




## Faculty Details proforma for DU Web-site

<b>Title</b>	<b>Prof</b>	<b>First Name</b>	<b>Yogendra</b>	<b>Last Name</b>	<b>Singh</b>	<b>Photograph</b>
<b>Designation</b>	<b>Professor</b>					
<b>Address</b>	<b>Lab 112, Department of Zoology University of Delhi, Delhi</b>					
<b>Phone No Office</b>						
<b>Residence</b>						
<b>Mobile</b>	<b>9871095673</b>					
<b>Email</b>	<a href="mailto:ysingh@zoology.du.ac.in">ysingh@zoology.du.ac.in</a> ysinghdu@gmail.com					
<b>Web-Page</b>						
<b>Educational Qualifications</b>						
<b>Degree</b>	<b>Institution</b>				<b>Year</b>	
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. 2006- Oct. 2015.</li> <li>• Sabbatical, NIAID, National Institutes of Health (NIH) USA, June 2008- June 2009.</li> <li>• Professor (On EOL), Ambedkar Centre for Biomedical Research, 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 Institute 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 Institute of Health, USA, June 1983-Sept 1987.</li> </ul>						
<b>Administrative Assignments</b>						
<b>Areas of Interest / Specialization</b>						
<b>Bacterial Pathogenesis, Bacterial Protein Toxins, Signal transduction in bacteria</b>						
<b>Subjects Taught</b>						
<ul style="list-style-type: none"> <li>• Metabolism: Concepts and Regulation</li> </ul>						

- Proteins Structure, Function and Evolution.
- Genomics

## 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 (In Press).
- **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

- Abhijit Maji, Richa Misra, 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** (2017) 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* (Under Revision).
- Vipin Gupta, Shazia Haider<sup>1</sup>, 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* (In Press).

- 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 1;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.
- Neha Dhasmana, Lalit K Singh, Asani Bhaduri, Richa Misra, **Yogendra Singh** (2014) Recent Developments in Anti-dotes Against Anthrax, Recent Patents on Anti-Infective Drug Discovery (In Press).

- 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.
- S. Sharma, S. Ghosh, L. K. Singh, A. Sarkar, R. Malhotra, O. P. Garg, **Yogendra Singh**, R. S Sharma, D.S. Bhakuni, T. K. Das, S. Biswas (2014) Identification of autoantibodies against transthyretin for the screening and diagnosis of rheumatoid arthritis. PLoS One, 9 (4): e93905
- 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 Viridi, 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*. *Biometals* 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.
- S.K. Upadhyay, P. Gautam, H. Pandit, **Yogendra Singh**, S.F. Basir and T. Madan (2012): Identification of Fibrinogen-Binding Proteins of *Aspergillus fumigatus* using Proteomic Approach. *Mycopathologia* 173:73-82.
- A.C. Gupta, Richa Misra, P. Sakhuja, **Yogendra Singh**, S.F. Basir, and S.K. Sarin (2012): Association of Adeponectin 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 fumigates* on exposure to artemisinin. *Mycopathologia* 172:331-346.
- P. K. Chakraborti, N. Matange, V. K. Nandicoori, **Yogendra Singh**, J. S. Tyagi and S. S. Visweswariah (2011) Signalling mechanisms in Mycobacteria. *Tuberculosis* 91: 432-440.

- 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.
- P. Sachdeva, R. Misra, A.K. Tyagi and **Yogendra Singh** (2010) The Sigma Factors of *Mycobacterium tuberculosis*: regulation of the regulators. FEBS Journal, 277:605-626.
- 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
- P. Sachdeva, A. Narayan, R. Misra, V. Brahmachari, **Yogendra Singh** (2008) Loss of kinase activity in *Mycobacterium tuberculosis* multidomain protein Rv1364c. *FEBS J.* 275:6295-308
- 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.
- A. Mattoo, M.S. Zaman, G.P. Dubey, A. Arora, A. Narayan, N. Jaikhanani, K. Rathore, S. Maiti, **Yogendra Singh** (2008) Spo0B of *Bacillus anthracis*: A protein with Pleiotropic Functions. *FEBS Journal* 273:2711-2721.
- Renu, B. Baweja, M.S. Zaman, A.R. Mattoo, K. Sharma, V. Tripathi, A. Aggarwal, G.P. Dubey, R.K. Kurupati, M. Ganguli, N.K. Chaudhury, S. Sen, T.K. Das, W.N. Gade and **Yogendra Singh** (2008) Properties of *Bacillus anthracis* spores prepared under various environmental conditions. *Arch. Microbiol.*, 189:71-79.
- 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.
- A. Swami, A. Agarwal, A. Pathak, S. Patnaik, P. Kumar, **Yogendra Singh**, K.C. Gupta (2007) Imidazolyl-PEI modified nanoparticles for enhanced gene delivery Int J. Pharmacol. 335:180-92.
- A. Swami, RK Kurupati, A. Pathak, **Yogendra Singh**, P. Kumar and K. C. Gupta (2007) A unique and highly efficient non-viral DNA/SiRNA delivery system based on PEI-bisepoxide nanoparticles. Biochem. Biophys. Res. Commun., 362:835-41.
- J. A. Khan, B. Pillai, T. K. Das, **Yogendra Singh**, and S. Maiti (2007): Molecular Effect of uptake of gold nanoparticle on HeLa cells. Chem BioChem. 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.
- A. Narayan, P. Sachdeva, K. Sharma, A. K. Saini, A. K. Tyagi and **Yogendra Singh** (2007): Serine Threonine Protein Kinases of Mycobacterial Genus: Phylogeny to Function. Physiol. Genomics 29: 66-75.
- S. Nimesh, A. Aggarwal, P. Kumar, **Yogendra Singh**, K.C. Gupta, R. Chandra (2007): Influence of acyl chain length on transfection mediated by acylated PEI nanoparticles. Int. J. Pharma. 337:265-274.
- A. Rao, G. Ram, A.K. Saini, R. Vohra, K. Kumar, **Yogendra Singh**, A. Ranganathan (2007): Synthesis and selection of De Novo proteins that bind and impede cellular functions of an essential mycobacterial protein. Appl. Environ. Microbiol. 73:1320-1331.
- K. Sharma, Meetu Gupta, Ananth Krupa, Narayanaswamy Srinivasan and **Yogendra Singh** (2006): EmbR, a regulatory protein with ATPase activity, is a substrate of multiple Ser/Thr kinases and phosphatases in Mycobacterium tuberculosis. FEBS Journal 273:2711-2721.
- K. Sharma, Meetu Gupta, Nidhi Gupta, Monika Pathak, Anil Koul, Smilona Sarangi, Renu B. Baweja and **Yogendra Singh** (2006): **Transcriptional control of mycobacterial *embcab* operon by PknH through a regulatory protein, *embr in vivo*. J. Bacteriol. 188:2936-2944.**
- **S. Patnaik, A. Aggarwal, S. Nimesh, A. Goel, M. Ganguli, N. Saini, Yogendra Singh, K.C. Gupta (2006) PEI-alginate nanocomposites as efficient in vitro gene transfection agents. J. Controlled Release, 114:398-409.**

- **S. Sharma, C.S. Sundaram, P.M. Luthra, Yogendra Singh, R. Sirdeshmukh, and W. N. Gade (2006): Role of proteins in resistance mechanism of *Pseudomonas fluorescens* against heavy metal induced stress with proteomics approach. J. Biotechnol. 126:374-382.**
- **J.A. Khan, R. Kumar Kainthan, M. Ganguli, J. N. Kizhakkedath, Yogendra Singh, S. Maiti (2006): Water soluble nanoparticles from PEG based cationic hyperbranched polymer and RNA that protect RNA from enzymatic degradation. J Biomacromolecules 7:1386-1388.**
- R. Vohra, Meetu Gupta, Rekha Chaturvedi and **Yogendra Singh** (2006) Attack on the scourge of tuberculosis: Patented Drug Targets. 1:95-106.
- S. Nimesh, A. Goyal, V. Pawar, S. Jayaraman, P. Kumar, R. Chandra, **Yogendra Singh**, K.C. Gupta (2006) Polyethylenimine nanoparticles as efficient transfecting agents for mammalian cells. J. Controlled Release 110;457-68
- A. Singh, **Yogendra Singh**, R. Pine, L. Shi, R. Chandra, and K. Drlica (2006): Protein kinase I of *Mycobacterium tuberculosis*: cellular localization and expression during infection of macrophage-like cells. Tuberculosis 86:28-33.
- P. Kumar, A. Verma, A. Saini, P. Chopra, P. Chakraborti, **Yogendra Singh**, and S. Chowdhury (2005) Nucleoside Diphosphate Kinase from *Mycobacterium tuberculosis* Cleaves Single Strand DNA within the Human c-myc Promoter in an Enzyme-Catalyzed Reaction. Nucl. Acid Res. 33:2707-2714.
- Mohd. Saif Zaman, Anita Goyal, Gyanendra P. Dubey, Pradeep K. Gupta, Harish Chandra, Taposh K. Das, Munia Ganguli, **Yogendra Singh** (2005): Imaging and analysis of *Bacillus anthracis* spore germination. Microscopy Research & Techniques 66: 307-311.
- H. Chandra, P.K. Gupta, K. Sharma, A. R. Mattoo, S. K. Garg, W.N. Gade, R. Sirdeshmukh, K. Maithal, & **Yogendra Singh** (2005): Proteome analysis of mouse macrophages treated with anthrax lethal toxin. Biochem. Biophys. Acta 1747: 151-159.
- P. Deol, R. Vohra, A.K. Saini, A. Singh, H. Chandra, P. Chopra, T. K. Das, Anil K. Tyagi and **Yogendra Singh** (2005) Role of *Mycobacterium tuberculosis* Ser/Thr kinase PknF: implications in glucose transport and cell division. J. Bacteriol. 187:3415-20
- A. K. Saini, K. Maithal, P. Chand, S. Chowdhury, R. Vohra, A. Goyal, G.P. Dubey, P. Chopra, R. Chandra, A.K. Tyagi, **Yogendra Singh**, V. Tandon (2004). Nuclear localization and insitu DNA damage by *Mycobacterium tuberculosis*. J. Biol. Chem. 279:50142-49.

P. Chopra, H. Koduri, R. Singh, A. Koul, M. Gildiyal, K. Sharma, A.K. Tyagi, and **Yogendra Singh** (2004): Nucleotide diphosphate kinase of *M. tuberculosis* acts as GTPase-activating protein for Rho- GTPases. FEBS Letters 571:212-216.

- K. Sharma, P. Chopra, and **Yogendra Singh** (2004): Recent advances towards identification of new drug targets for *M. tuberculosis*. Expert Opin. Ther. Targets 8:79-93.
- Dewal Jani, N. K. Singh, S. Bhattacharya, L.S. Meena, **Yogendra Singh**, Shakti N. Upadhyay, Arun K. Sharma and A. K. Tyagi (2004) Studies on the immunogenic potential of plant-expressed cholera toxin B subunit. Plant Cell Reports 22:471-477.
- K. Sharma, H. Chandra, P. K. Gupta, M. Pathak, A. Narayan, L.S. Meena, R. D'Souza, P. Chopra, S. Ramachandran, **Yogendra Singh** (2004): PknH, a transmembrane Hank's type serine/threonine kinase from *Mycobacterium tuberculosis* is differentially expressed under stress conditions FEMS Microbiol. Lett. 233:107-113.
- P. K. Gupta, H. Chandra, R. Gaur, R. K. Kurupati, S. Chowdhury, V. Tandon, **Yogendra Singh** and K. Maithal (2003): Conformational fluctuations in anthrax protective antigen: A possible role of calcium in the folding pathway of the protein. FEBS Letters, 554:505-510.
- P. K. Gupta, R. K. Kurupati, H. Chandra, R. Gaur, V. Tandon, **Yogendra Singh** and K. Maithal (2003): Acid induced unfolding of anthrax protective antigen. Biochem. Biophys. Res. Commun. 311: 229-232.
- P. Chopra, B. Singh, R. Singh, R. Vohra, A. Koul, L. S. Meena, H. Koduri, M. Ghildiyal, P. Deol, T. K. Das, A. K. Tyagi and **Yogendra Singh** (2003): Phosphoprotein phosphatase of *Mycobacterium tuberculosis* dephosphorylates serine–threonine kinases PknA and PknB. Biochem. Biophys. Res. Commun. 311: 112-120.
- R. D. McAllister, **Yogendra Singh**, W.D. du Bois, M. Potter, T. Boehm, N. D. Meeker , P. D. Fillmore, L.M. Anderson, M.E. Poynter and C. Teuscher (2003) Susceptibility to Anthrax lethal toxin is controlled by three linked quantitative trait loci. Am. J. Pathol.163: 1735-1741.
- R. Singh, V. Rao, H. Shakila, R. Gupta, A. Khera, N. Dhar, A. Singh, A. Koul, **Yogendra Singh**, M. Naseema, P.R. Narayanan, C.N. Paramasivan, and A. K. Tyagi (2003): Disruption of *mptpB* impairs the ability of *Mycobacterium tuberculosis* to survive in guinea pigs. Mol. Microbiol. 50: 751-762.
- U. Tawar, A.K. Jain, B.S. Dwarakanath, R. Chandra, **Yogendra Singh**, N. K. Chaudhury, D. Khaitan and V. Tandon (2003): Influence of phenyl ring distribution on bisbenzimidazole and terbenzimidazole cytotoxicity: Synthesis and biological evaluation as radioprotectors. J. Med. Chem., 46:3785-3792.

- U. Tawar, A.K. Jain, R. Chandra, **Yogendra Singh**, B.S. Dwarakanath, N. K. Chaudhury, L. Good and V. Tandon (2003): Minor groove binding DNA ligands with expanded A/T sequence length recognition, selective binding to bent DNA regions and enhanced fluorescent properties. *Biochemistry* 42: 13339-13346.
- M.J. Rosovitz, P. Schuck, M. Varughese, A. P. Chopra, V. Mehra, **Yogendra Singh**, L. M. McGinnis and S.H. Leppla (2003) Alanine scanning mutations in domain 4 of anthrax toxin protective antigen reveal residues important for binding to the cellular receptor and to a neutralizing monoclonal antibody. *J. Biol. Chem.* 278, 30936-30944.
  - Puneet Chopra, L. S. Meena and **Yogendra Singh** (2003) New drug targets for *Mycobacterium tuberculosis*. *Ind. J. Med. Res.* 117: 1-9.
  - L.S. Meena, P. Chopra, R.S. Bedwal and **Yogendra Singh** (2003) Nucleoside diphosphate kinase like activity in adenylate kinase of *M. tuberculosis* Biotech. *Appl. Biochem.* 38: 169-174.
  - Puneet Chopra, Anubha Singh, Anil Koul, Srinivasan Ramachandran, Karl Drlica, Anil Tyagi and **Yogendra Singh** (2003) Cytotoxic activity of Nucleoside Diphosphate Kinase secreted from *Mycobacterium tuberculosis*. *Eur. J. Biochem.* 270:625-634.
  - R. Gaur, P.K. Gupta, A. Goyal, W. Wels, **Yogendra Singh** (2002) Delivery of nucleic acid into mammalian cells by anthrax toxin. *Biochem Biophys Res Commun*, 297:1121-26
  - D. Jani, L.S. Meena, Q. M. Rizwan-ul-Haq, **Yogendra Singh**, A.K. Sharma and A.K. Tyagi (2002) Expression of Cholera toxin B-subunit in transgenic tomato plants. *Transgenic Res.*, 11:447-454.
  - Reetika Gaur, Pradeep K. Gupta, Akhil C. Banerjea and **Yogendra Singh** (2002) Effect of Nasal Immunization with Protective Antigen of *Bacillus anthracis* on Protective Immune Response against Anthrax Toxin. *Vaccine*, 20, 2836-39.
  - L. S. Meena, S. Goel, S.K. Sharma, N.K. Jain, J.N. Banawaliker, R.S. Bedwal and **Yogendra Singh** (2002) Comparative study of three different mycobacterial antigens with a novel Lipo-polysaccharide antigen for the serodiagnosis of tuberculosis. *J. Clin. Lab. Analysis*, 16:151-155.
  - H. Khanna, **Yogendra Singh** (2001) War against anthrax. *Molecular Med.*, 7:795-96.
  - A. Koul, A. Choidas, A. K. Tyagi, K. Drlica, **Yogendra Singh**, and A. Ullrich. (2001) Serine/threonine protein kinases PknF and PknG of *Mycobacterium tuberculosis*: characterization and localization. *Microbiology*, 147:2307-2314.

**Yogendra Singh**, H. Khanna, A. P. Chopra, and V. Mehra (2001): A dominant negative mutant of *Bacillus anthracis* protective antigen inhibits anthrax toxin action in vivo. J. Biol. Chem. 276: 22090-22094.

- H. Khanna, A. P. Chopra, N. Arora, A. Chaudhary, and **Yogendra Singh** (2001) Role of residues constituting the 2B1 strand of domain II in the biological activity of anthrax protective antigen. FEMS Microbiology Letters, 199:27-31.
- H. Khanna, P. K. Gupta, A. Singh, R. Chandra, and **Yogendra Singh** (2001). Participation of residues F552 present in domain III of protective antigen in the biological activity of anthrax lethal toxin. Biol.Chem. 382:941-46.
- V. Mehra, H. Khanna, R. Chandra and **Yogendra Singh** (2001): Anthrax toxin mediated delivery of a 19 kDa antigen of *Mycobacterium tuberculosis* into the cytosol of mammalian cells. Biotechnol. Appl. Biochem. 33: 71-74.
- A. Koul, A. Choidas, M. Treder, A.K.Tyagi, K. Drlica, **Yogendra Singh** and Axel Ullrich (2000) Cloning and characterization of secretory tyrosine phosphatase of *Mycobacterium tuberculosis*. J. Bacteriol. 182:5425-32.
- V. Mehra, **Yogendra Singh**, and S.K.Brahmachari (2000) Predictive Medicine: The DNA chip Technology and the drugs of tomorrow. J. Safdarjung Hospital. 7:27-31.
- M. Sharma, H. Khanna, N. Arora, and **Yogendra Singh** (2000) Anthrax toxin mediated delivery of cholera toxin A subunit into the cytosol of mammalian cells. Biot. Appl. Biochem. 32:69-72.
- A. K. Sharma, A. Mohanty, **Yogendra Singh** and A K. Tyagi (1999) Transgenic plants for the production of edible vaccines and antibodies for immunotherapy. Current Science, 77:524-529.
- **Yogendra Singh**, K. R. Klimpel, Seema Goel, P. K. Swain and S. H. Leppla (1999) Oligomerization of anthrax protective antigen and binding of lethal factor during endocytic uptake into mammalian cells. Infect. Immun. 67:1853-159.
- **Yogendra Singh**, B. E. Ivins, and S. H. Leppla (1998) Study of Immunization against anthrax with the purified recombinant protective antigen of B. anthracis. Infec. Immun., 66: 3447-48.
- P. Gupta, S. Khetrapal, A. Chopra, **Yogendra Singh** and R. Bhatnagar (1998) Expression and purification of recombinant lethal factor of B.anthraxis. Infect. Immun., 66: 862-865.
- P.K. Swain, N.K. Sarkar, M. Sharma, S. Goel, R.P. Singh and **Yogendra Singh** (1997) Cytotoxicity of anthrax lethal factor microinjected into macrophage cells through sendai virus envelops. Ind. J. Biochem. Biophys., 34: 186-191

- S. F. Little, J.M. Novak, J.R. Lowe, S.H. Leppla, **Yogendra Singh**, K.R. Klimpel, B.C. Lidgerding and A. M. Friedlander (1996) Characterization of lethal factor binding and cell receptor binding domains of protective antigen of B. anthracis using monoclonal antibodies. *Microbiology* 142: 707-715.
- S. H. Leppla, K.R. Klimpel, **Yogendra Singh**, V. M. Gordon, and N. Arora (1996) Interaction of anthrax toxin with mammalian cells. *Salisbury Med. Bullet.*, 87: 91-92.
- M. Sharma, P. K. Swain, A. Chopra, V. K. Chaudhary and **Yogendra Singh** (1996) Expression and purification of anthrax toxin protective antigen from *E. coli*. *Protein Express. Purif.*,7: 33-38.
- **Yogendra Singh**, K.R. Klimple, P.K. Swain, Seema Goel and S.H. Leppla (1996): Protective antigen- based engineered vaccines. *Salisbury Med. Bullet.* 87; 130-131.
- A.M. Reddy, Y.N.Rao, **Yogendra Singh**, and Alpana Saxena (1995): Adenosine deaminase and protein tyrosine phosphates activities in liver and peritoneal macrophages of streptozotocin induced diabetic mice. *Ind. J. Clin. Biochem.* 10:66-71.
- K.L.Vadheim, **Yogendra Singh** and Jerry M.Keith (1994): Expression and mutagenesis of recombinant cholera toxin A subunit. *Microbial. Pathogen.* 17:339-346.
- **Yogendra Singh**, K. Klimpel, N. Arora, M. Sharma, and S. H. Leppla (1994): The chymotrypsin sensitive site, FFD in anthrax toxin protective antigen is required for translocation of lethal factor. *J. Biol. Chem.*, 269:29039-29046.
- **Yogendra Singh**, M. Sharma, and V. K. Chaudhary (1994) : Anthrax *Ind. J. Clin. Pract.* 4: 25-31.
- A. M. Friedlander, R. Bhatnagar, S.H. Leppla, L. Johnson and **Yogendra Singh** (1993): Characterization of macrophage sensitivity and resistance to anthrax lethal toxin. *Infect. Immun.*, 61:245-252.
- K. R. Klimpel, S. H. Leppla, **Yogendra Singh**, and C. P. Quinn (1992): Fine structure analysis of the amino acid sequence recognized by the eukaryotic cell protease that activates anthrax toxin. *Bacterial Protein Toxin* 490-491.
- N. Arora, K. R. Klimpel, **Yogendra Singh**, and S.H. Leppla (1992): Fusion of anthrax toxin lethal factor to the ADP-ribosylation domain of Pseudomonas exotoxin A are potent cytotoxins which are translocated to the cytosol of mammalian cells. *J. Biol. Chem.*, 267: 15542-15548.

- **Yogendra Singh**, K. R. Klimpel, and C. P. Quinn, V. K. Chaudhary and S. H. Leppla (1991): The carboxyl terminal end of protective antigen is required for receptor binding and anthrax toxin activity. *J. Biol. Chem.*, 266: 15493-15497.
- C. P. Quinn, **Yogendra Singh**, K. R. Klimpel, and S. H. Leppla (1991): Mapping of anthrax toxin lethal factor by in frame insertion mutagenesis. *J. Biol. Chem.*, 266: 20124-20130.
- **Yogendra Singh**, S.H. Leppla, R. Bhatnager, A. M. Friedlander (1990): Basis of cellular sensitivity and resistance to anthrax lethal toxin. *Salisbury Med. Bullet. (Spec.Suppl)*, 68:46-48.
- S. H. Leppla, A.M. Friedlander, **Yogendra Singh**, and E. M. Cora (1990): A model for anthrax toxin action at the cellular level. *Salisbury Med. Bullet (Spec. Suppl.)*, 68:41-43.
- A. M. Friedlander, R. Bhatnager, S.H. Leppla, and **Yogendra Singh**, (1990): Basis of macrophage sensitivity and resistance to anthrax lethal toxin. *Bacterial Protein Toxin*, 407-408, Ed. Rappouli, R. et al, Gustav Fisher, Stuttgart.
- **Yogendra Singh**, V.K. Chaudhary, and S. H. Leppla (1989): A deleted variant of *Bacillus anthracis* protective antigen is non-toxic and blocks anthrax toxin action in vivo. *J. Biol. Chem.*, 264: 19103-19107.
- **Yogendra Singh**, S. H. Leppla, R. Bhatnagar, and A. M. Friedlander (1989): Internalization and processing of *Bacillus anthracis* lethal toxin by toxin sensitive and resistant cells. *J. Biol. Chem.*, 264: 11099-11102.
- **Yogendra Singh**, R. Bhatnagar , G. S. Sidhu , J. K. Batra and G. Krishna (1989): MPTP inhibits proton motive force in energized liver mitochondria . *Arch. Biochem. Biophys.*, 271: 217-222.
- **Yogendra Singh**, L. Ullrich, D. Katz, P. Bowen, and G. Krishna (1989): Structural requirements for anthracycline-induced cardiotoxicity and antitumor effects. *Toxicol. Appl. Pharm.*, 100:9-23.
- R. Bhatnagar, **Yogendra Singh**, S.H. Leppla and A. M. Friedlander (1989): Calcium is required for the expression of anthrax lethal toxin activity in the macrophage like cell line J774A.1. *Infec. Immun.*, 57: 2107-2114.
- R. K. Kutty, **Yogendra Singh**, G. Santostasi, and G. Krishna (1989): Mechanism of maitotoxin induced liver cell death involving loss of cell ATP following influx of calcium. *Toxicol. Appl. Pharmacol.*, 101: 1-10.

- K. A. Mereish, R. Solow, **Yogendra Singh**, and R. Bhatnagar (1989): Comparative toxicity of cyclic peptides and desipeptides in cultured rat hepatocyte. *Med. Sci. Res.*, 17: 869-871.
- G.S.Dhaunsi, G.S. Sidhu, U.C.Garg, **Yogendra Singh**, R.N. Charkravarti, and R.Bhatnagar (1989): Effects on intestinal nutrient uptake and brush border membrane enzyme in response to atherogenic diet in rhesus monkeys. *J. Med. Primatol*, 18: 467-475.
- **Yogendra Singh**, E. Swanson, E. Sokoloski, R. K. Kutty and G. Krishna (1988): MPTP and MPTP analogs induced cell death in cultured rat hepatocytes involving the formation of pyridinium metabolite. *Toxicol. Appl. Pharmacol.*, 96: 347-359.
- **Yogendra Singh**, V.K. Chaudhary, R. Bhatnagar, and U.K. Misra (1988): Mixed function oxidases in response to quality and quantity of dietary protein. *Biochem. Internat.* 17: 1-8.
- **Yogendra Singh**, V. K. Chaudhary, S. R. Tyagi, R. Bhatnagar, and U.K. Misra (1988): Hepatic phosphatidylcholine synthesis in deficiency of lysine and threonine: Effect of malathion. *Experientia*, 44:758-759.
- A. M. S. Falah, R. Bhatnagar, N. Bhatnagar, **Yogendra Singh**, G. S. Sidhu, P. S. Murthy, and T. A. Venkitasubramanian (1988): On the presence of calmodulin like protein in Mycobacteria. *FEMS Microbiology Letter*, 56: 89-94.
- U.C. Garg, N.Rai, **Yogendra Singh**, G.S. Dhaunsi, G.S. Sidhu, N.K. Ganguly and R. Bhatnagar (1988). A spectrophotometric method for calmodulin assay. *Biotechniques*, 6: 294-296.
- P.K. Srivastava, **Yogendra Singh**, and U.K.Misra (1988): Pulmonary and hepatic glutathione levels, glutathione shuttle enzymes and lipids peroxidation in rats exposed intratracheally to coal fly ash. *Biochem. Internat*, 17: 509-516.
- **Yogendra Singh**, G. Liu, and G. Krishna (1987): Valproic acid induced increase in carnitine acetyl transferase in rat hepatocytes is not due to an induction of peroxisomes. *J. Toxicol. Environ. Health*, 22:459-469.
- D. R. Feller, **Yogendra Singh**, V. Shirhatti, C.T. Liu and G. Krishna (1987) : Characterization of ciprofibrate and clofibrac acid as peroxisomal proliferators in primary culture of rat hepatocytes. *Hepatology*, 7:508-516.
- J. B. Reese, V. Shirhatti, **Yogendra Singh**, & G. Krishna (1987): Daunamycin inhibits the uptake of adenine, amino acids, & glucose into cardiac myocytes. *Toxic. Appl. Pharmacol.*, 88:105-112.



- P. K. Srivastava, **Yogendra Singh**, S.R. Tyagi, and U.K. Misra (1987): Induction of hepatic drug metabolizing enzymes by coal fly ash in rats. *Environ. Res.*, 44:228-237.
- **Yogendra Singh**, V. Shirhatti, C.T. Liu, H.W. Davies, and G. Krishna (1986): Inhibition of overall protein and RNA synthesis as a mechanism for the tunicamycin induced decrease in cytochrome P-450 in rat hepatocytes. *Biochem. Int.* 13: 213-217.
- B. K. Sinha, **Yogendra Singh** and G. Krishna (1986): Formation of superoxide and hydroxyl radicals from 1-methyl-4-phenylpyridinium ion (MPP<sup>+</sup>): reductive activation by NADPH cytochrome P-450 reductase. *Biochem. Biophys. Res. Commun.*, 135: 583-588.
- **Yogendra Singh**, V. Shirhatti, C. T. Liu, D. R. Feller and G. Krishna (1985): Inhibition of protein synthesis: A basis for tunicamycin induced decrease in rat liver cytochrome P450. *Life Science* 37: 1411-1417.
- S. R. Tyagi, **Yogendra Singh**, K. Sriram, and U.K. Misra (1985): Quality and quantity of dietary proteins and acute endosulfan metabolic toxicity in rat liver microsome. *Ind. J. Med. Res.*, 81: 480-487.
- S. R. Tyagi, **Yogendra Singh**, P. K. Srivastava, and U. K. Misra (1984): Induction of hepatic mixed function oxidase system by endosulfan in rats. *Bull. Environ. Contam. Toxicol.*, 32: 550-556.
- **Yogendra Singh**, V. K. Chaudhary, S. R. Tyagi, and U. K. Misra (1984): Inhibition of hepatic phosphatidylcholine synthesis by malathion in rats. *Toxicol. Letter*, 20: 219-223.
- A. Swaroop, **Yogendra Singh**, and U. K. Misra (1979): Liver lipids of weanling rats fed lysine-threonine deficient rice diets. *Nutr. Rep. Int.*, 20: 79-81.
- **Yogendra Singh**, A. Swaroop, and U. K. Misra (1979): Kidney lipids of weanling rats fed lysine-threonine deficient rice diets. *Nutr. Rep. Int.* 20: 75-77.

## Invited lectures/ special lecture or presentations for conferences/ symposia

### 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 Bundel Khand 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, 2013.
- “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**

- J.C. Bose National Fellowship
- 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)

- A. **Editorial Board Member** of *Journal of Biological Chemistry*.
- B. **Editor** in “Indian Journal of Microbiology” (Springer Press) and Editorial Advisory Board member in “Recent Patents on Anti-infective Drug Discovery” (Bentham Science Publishers).
- C. **Reviewer:** Molecular Microbiology; J. Bacteriology; PLoS One; J. Pharm. Res; Vaccine; JACS, Scientific Reports etc.
- D. DBT member–Expert Committee on Tuberculosis (2011-2013)
- E. Member Special Committee of the Centre for Mol. Med., JNU (2007- 2013)
- F. Research Council Member (CCMB- 2007-2010)
- G. Member of committee for the “CSIR@70: celebration of the foundation day on 26th September, 2012 and the year beyond”
- H. Member of Selection, Assessment and Promotion Committees of RAB (CSIR)
- I. Advisor, Star College Project of Ramjas College and Daulat Ram College, University of Delhi (Sponsored by DBT, India)
- J. 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”.
- K. Served as Member and Chairperson of Purchase Committee, IGIB.
- L. In-charge Maintenance, IGIB at present.
- M. Coordinator for CAG Audit at IGIB at present

#### Other Activities

