Army Medical Research Institute, Nov. 1987- Sept. 1989.</li> <li>• Visiting Fellow, National Institutes of Health, USA, June 1983-Sept 1987.</li> <li>•</li> </ul>						
<b>Administrative Assignments</b>						
<ul style="list-style-type: none"> <li>• President, Association of Microbiologists of India</li> <li>• Dean Research (Life Sciences), University of Delhi</li> <li>• Member, Research Council (CCMB),</li> </ul>						
<b>Areas of Interest / Specialization</b>						
<ul style="list-style-type: none"> <li>• Bacterial Pathogenesis, Bacterial Protein Toxins, Signal transduction in bacteria</li> <li>• Bacterial Virulence factors, cell biology, Host pathogen interaction</li> </ul>						
<b>Subjects Taught</b>						
<ul style="list-style-type: none"> <li>• Metabolism: Concepts and Regulation</li> <li>• Proteins Structure, Function and Evolution.</li> <li>• Molecular Cell Biology</li> <li>• Metagenomics</li> </ul>						

## Research Guidance

- *Supervision of awarded Doctoral Thesis (Forty)*
- *Supervision of Doctoral Thesis, under progress (Eight)*

## Publications Profile

### Books

- L.K. Singh, N. Dhasmana and **Yogendra Singh** (2014) Quorum Sensing Systems in Bacillus .
- **Yogendra Singh**, X. Liang and N. S. Duesbery (2004) Pathogenesis of Bacillus anthracis: The role of anthrax toxins. Microbial Toxins: Molecular and Cellular Biology, 285-311 (Ed. Thomas Proft).
- G. Krishna, **Yogendra Singh**, G.S. Sidhu, and R. Bhatnagar (1989): Mechanism of MPTP induced Parkinson's disease at cellular and subcellular levels. In "Neurochemical Pharmacology" (Ed. E.Costa), pp 165-174, Raven Press, NY.
- D. R. Feller, **Yogendra Singh**, V. Shirhatti, C. T. Liu, and G. Krishna (1985): Cultured rat hepatocytes: In Vitro model for the study of peroxisomal proliferation by hypolipidemic drugs. In Vitro Toxicol., 3; 497-514 (Ed. A. Goldberg) Liebert Publ. Inc. NY.

### Research Articles

- RichaVirmani, AndaleebSajid, AnshikaSinghal, Mohita Gaur, Jayadev Joshi, AnkurBothra, RichaGarg, RichaMisra, Vijay Pal Singh, VirginieMolle, Ajay K. Goel, Archana Singh, Vipin C. Kalia, Jung- Kul Lee, YashaHasija, Gunjan Arora and **Yogendra Singh** (2019) The Ser/Thr protein kinase PrkC imprints phenotypic memory in Bacillus anthracis spores by phosphorylating the glycolytic enzyme enolase. J. Biol. Chemistry 294, 8930-8941
- RichaMisra, Dilip Menon, Gunjan Arora, RichaVirmani, Mohita Gaur, Saba Naz, NeetikaJaisinghani, AsaniBhaduri, AnkurBothra, Abhijit Maji, AnshikaSinghal, PreetiKarwal, Christian Hentschker, Dörte Becher, Vivek Rao, Vinay K. Nandicoori, SheetalGandotra, **Yogendra Singh** (2019) Tuning the Mycobacterium tuberculosis Alternative Sigma Factor SigF through the Multidomain Regulator Rv1364c and Osmosensory Kinase Protein Kinase D. Journal of Bacteriology, Vol 201, e00725-18
- Mohita Gaur, A. Vasudeva, A. Singh, V. Sharma, H. Khurana, R.K. Negi, J.K. Lee, V.C. Kalia, R. Misra, and **Yogendra Singh** (2019). Comparison of DNA Extraction Methods for Optimal Recovery of Metagenomic DNA from Human and Environmental Samples. Indian J Microbiol. 59, 482-489
- Lahari Das, R. Virmani, V. Sharma, D. Rawat and **Yogendra Singh** (2019). Human Milk Microbiota: Transferring the Antibiotic Resistome to Infants. Indian J Microbiol. 59, 410-416.
- N. K. Mahato, A. Sharma, **Yogendra Singh** and Rup Lal (2019). Comparative metagenomic analyses of a high-altitude Himalayan geothermal spring revealed temperature-constrained habitat-specific microbial community and metabolic dynamics. Arch Microbiol 201, 377-388.
- AkshitaPuri, AbhayBajaj, H. Verma, R. Kumar, **Yogendra Singh**, and Rup Lal, (2019). Complete genome sequence of *Paracoccus* sp. strain AK26: Insights into multipartite genome architecture and methylotrophy. Genomics 112, 2572-2582.

- Abhijit Maji, RichaMisra, Darshan B dhakan, V. Gupta, N.K. Mahato, R.Saxena, P.Mittal, N.Thukral, E. Sharma, A. Singh, R. Virmani, M. Gaur, H.Singh, Y Hasija, G.Arora, A.Agrawal, A.Chaudhry, J.P. khurana,

- V.K.Sharma, R.Lal, and **Yogendra Singh** (2018) Gut microbiome contributes to impairment of immunity in pulmonary tuberculosis patients by alteration of butyrate and propionate producers. *Environmental Microbiology* (doi:10.1111/1462-2920.14015)
- Aditya K. Sharma, Divya Arora, Lalit K Singh, Andaleeb Sajid, **Yogendra Singh**, Vinay K. Nandicoori (2016) Serine/threonine protein phosphatase PstP of *Mycobacterium tuberculosis* is necessary for accurate cell division and survival of pathogen, *J. Biol Chem.*
  - Vipin Gupta, Shazia Haider, Utkarsh Sood, Jack A. Gilbert, Meenakshi Ramjee, Ken Forbes, **Yogendra Singh**, Bruno S. Lopes & Rup Lal (2016) Comparative genomic analysis of novel *Acinetobacter* symbionts: A combined systems biology and genomics approach. *Scientific Reports*, 6:29043. doi: 10.1038/srep29043.
  - Andaleeb Sajid, Gunjan Arora, Anshika Singhal, Vipin C. Kalia and **Yogendra Singh** (2015) Protein phosphatases of pathogenic bacteria: Role in Physiology and Virulence, *Annual Review of Microbiology*, 69: 527-47.
  - Abhijit Maji, Richa Misra, Anupam Kumar Mondal, Dharendra Kumar, Divya Bajaj, Anshika Singhal, Gunjan Arora, Asani Bhaduri, Andaleeb Sajid, Sugandha Bhatia, Sompal Singh, Harshvardhan Singh, Vivek Rao, Debasis Dash, Baby Shalini E, Joy Sarojini Michael, Anil Chaudhary, Rajesh S. Gokhale, **Yogendra Singh** (2015) Expression profiling of lymph nodes in tuberculosis patients reveal inflammatory milieu at site of infection. *Scientific Reports*, 5:15214 doi: 10.1038/srep15214.
  - Anshika Singhal, Gunjan Arora, Richa Virmani, Parijat Kundu, Tanya Khanna, Andaleeb Sajid, Richa Misra, Jayadev Joshi, Vikas Yadav, Sintu Samanta, Neeru Saini, Amit K. Pandey, Sandhya S. Visweswariah, Christian Hentschker, Dörte Becher, Ulf Gerth, and **Yogendra Singh** (2015) Systematic Analysis of Mycobacterial Acylation Reveals First Example of Acylation-mediated Regulation of Enzyme Activity of a Bacterial Phosphatase. *J. Biol. Chem.*, 290: 26218-34.
  - A. Chadha, S. Mehto, A. Selvakumar, M. Vashishta, S.S. Kamble, S. Popli, R. Raman, **Yogendra Singh**, K. Natarajan (2015) Suppressive role of neddylation in dendritic cells during *Mycobacterium tuberculosis* infection. *Tuberculosis (Edinb)*, S1472-9792(15)20775-5. doi: 10.1016/j.tube.2015.05.014. PMID:26096160.
  - S. Mehto S, C. Antony, N. Khan, R. Arya, A. Selvakumar, B.K. Tiwari, M.S. Vashishta, **Yogendra Singh**, S. Jameel, K. Natarajan (2015) *Mycobacterium tuberculosis* and Human Immunodeficiency Virus Type 1 Cooperatively Modulate Macrophage Apoptosis via Toll Like Receptor 2 and Calcium Homeostasis. *PLoS One*;10(7):e0131767. doi: 10.1371/journal.pone.0131767. PMID: 26132135.
  - Ajay Jajodia, Dhanachandra Singh, Anshika Singhal, Saurabh Vig, Malabika Datta, **Yogendra Singh**, Muthusamy Karthikey and Ritushree Kukreti (2015) Methylation of a HTR3A promoter variant alters the binding of transcription factor CTCF. *RSC Adv.*, 2015, 5, 45710. DOI: 10.1039/c5ra04455c.
  - Cecil Antony, Subhash Mehto, Brijendra K. Tiwari, **Yogendra Singh**, Krishnamurthy Natarajan (2015) Regulation of L-type Voltage Gated Calcium Channel CACNA1S in Macrophages upon *Mycobacterium tuberculosis* Infection. *PLoS One*, 10(4): e0124263. doi:10.1371/journal.pone.0124263.
  - G. Arora, A. Sajid, A. Singhal, J. Joshi, R. Virmani, M. Gupta, N. Verma, A. Maji, R. Misra, G. Baronian, A.K. Pandey, V. Molle, **Yogendra Singh** (2014) Identification of Ser/Thr kinase and forkhead associated domains in *Mycobacterium ulcerans*: characterization of novel association between protein kinase Q and MupFHA. *PLoS Neglected Trop. Dis.* 8(11):e3315. doi: 10.1371/journal.pntd.0003315
  - L. K. Singh, N. Dhasmana, A. Sajid, P. Kumar, A. Bhaduri, M. Bharadwaj, S. Gandotra, V. C. Kalia, T. K Das, A. K. Goel, A. P. Pomerantsev, R. Misra, Ulf Gerth, S. H. Leppla and **Yogendra Singh** (2014) ClpC operon regulates cell architecture and sporulation in *Bacillus anthracis*, *Environ. Microbiol.* doi: 10.1111/1462-2920.12548.

- A. Nigam, K. H. Almabruk, A. Saxena, J. Yang, U. Mukherjee, H. Kaur, P. Kohli, R. Kumari, P. Singh, L. N. Zakharov, **Yogendra Singh**, Taifo Mahmud and Rup Lal (2014) Modification of Rifamycin Polyketide Backbone Leads to Improved Drug Activity Against Rifampicin-Resistant *Mycobacterium tuberculosis*. J. Biol. Chem. 289: 21142-21152.
- M. Gupta, A. Sajid, K. Sharma, S. Ghosh, G. Arora, R. Singh, V. Nagaraja, V. Tandon and **Yogendra Singh** (2014) HupB, a Nucleoid associated protein of *Mycobacterium tuberculosis*, is modified by Serine/Threonine Protein Kinases *In vivo*. J. Bacteriol. 196:2646-2657.
- A. Selvakumar; C. Antony, J. Singhal; B. K Tiwari; **Yogendra Singh** and Krishnamurthy Natarajan (2014) Reciprocal Regulation of Reactive Oxygen Species and phospho-CREB Regulates Voltage Gated Calcium Channel Expression During *Mycobacterium tuberculosis* Infection. PLoS One e96427.
- A. Bhaduri, R. Misra, A. Maji, P. J. Bhetaria, S. Mishra, G. Arora, LK Singh, N. Dhasmana, N. Dubey, JS Virdi, and **Yogendra Singh** (2014) *Mycobacterium tuberculosis* cyclophilin A uses novel signal sequence for secretion and mimics eukaryotic cyclophilins for interaction with host protein repertoire. PLoS One 9 (2): e88090
- Singhal, G. Arora, A. Sajid, A. Maji, R. Virmani, A. Bhat, S. Upadhyay, V. K. Nandicoori, S. Sengupta, and **Yogendra Singh** (2013) Regulation of homocysteine metabolism by *Mycobacterium tuberculosis* S-adenosyl homocysteine hydrolase. Scientific Reports. 3:2264. doi: 10. 1038/srep 02264.
- G. Arora, A. Sajid, Mary D. Arulanandh R. Misra, A. Singhal, S. Kumar, Lalit K. Singh, Abid R. Mattoo, R. Raj, S. Maiti, Sharmila Basu-Modak, **Yogendra Singh** (2013): Zinc regulates the activity of kinase-phosphatase pair (BasPrkC/BasPrpC) in *Bacillus anthracis*. *Biomaterials* 26:715-730.
- L.S. Meena, P. Chopra, R.A. Viswakarma, **Yogendra Singh** (2013) Biochemical characterization of an S-adenosyl-l-methionine-dependent methyltransferase (Rv0469) of *Mycobacterium tuberculosis*. Biol. Chem. 394: 871-877.
- A. Ranjan, N. Kaur, V. Tiwari, **Yogendra Singh**, M.M. Chaturvedi, V. Tandon (2013): 3,4-Dimethoxyphenyl Bis-benzimidazole Derivative, Mitigates Radiation-Induced DNA Damage. Radiation Res. 179:647-62.
- G. Arora, A. Sajid, M. Diana Arulanandh, Anshika Singhal, Abid R. Mattoo, A. P. Pomerantsev, Stephen H. Leppla, S. Maiti, and **Yogendra Singh** (2012): Unveiling the Novel Dual Specificity Protein Kinases in *Bacillus anthracis*. J. Biol Chem 287:26749-26763.
- J. Singhal, Neha Agrawal, Mohit Vashishta, N. Gayatri Priya, Brijendra K. Tiwari, **Yogendra Singh**, Rajagopal Raman and K. Natarajan (2012): Suppression of Dendritic Cell Mediated Responses by Genes in the Calcium and Cysteine Protease Pathways During *Mycobacterium tuberculosis* Infection. J. Biol Chem 287: 11108-11121.
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- A.C. Gupta, Richa Misra, P. Sakhuja, **Yogendra Singh**, S.F. Basir, and S.K. Sarin (2012): Association of APOA2 gene functional polymorphism (-11377C/G and +45T/G) with non-alcoholic fatty liver disease. Gene, 496:63-67
- A. Sajid, G. Arora, M. Gupta, A. Singhal, K. Chakraborty, V. K. Nandicoori and **Yogendra Singh** (2011) Interaction of *Mycobacterium tuberculosis* elongation factor Tu with GTP is regulated by phosphorylation. J. Bacteriol., 193:5347-58
- P. Gautam, S.K. Upadhyay, W. Hassan, T. Madan, R. Sirdeshmukh, C.S. Sundaram, W.N. Gade, S.F. Basir, **Yogendra Singh**, P.U. Sarma (2011) Transcriptomic and Proteomic profile of *Aspergillus fumigatus* on exposure to artemisinin. Mycopathologia 172:331-346.

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- A. Sajid, G. Arora, M. Gupta, S. Upadhyay, V. K. Nandicoori and **Yogendra Singh** (2011) Phosphorylation of *Mycobacterium tuberculosis* Ser/Thr Phosphatase by PknA and PknB. *PLoS One* 6 (3) e17871: 1-11.
- J. A. Khan, T. K. Mandal, T. K. Das, **Yogendra Singh**, B. Pillai and S. Maiti (2011) Magnetite (Fe<sub>3</sub>O<sub>4</sub>) Nanocrystals Affect the Expression of Genes Involved in TGF-beta Signalling Pathway. *Mol. BioSystems* 7:1481-1486.
- G. Arora, A. Sajid, M. Gupta, A. Bhaduri, P. Kumar, S. Basu-Modak, **Yogendra Singh** (2010) Understanding the role of PknJ in Mycobacterium tuberculosis: Biochemical Characterization and identification of novel substrate Pyruvate Kinase A. *PLoS One* 5(5):e10772.
- A. C. Gupta, A.K. Chaudhory, Sukrit, C. Pandey, P. Sakhuja, **Yogendra Singh**, S. F. Basir and S.K. Sarin (2010) Peroxisome Proliferators activated receptors gamma2 Pro12Ala variant is associated with body mass index (BMI) in non-alcoholic fatty liver disease patients (NAFLD). *Hepatol. Int.* 5:575-80.
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- M. Gupta, A. Sajid, G. Arora, V. Tandon, **Yogendra Singh** (2009) Fork Head-associated domain containing protein Rv0019c and Polyketide-associated protein-PapA5, from substrates of Serine/Threonine Protein Kinase PknB to interacting proteins of *Mycobacterium tuberculosis* *J. Biol. Chem.* 284: 34723-34
- P. Kumar, D. Kumar, A. Parikh, D. Rananaware, M. Gupta, **Yogendra Singh**, V. K. Nandicoori (2009) The *Mycobacterium tuberculosis* protein kinase K modulates activation of transcription from the promoter of mycobacterial monooxygenase operon through phosphorylation of the transcriptional regulator VirS. *J. Biol. Chem.*, 284:11090-9.
- S. Patnaik, A. Mohammad, A. Pathak, R. Kurupati, **Yogendra Singh**, K.C. Gupta (2009) Cross-linked polyethylenimine-hexametaphosphate nanoparticles to deliver nucleic acids therapeutics. *Nanomedicine* 6:344-54
- S.K. Upadhyay, L. Mahajan, S. Ramjee, **Yogendra Singh**, S.F. Basir, T. Madan (2009) Identification and characterization of a laminin-binding protein of *Aspergillus fumigatus*: extracellular thaumatin domain protein (AfCalAp). *J. Med. Microbiol.* 58:714-22.
- K. Kumar, M. Tharad, S. Ganapathy, G. Ram, A. Narayan, J. A. Khan, R. Pratap, A. Ghosh, S. Kumar Samuchiwal, S. Kumar, K. Bhalla, D. Gupta, K. Natarajan, **Yogendra Singh**, A. Ranganathan (2009) Phenylalanine-Rich peptides potently bind ESAT6, a virulence determinant of *Mycobacterium tuberculosis*, and concurrently affect the Pathogen's Growth. *PLoS One* 4: e7615
- G. Misra, A. Aggarwal, D. Dube, M. S. Zaman, **Yogendra Singh**, R. Ramachandran (2009) Crystal structure of the *Bacillus anthracis* nucleoside diphosphate kinase and its characterization reveals an enzyme adapted to perform under stress conditions. *Proteins* 76: 496-506
- G.P. Dubey, A. Narayan, A.R. Mattoo, G.P. Singh, R.K. Kurupati, M.S. Zaman, A. Aggarwal, R.B. Baweja, S. Basu-Modak, **Yogendra Singh** (2009) Comparative genomic study of spo0E family genes and elucidation of the role of Spo0E in *Bacillus anthracis*. *Arch. Microbiol.* 191:241-53.
- K. Gupta, V.P. Singh, R.K. Kurupati, A. Mann, M. Ganguli, Y.K. Gupta, **Yogendra Singh**, K. Saleem, S. Pasha, S. Maiti (2009) Nanoparticles of cationic chimeric peptide and sodium polyacrylate exhibit striking antinociception activity at lower dose. *J Control Release.* 2009, 134:47-54
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- A. R. Mattoo, A. Arora, S. Maiti S, **Yogendra Singh** (2008) Identification, characterization and activation mechanism of a tyrosine kinase of *Bacillus anthracis*. FEBS J. 275:6237-47.
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- M. K. Sharma, D. Jani, M. Thungapathra, J.K. Gautam, L.S. Meena, **Yogendra Singh**, A. Ghosh, A. K. Tyagi, A. K. Sharma (2008) Expression of accessory colonization factor subunit A (ACFA) of *Vibrio cholerae* and ACFA fused to cholera toxin B subunit in transgenic tomato (*Solanum lycopersicum*), J. Biotechnology 135:22-27
- M. K. Sharma, N.K. Singh, D. Jani, R. Sisodia, M. Thungapathra, J.K. Gautam, L. S. Meena, **Yogendra Singh**, A. Ghosh, A.K. Tyagi, A.K. Sharma (2008) Expression of toxin co-regulated pilus subunit A (TCPA) of *Vibrio cholerae* and its immunogenic epitopes fused to cholera toxin B subunit in transgenic tomato (*Solanum lycopersicum*). Plant Cell Rep. 27:307-18.
- G. Misra, A. Aggarwal, S. Mittal, **Yogendra Singh**, Ravishanker Ramachandran (2007). Purification, crystallization and preliminary structural analysis of nucleoside diphosphate kinase from *Bacillus anthracis* Acta Crystallographica (Section F):F63:1084-1086.
- A. Pathak, A. Aggarwal, RK Kurupati, S. Patnaik, A. Swami, **Yogendra Singh**, P. Kumar, SP Vyas, K.C. Gupta (2007) Engineered polyallylamine nanoparticles for efficient *in vitro* transfection Pharm. Res. 8:1427-40.
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- J. A. Khan, B. Pillai, T. K. Das, **Yogendra Singh**, and S. Maiti (2007): Molecular Effect of uptake of gold nanoparticle on HeLa cells. ChemBioChem. 8:1237-1240.
- L.S. Meena, P. Chopra, R.S. Bedwal, **Yogendra Singh** (2007) Cloning and characterization of GTP-binding proteins of *Mycobacterium tuberculosis* H37Rv Enzyme Microbial Technology 42:138-144.
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### **Invited lectures/ special lecture or presentations for conferences/ symposia**

#### **2019**

- Inaugural Lecture of “Biospark 2019” in Deshbandhu College, University of Delhi on 24 September, 2019
- Daulat Ram College, University of Delhi “Genes & genomes architect of the living organisms” 18<sup>th</sup> September, 2019
- Konkuk University, Seoul, South Korea “Anthrax & Tuberculosis how much we are ready?” 27 June, 2019
- Acharya Narendra Dev College, University of Delhi “Dependence of giant on tiny: human microbiome” 21<sup>st</sup> June, 2019
- Amity University “Tuberculosis: Reemerged enemy with evolved strength” on 27 March 2019.
- Bhaskaracharya College, University of Delhi “Career in biological sciences: road to success & happiness” 6<sup>th</sup> February, 2019
- Vallabhbhai Patel Chest Institute, University of Delhi, Professor H.S. Randhawa Oration “Tuberculosis: Are we losing the battle?” 12<sup>th</sup> Jan, 2019

#### **2018**

- “Gut microbiome alters immunity in TB patient” Gargi College, University of Delhi, Delhi, Jan, 2018
- “Scope & future in microbiology” Shaheed Rajguru College, University of Delhi, Delhi, February, 2018
- “Survival strategies Mycobacterium tuberculosis” Delhi Technological University (DTU), Delhi, March 2018

#### **2017:**

- “Success and Failure in combating anthrax and tuberculosis” 7<sup>th</sup> Symposium on Frontiers of Molecular Medicine” School of Mol. Med. JNU 23-24<sup>th</sup> March, 2017
- “Microbiome: special reference to TB” Department of Zoology, University of Delhi, 22 Sept, 2016
- “Tuberculosis & Anthrax mechanism of pathogenesis” Haryana Central University, MahenderGarh, Haryana, 5<sup>th</sup> August, 2016,

#### **2014:**

- “Prevent Bacterial Infections: The Vaccine Way” Annual meeting of Association of Microbiologists of India, Coimbatore, Tamil Nadu, 13 November, 2014
- “Survival Mechanisms of Bacterial Pathogens” Annual meeting of Clinical Biochemists of India, Jodhpur, Rajasthan, 12<sup>th</sup> December, 2014
- “Hurdles and success stories in combating bacterial diseases” workshop on Microbial Biotechnology, Botany Department, Hans Raj College, Delhi University, 19<sup>th</sup> March, 2014.

- “Protein kinases & phosphatases of mycobacterium tuberculosis” Indo-Sweden Discussion Meeting on “Genomics, biology and therapeutics in tuberculosis and other mycobacterial diseases” Patan Mahal, Patan, Rajasthan, 22<sup>nd</sup> March 2014
- “Combating tuberculosis and anthrax: Are we failing?” Amity University, 26 March, ASM India sponsored program. 2014

### 2013:

- “Anthrax virulence factors & recombinant vaccine”. In “India-Japan workshop on Biomolecular electronics and Organic nanotechnology for environment preservation”, Delhi Technological University, 13<sup>th</sup> Dec, 2013 (Meeting 13-15 Dec. 2013).
- “Anthrax: Employing toxins to Protect”. Annual Meeting of Association of Microbiologists of India. 18<sup>th</sup> November, 2013 (Meeting 16-19 Nov, 2013, Rohtak).
- *Bacillus anthracis*: A soil bacteria that can be used in bio-warfare”. In National Conference on "Environmental Pollution, Soil Health and Sustainable Agriculture", Amity University, January, 2013.

### 2012:

- "Signaling mechanisms in *Mycobacterium tuberculosis*: Implication in pathogenesis". Workshop on “New TB and TB/HIV Multidisciplinary Research Partnerships in India: Priorities and Opportunities, organized by Johns Hopkins (USA), NIH and NIRT, IGIB, CRF October, 2012.
- “Mtb’s virulence factors and insights into microbial pathogenesis” Special Lecture at Dr. Ram Manohar Lohia Avadh University, Faizabad, October, 2012
- “Signaling mechanisms of Mycobacterium tuberculosis: Role in Pathogenesis” Leh symposium, Leh, August, 2012
- “Survival strategies of bacterial pathogen”. In Indian Academy of Science, Annual Meeting, Bangalore, July, 2012
- “Specialized mechanisms of bacterial survival in host”. At Annual Meeting of Star College Project of Ramjas College, University of Delhi, March, 2012
- “Survival strategies of bacterial pathogens with special reference to *Bacillus anthracis* and *Mycobacterium tuberculosis*” In Silver Jubilee Symposium of the Department of Biochemistry, Aligarh Muslim University, Aligarh, March, 2012.

### 2011:

- “Bacterial pathogens: mechanisms of survival in hostile conditions”. Special lecture for M.Sc and Ph.D. students at Dr. Ram Manohar Lohia Avadh University, Faizabad, December, 2011
- “Transgenic plants for the production of vaccines for bacterial diseases”. In conference on Environmental degradation and Biodiversity, M L K College, Balrampur, November, 2011
- “Pathogenesis of *Mycobacterium tuberculosis* and *Bacillus anthracis*”. In “Current Trends in Life Sciences: The Indian Scenario”. UGC Refresher Course for teachers at Department of Zoology, University of Delhi, February, 2011

### 2010:

- “Protein kinases and phosphatases of *Mycobacterium tuberculosis*: implication in virulence”. Annual meeting of Society of Biological Chemist (SBCI) at IISc, Bangalore, December, 2010.
- “Translocation strategies of bacterial protein toxins”. In National Symposium on Biotechnology organized by Delhi Technological University, Delhi, October, 2010.
- “Anthrax Toxin”. In National Symposium on **Infectious Diseases: Basic and Applied Research, Bhaskaracharya College, University of Delhi, February, 2010**

- “Translocation of anthrax lethal toxin into mammalian cells”. In Understanding and managing pathogenic microbes at IMTECH, Chandigarh, January, 2010
- “Role of Protein Kinases and Phosphatases in *Mycobacterium tuberculosis*”. In India- USA (SF-Bay Area TB Summit at Delhi)Jan, 2010.

2009:

- "Battling the bacterium: targeting the signaling network by a multi-pronged approach". In Joint CSIR-NM4 discussion on TB Drug Discovery: Questioning the paradigms, December, 2009.
- “Protein kinases and phosphatases of *Mycobacterium tuberculosis*: implication in virulence”. In Indo-Brazil Symposium on Infectious Diseases, CSIR-IICB, Kolkata, December, 2009
- “Mechanism of internalization of anthrax toxin”. In International Conference: on advancement in biomedical research at KIIT University,Bhubaneswar, November, 2009.
- “Role of Protein Kinases and Phosphatases in Survival and Virulence of *Mycobacterium tuberculosis*”. At Microbiology and Biotechnology Centre,M S. University, Vadodara, September, 2009.
- “Anthrax toxin: From killer to savior”. At CPDHE, University of Delhi, July, 2009
- “Bacterial Protein Toxin”. At Department of Biotechnology, Pune University, July, 2009
- “Role of protein kinases and phosphatases in *M. tuberculosis*”. AFFRI, Maryland, USA, May, 2009

2008:

- Protein kinases and survival of *Mycobacterium tuberculosis*, NIAID, NIH, June, 2008

2007:

- Anthrax Toxin. Albert-Ludwigs-University, Freiburg, Germany, August, 2007
- “Role of genomics in understanding infectious diseases anthrax & tuberculosis”. Miranda House, University of Delhi, 2007
- “Protein Kinases and Phosphatases of *Mycobacterium tuberculosis* as Drug Target”. Ranbaxy Laboratories, Gurgaon, Feb, 2007

2006:

- “Anthrax: mechanism of toxin action & bioterrorism”. Hindu College, University of Delhi, February, 2006

2005:

- “Identification of drug targets in *M. tuberculosis*: Studies with protein kinases and phosphatases” at an International Conference on Drug Discovery, CSIR-CDRI, 2005
- “Anthrax Toxin: A tripartite Lethal Combination”. In BundelKhand University, Jhansi, 2005

2004:

- “Anthrax Toxin: Mechanism of action and vaccine development”. 10<sup>th</sup> Asian Pacific Congress of Clinical Biochemistry, Perth Australia, September, 2004

2003:

- Organised a session on “Infectious Diseases” in FAOBMB meeting at IISc Bangalore, December, 2003.
- “Protective antigen of anthrax toxin as recombinant vaccine for anthrax”. Indo-US Vaccine Action Program Joint Working Group at NIAID, NIH, 2003

2001:

- “Anthrax Vaccine: Past, Present and Future”. In Round table Conference by Ranbaxy Science Foundation. December, 2001.
- “Anthrax” Public Lecture 17, India International Centre, 2001

**Research Projects (Major Grants/Research Collaboration)**

- Collaboration with Prof. Anil Tyagi, South Campus, University of Delhi; Dr. Vinay K. Nandicoori, National Institute of Immunology, New Delhi and Prof. K. Natarajan, ACBR, Delhi University.
- Collaboration with Dr. Stephen H. Leppla, NIH, USA and Prof. Axel Ullrich, Max-Planck Institute, Munich, Prof. Virginie Molle, France, Germany. Prof. Ulf Gerth, Germany, Dr. Anand Swaroop, NEI, NIH, USA.
- Rockefeller Career Development award to work at NIH (1994, 1995, 1996- three months each year)
- Visiting Scientist Max Planck Institute, Munich, Germany (2000)
- CSIR-DAAD fellow at University of Freiburg, Germany (2007)
- Visiting Special Volunteer, NEI, NIH (2016)

### Awards and Distinctions

- President, Association of Microbiologists of India (2020)
- Best Mentor Award (Indian Institute of Science) (2017)
- J.C. Bose National Fellowship (2016)
- Moselio Schaechter Distinguished Service Award of American Society for Microbiology (2014)
- Fellow of the Indian National Science Academy (2013)
- Fellow of the Association of Microbiologists of India (2013)
- Fellow of the Indian Academy of Sciences (2011)
- Fellow of the National Academy of Sciences, India (2010)
- Goyal Prize in Life Sciences in 2002
- All India Biotech Association Award (For the year 2001-2002)
- Rockefeller Career Development award (1994)
- Gold Medal in B.Sc. (1974)

### Association With Professional Bodies

- A. **Editorial Board Member** of *Journal of Biological Chemistry*.
- B. **Editor “mSystems”**
- C. **Editor** in “Indian Journal of Microbiology” (Springer Press) and Editorial Advisory Board member in “Recent Patents on Anti-infective Drug Discovery” (Bentham Science Publishers).
- D. Academic Council Member JNU (2019-todate)
- E. SERB- member of Animal Sciences Committee (2019-todate)
- F. DBT member–Expert Committee on Tuberculosis (2011-2013)
- G. Member Special Committee of the Centre for Mol. Med., JNU (2007- 2013)
- H. Research Council Member (CCMB- 2007-2010)
- I. Member of committee for the “CSIR@70: celebration of the foundation day on 26th September, 2012 and the year beyond”
- J. Member of Selection, Assessment and Promotion Committees of RAB (CSIR)
- K. Advisor, Star College Project of Ramjas College and Daulat Ram College, University of Delhi (Sponsored by DBT, India)
- L. Member of Advisory and Monitoring Committee for NMITLI project entitled “Development of a diagnostic system for affordable, point of need testing to manage HIV and TB”.

- M. Served as Member and Chairperson of Purchase Committee, IGIB.
- N. In-charge Maintenance, IGIB at present.
- O. Coordinator for CAG Audit at IGIB at present