

Curriculum Vitae

Ravi Kumar Gupta, Ph.D.

Assistant Professor

Department of Environmental Microbiology

Babasaheb Bhimrao Ambedkar (A Central) University

Vidya Vihar, Raebareli Road, Lucknow - 226025,

Uttar Pradesh, India

Phone no: +91-9193003108; e-mail: ravikumarcetri@gmail.com

Academic Progressions:

Assistant Professor: (2017--

Area of specialization: Microbial genetics, genes and small noncoding RNA regulation, bacterial pathogenesis in animal models and Nanotherapeutics.

Research endeavors: Gram positive human and animal pathogens causes superficial skin to deep tissue infections. The capability of causing a variety of infections by these organism is due to the production of numerous virulence factors which are tightly regulated by transcriptional regulatory proteins, two-component systems and small regulatory RNAs. Advancement of genomics revealed a repertoire of small non-coding RNAs which play significant role in virulence regulation in bacteria. This has opened a new tier of virulence regulation besides gene and protein regulation. However, major questions remain to be answered i.e.: 1) what are the factors which stimulate the expression of sRNAs? 2) How many of these small RNAs are important for virulence regulation? 3) Are they have diverse or conserved mode of action? 4) Are they represent a novel anti-infective approach? 5) Are they can be used as biomarkers for diagnostic purposes? Although a commendable progress has been made in this area recently, but many remains unanswered. The long term goal of my lab is to answer above queries and better understand the regulatory mechanism of small non-coding RNAs and their role in virulence regulations in important gram positive pathogenic bacteria such as *S. aureus* and *M. tuberculosis*. This may lead to the development of alternative therapeutic approach to treat and prevent deadly infections in humans and animals.

Postdoctoral Research Associate: (2011-2017)

Research Area: "Virulence gene regulation in *Staphylococcus aureus*"

Expertise: RNA-SHAPE, RNA-Walk and RNA-RNA EMSA techniques, Rat-infective endocarditis model, Rat abscess model, Rat orthopedic implants infection model.

Institution: University of Arkansas for Medical Sciences, Dept. of Microbiology & Immunology, Little rock, AR, USA.

Ph. D.: Life Sciences (Microbiology): (2005 – 2011)

Thesis Title: “Studies on autocrine growth factors involved in the resuscitation of dormant Mycobacteria.”

Institution: Microbiology Division, Central Drug Research Institute (CDRI), Lucknow.

Award of Degree: Jawaharlal Nehru University (JNU), New Delhi.

Thesis supervisor: Dr. Ranjana Srivastava

M. Sc. (Post-Graduation): Biochemistry: (2003-2005)

Institution/University: Jamia Hamdard University, New Delhi.

Project: “Tools and Techniques involved in the Molecular Biology” Jamia Hamdard, New Delhi.

B. Sc. (Graduation): Zoology, Botany and Chemistry: (1997-2000)

Institution/University- University of Lucknow, Lucknow.

Additional Qualifications:

Diploma: Advance Diploma in Information Technology (2005-2006).

Certificate Course: One-year certificate course in Science Journalism from Indian Science Communication Society, India (2009-2010).

Research and Teaching Experience: 12 years

Honors and Awards:

2017:- Editor for Journal Advances in Microbiology, Herald publications, USA

2016:- Guest Editor for the Journal Biochemistry Insight

2016:- Reviewer for Journal PLOS ONE, USA

2016:- Reviewer for Journal Biological Reviews (Wiley Publications)

2016:- Reviewer for Journal Biomedical Journals (Omics International Publications)

October, 2014: Oral presentation travel award in the Gram+ Conference, Omaha, USA

April, 2013: Best Poster Award at UAMS Research Day, Little rock, USA

August, 2013: Travel Award for the Gordon Research conference, New Hampshire, USA

October, 2012: Travel Award for the Gram-Positive Conference at Omaha, NE, USA

February, 2011: Dr. M. M. Dhar Memorial Award at CDRI, India

March, 2008-11: Senior Research Fellowship, CSIR, New Delhi, India

March, 2005-08: Junior Research Fellowship, CSIR, New Delhi, India

August, 2005: Junior Research Fellowship, ICMR, New Delhi, India

February, 2005: Graduate Aptitude Test for Engineering with 97.78 percentile (AIR-144)

July, 2004: National Eligibility Test for Lectureship by Council of Scientific and Industrial Research (CSIR-UGC NET)

Other Experiences and Professional Memberships:

- 2012- : Member, American Society for Microbiology (ASM)
2011- : Member, American Association for the Advancement of Science (AAAS)
2007: Workshop on Microarray Technology organized by Operon Biotechnologies.

Research papers in Peer-reviewed Journals:

(Total published articles: 12, Citations: 163, h-index: 8, i10-index: 8).

- 1. Gupta RK**, Luong TT, Lee CY (2015). [RNAIII of the *Staphylococcus aureus* agr system activates global regulator MgrA by stabilizing mRNA](#). Proceedings of the National Academy of Sciences, PNAS 2015, 112 (45), 14036-14041. **(Impact factor: 9.73)**
- 2. Gupta RK**, Alba J, Xiong YQ, Bayer AS, Lee CY (2013). [MgrA activates expression of capsule genes, but not the \$\alpha\$ -toxin gene in experimental *Staphylococcus aureus* endocarditis](#). J. Infectious Diseases, 2013 Dec 1; 208(11):1841-8. **(Impact factor: 5.99)**
- 3. Kashyap VK***, **Gupta RK***, Shrivastava R, Srivastava BS, Srivastava R, Parai MK, Singh P, Bera S, Panda G (2012). [In vivo activity of thiophene-containing trisubstituted methanes against acute and persistent infection of non-tubercular *Mycobacterium fortuitum* in a murine infection model](#). J. Antimicrobial and Chemotherapy. 2012 May; 67(5):1188-97. (*Equal Authorships). **(Impact factor: 4.98)**
- 4. Gupta RK**, Srivastava BS, Srivastava R (2010). [Comparative expression analysis of rpf-like genes of *Mycobacterium tuberculosis* H37Rv under different physiological stress and growth conditions](#). Microbiology, 2010 Sep; 156:2714-22. **(Impact factor: 3.01)**
- 5. Gupta RK**, Kumar B, Bisht D, Katoch K, Mitra K, Srivastava R (2015). Differentially expressed proteins in response to resuscitation of non-culturable cells of *Mycobacterium tuberculosis* H37Rv: Potential new drug targets. International Journal of Respiratory and Pulmonary Medicine, IJRPM-2-025, ISSN: 2378-3516, [ijrpm-2-025.php?jid=ijrpm](#).
- 6. Gupta RK**, Srivastava R (2012). [Resuscitation promoting factors: a family of microbial proteins in survival and resuscitation of dormant mycobacteria](#). Indian Journal of Microbiology. 2012 Jun; 52(2):114-21. (Review Article).
- 7. Gupta RK**, Srivastava S, Srivastava BS, Srivastava R (2016). [Defining New Drug Targets Through Protein-Protein Interaction: Interaction of Resuscitation Promoting Factors with SucA of TCA Cycle in *M. tuberculosis* H37Rv](#). J Pulm Respir Med 6 (4), 363-369.
- 8. Lei MG***, **Gupta RK***, and Lee CY (2017). [Proteomics of *Staphylococcus aureus* biofilm matrix in a rat model of orthopedic implant-associated infection](#). (PLoS One. 2017 Nov 9;12(11): e0187981 *equal authors).
- 9. Yadav S, Gupta RK*** (2017). [Multifunctional Role and Regulation of RNAIII of the Agr Quorum Sensing System in *Staphylococcus aureus*](#). Adv Microb Res 1: 001. (*Corresponding author).

10. Atwood DN, Loughran AJ, Courtney AP, Anthony AC, Meeker DG, Spencer HJ, **Gupta RK**, Lee CY, Beenken KE, Smeltzer MS. [Comparative impact of diverse regulatory loci on *Staphylococcus aureus* biofilm formation.](#) (2015) Microbiologyopen . 2015 Jun; 4(3): 436-51. **(Impact factor: 2.21)**

11. Esmaeili MA, Yadav S, **Gupta RK**, Waggoner GR, DeLoach A, Calingasan NY, Beal MF, Kiaei M (2015). [Preferential PPAR-alpha activation reduces neuroinflammation, and blocks neurodegeneration in vivo.](#) Human Molecular Genetics. 2015 Nov 24. pii: ddv477. **(Impact factor: 6.85)**

12. Spoor L, Richardson Emily, Richards A, Wilson G, Mendonca C, **Gupta RK**; McAdam P, Nutbeam-Tuffs S, Lee CY, Corander J, Fitzgerald R. Recombination-mediated remodelling of host-pathogen interactions during *Staphylococcus aureus* niche adaptation (2015). Microbial Genomics, MGen, 2015, 1 doi: [10.1099/mgen.0.000036](#).

Details of oral and posters presented in Conferences/Seminars:

1. Gupta RK, Luong TT, Lee CY. Stability of multiple-gene regulator (mgrA) mRNA in *Staphylococcus aureus* Newman is affected by 5'-untranslated region. International Conference on Gram-Positive Pathogens, October, 2013 at Omaha, NE, USA. Organized by University of Nebraska, NE, USA. (Got Travel Award)

2. Gupta RK, Lee CY. MgrA activates expression of capsule genes, but not the α -toxin gene in experimental *Staphylococcus aureus* endocarditis. August 2013, International Conference on *Staphylococcus* diseases organized by Gordon Research conferences, New Hampshire, USA (Got Travel award)

3. Gupta RK, Lee CY. 2013, International Conference on *Staphylococcus* diseases organized by Gordon Research Symposium, New Hampshire, USA.

4. Gupta RK, Lee CY. MgrA activates expression of capsule genes, but not the α -toxin gene in experimental *Staphylococcus aureus* endocarditis. April, 2013, UAMS Research Day, Little rock, AR, USA. Organized by University of Arkansas for Medical Sciences, AR, USA. (Got The Best Poster Award: Third Place).

5. Gupta RK, Yadav A, Srivastava BS, Srivastava R. Cloning, Expression & purification of M. luteus Rpf and its role in the resuscitation of Non Culturable Cells of Mycobacteria. December, 2008 at International Symposium on Emerging Trends in Tuberculosis Research: Biomarkers, Drug & Vaccines, New Delhi, India, Organised by International Centre for Genetic Engineering & Biotechnology (ICGEB, NEW DELHI).

6. Gupta RK, Yadav A, Srivastava BS, Srivastava R. December, 2010 at International Symposium on Tuberculosis Diagnostics: Innovating to make an

impact, New Delhi, India, Organised by International Centre for Genetic Engineering & Biotechnology (ICGEB, NEW DELHI).

7. Gupta RK, Yadav A, Srivastava BS, Srivastava R. Role of Autocrine Growth Factor involved in the resuscitation of non-culturable cells of *Mycobacterium smegmatis*. December, 2007, National Symposium on Current Advances in Molecular Biochemistry Organized by University of Lucknow, India.

8. Gupta RK, Luong TT, Lee CY. *Staphylococcus aureus* RNAIII of the *agr* quorum sensing system stabilizes *mgrA* mRNA. International Conference on Gram-Positive Pathogens, October, 2014 at Omaha, NE, USA. Organized by University of Nebraska, NE, USA. (Got oral presentation Award).