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**Research profile**

1. Multi-drug resistant and virulence gene profiles of pathotypes of 'water quality indicator bacteria' in Gangetic riverines and non-point sources of pollution.
2. Development and validation of molecular and nanoprobes for detection of diarrheagenic *E.coli* (Enterotoxigenic *E. coli* – Traveller's diarrhoea; Enterohemmorhagic *E. coli* – Bloody diarrhoea), Vancomycin Resistant *Enterococci* (VRE) and Salmonella sp. in water resouces.
3. Understand the molecular mechanisms of persistance in *Pseudomonas aerogenosa*.
4. Isolation and characterization of growth promoting bacteria in mushroom and agriculture crop.
5. Molecular characterization of Rabies virus

The outcome of above mentioned research interest of immense societal and environmental health relevance to our country, are more than 33 research papers till date in international peer-reviewed, high impact journals such as Environmental Science & Technology, Environmental Health Perspective, Journal of Applied Microbiology etc.

**Research Grant**

1. Development of novel adsorbent for pre-concentration of the pathogens and molecular beacon based PCR array to enable culture-free detection of the food and waterborne pathogens (23.53 Lac, from SERB-DST)- Completed

**Research Supervision/Reviewer**

1. At PhD level: Two (Girraj Singh & Ravi Kumar Chaudhari, Thesis submitted)
2. At M. Tech./M. Phil level, Total: 24
3. Adhoc reviewer for Journal of Applied Microbiology, Journal of Environmental Biology, Journal of Bacteriology Research etc.

**Publications**

**Total citation at Google Scholar: 535**

**h-index: 13**

**i10 index:14**

1. Singh, G.; Chhabra, M.; Singh, P.; Gupta, N. K.; Singhal, M.; Dhariwal, A.C.; ***Ram, S.*** Molecular study of glycoprotein (G) gene region of rabies virus from spotted deer, Delhi, India. *J. Commun. Dis.* 2018; 50(3), 28-35.
2. Chaudhary, R. K.; Singh, G.; ***Ram S.*** Structural and Functional *In-silico* Analysis of Toxin Antitoxin Proteins in Persister cells of *Pseudomonas aeruginosa*. *Plant Archive*, 2018 18 (2), 1643-1651.
3. Chaudhary, R. K.; Singh, G.; ***Ram S.*** Homology Modeling and *in silico* Structural Annotation of the Toxin-Antitoxin Systems in *Pseudomonas aeruginosa.* *Indian Res. J. Genet. & Biotech,* 2018, 10(1): 180-188.
4. Kumar, N.; Bansala, R.; Kumar, A.; Chaudhary, R. K.; ***Ram, S.*** Rapid detection of Shiga toxin-producing Escherichia coli (STEC) using DNA conjugated Gold NanoParticles. NANOfIM, IEEE Coference 2017
5. Kumar, A.; Kaushik, A, C.; Singh P. P.; Chaudhary, R. K.; Yamaguchi, S.; Lay-EkuakilleA.; G.; Urooj, S.; Tripathi, V.; ***Ram. S.*** Predictive novel anti-EGFR Gold Nanoparticle decorated potential effective nanomedicine for enhanced tumor targeting and antitumor efficiency. NANOfIM, IEEE Coference 2017
6. Kumar, A.; Chaudhary, R.K.; Singh, G.; Urooj, S.; Tripathi, V.; ***Ram. S.*** Applications of Nanomaterials for the diagnosis and prognosis of Alzheimer's disease, NANOfIM, IEEE Coference 2017
7. Singh, G.; Jaiswal, R.; Chhabra, M.; Sood, Y.; Gupta, N.; Singhal, M.; Tiwari, S.; Dhariwal, A.C.; Sharma, R., ***Ram, S.*** Evaluation of Direct Rapid Immunohistochemistry Test (DRIT) for Postmortem Diagnosis of Rabies, *J. Commun. Dis.* 2017; 49 (3), 9-13. (doi: 10.24321/0019.5138.201715).
8. Lata, P.; ***Ram, S.,*** Shanker, R. Multiplex PCR based genotypic characterization of pathogenic vancomycin resistant *Enterococcus faecalis* recovered from an Indian river along a city landscape. *SpringerPlus*, 2016, 5 (1), 1199. https://doi.org/10.1186/s40064-016-2870-5
9. Chaudhary, R.K., Narain, R., Singh, G., Kumar, A., ***Ram, S.*** The role of toxin-antitoxin systems in the survival of multidrug tolerant pathogens and designing of new approaches to treat them. *Int. J. Infect. Dis.*, 2016, 45, 274-275
10. Naraian, R.; Singh, M. P. ; ***Ram, S.*** Supplementation of basal substrate to boost up substrate strength and oyster mushroom yield: An overview of substrates and supplements, *Int.J.Curr.Microbiol.App.Sci* (2016).
11. Urvashi, ***Ram, S,*** Pant P, Nagar, S. Application of cloud computing in microbiological studies (*Vibrio* spp.) of Yamuna Water using PCR techniques. *Int. J. Sci. Tech. & Management;* 2015, 6 (1), 1-13.
12. Naraian, R.; ***Ram, S.***; Kaistha, S.D.; Srivastava, J. Occurrence of plasmid linked multiple drug resistance in bacterial isolates of tannery effluent. *Cell. Mol. Biol.*2012, *58*, 134-141.
13. ***Ram. S****.;* Vajpayee, P.; Dwivedi, P.D.; Shanker, R. Culture-free detection and enumeration of STEC in water. *Ecotoxicol. Environ. Saf.* **2011** (doi:10.1016/j.ecoenv.2011.01.019).
14. Naraian, R., ***Ram, S****.,* Srivastava, J., Kumar, J., Singh, K.P., Garg, S. K. Influence of metal ions on growth and enzyme profile of white-rot fungus *Pleurotus florida* ITCC 3308, *Res. Environ. Life Sci.* **2010**, *3,* 59 - 64.
15. Singh G.; Vajpayee P.; ***Ram S.;*** Shanker R. Environmental Reservoirs for Enterotoxigenic *Escherichia coli* in South Asian Gangetic Riverine System. *Environ. Environ. Sci. Technol.* **2010**, *44,* 6475 - 6480.
16. Jyoti, A.; ***Ram, S.;*** Vajpayee, P.; Singh, G.; Dwivedi, P.; Jain, S.K.; Shanker, R.. Contamination of surface and potable water in south Asia by salmonellae: Culture independent quantification with molecular beacon real-time PCR. *Sci. Total. Environ.* **2010,** *408*, 1256 - 1263.
17. ***Ram, S.;*** Vajpayee, P.; Shanker, R. Enterotoxigenic *Escherichia coli* in sewage impacted waters and aquatic weeds: quantitative PCR for culture-independent enumeration. *J. Appl. Microbiol.* **2010,** *108,* 1007 - 1014.
18. Lata, P.; ***Ram, S.;*** Agarwal, M.; Shanker, R. Enterococci in river Ganga surface waters: Propensity of species distribution, dissemination of antimicrobial-resistance and virulence markers among species along land scape*. BMC Microbiol.* **2009**, *9*:140 (doi: 10.1186/1471- 2180-9-140).
19. ***Ram, S.*** Real-Time qPCR: A potential tool for nucleic acid quantitation, GBU Research Bulletin, **2009** volume 1, issue III & IV. http://www.gbu.ac.in/UniversityDoc/Research\_Bulletin[2].pdf).
20. Lata, P.; ***Ram, S.;*** Agarwal, M.; Shanker, R. Real-time PCR for rapid detection of *vanA* gene in surface waters and aquatic macrophyte by molecular beacon probe*. Environ. Sci. Technol.***2009**, *43,* 3343 - 3348.
21. ***Ram, S.;*** Vajpayee, P.; Singh, R. L.; Shanker, R. Surface water of a perennial river exhibits multi-antimicrobial resistant shiga-toxin and enterotoxin producing *Escherichia coli. Ecotoxicol. Environ. Saf*. **2008**, *72,* 490 - 495.
22. Lata, P., ***Ram, S.,*** Agrawal, M., Shanker, R. Culture-independent specific detection of vancomycin resistant enterococci in surface waters by molecular beacon probe. *Indian J. Pharmacol.,* 2008, 40, 234-234.
23. ***Ram, S.;*** Vajpayee, P.; Tripathi, U.; Singh, R.L.; Seth, P. K., Shanker, R. Determination of antimicrobials resistance and virulence gene signatures in surface water isolates of *Escherichia coli. J. Appl. Microbiol.* **2008,** *105,* 1899 - 1908.
24. ***Ram, S.;*** Singh, R. L.; Shanker, R. *In-silico* comparison of real-time PCR probes for detection of pathogens. *In- Silico Biol.* **2008**, *8,* 251 - 259.
25. Shanker, R., ***Ram, S.,*** Lata, P., Vajpayee, P., Jyoti, A., Patel, C.B. Dwivedi**,** P.D. Pathogen Detection: PCR Probes to Nano-Probes!, *Nanotoxicology,* 2008, *2 :*1 S-42.
26. ***Ram, S.;*** Vajpayee, P.; Shanker, R. Rapid culture independent quantitative detection of enterotoxigenic *Escherichia coli* in surface waters by real - time PCR with molecular beacon. *Environ. Sci. Technol.* **2008***, 42,* 4577 - 4582.
27. ***Ram, S.;*** Vajpayee, P.; Shanker, R. Contamination of potable water distribution systems by multi-antimicrobial resistant enterohemorrhagic *Escherichia coli. Environ. Health Perspect.***2008,** *116,* 448 - 452.
28. ***Ram, S.;*** Vajpayee, P.; Singh, R. L.; Shanker, R. (2007). Virulence determinants of shigatoxin and enterotoxin producing *E. coli* exhibit distinct pattern in three perennial Indian rivers. *Adv. Life. Sci.* **2007**, *1,* 1 - 8.
29. ***Ram, S.;*** Vajpayee, P.; Shanker, R. Prevalence of multi antimicrobial agent resistant, shiga toxin and enterotoxin producing *Escherichia coli* in surface waters of river Ganga. *Environ. Sci. Technol.* **2007**, *41,* 7383 - 7388.
30. ***Ram, S.;*** Shanker, R. Computing TaqMan probe for multiplex PCR detection of *E. coli* O157 serotype in water. *In-Silico Biol.* **2005**, *5,* 499 - 504.
31. ***Ram, S.;*** Shanker, R. Plasmid and drug resistance profile of sorbitol non-fermenting cefixime- tellurite resistance *Escherichia coli* isolates from the river Gomti. *Bull. Environ. Contam.Toxicol.* **2005**, *75,* 623 - 628

**Book Chapter**

1. Naraian, R., Kumari S., ***Ram, S.*** *Pleurotus* as an exclusive Eco-friendly modular Biotool. CAB international, 2016. The handbook of microbial bio-resources (eds V.K. Gupta) page 140-158 (http://www.cabi.org/cabebooks/ebook/20163199952)
2. ***Ram, S.,*** and Naraian, R. Real-time Quantitative Polymerase Chain Reaction: A Potential Tool for pathogen detection. Recent Advances in Microbiology. 2013, vol. 2, (https://www.novapublishers.com/catalog/product\_info.php?products\_id=44458; **Editors:** S.P. Tiwari, Rajesh Sharma and Rajeeva Gaur (Department of Microbiology, VBS Purvanchal University, Jaunpur, India, and others.

**Sequence Submitted at NCBI database**

1. Naraian, R., Kumari, S., Ram, S., Kumar, A. *Azospirillum brasilense* gene for 16S ribosomal RNA, partial sequence, strain, RN20150121; Nucleotide sequence submitted to GenBank (LC02657); 2015 January 22. (https://www.ncbi.nlm.nih.gov/nuccore/750678883)
2. Naraian, R., Kumari, S., Ram, S. *Bacillus vallismortis* gene for 16S ribosomal RNA, partial sequence, isolate: CG141107; Nucleotide sequence submitted to GenBank (LC010220); 2014, November 7. (https://www.ncbi.nlm.nih.gov/nuccore/LC010220.1)

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