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Research Summary

The major research focus is the metagenomic characterization of the diverse microbiome (like human gut microbiome, lung microbiome, soil microbes, etc.) for their native community structure, Physiological functions (biocatalytic potential), Survival strategies under abiotic stress (Salt, antibiotic, metal & metalloids, etc.), colonization factors (commensalism), Host microbial interactions (in diseases and health conditions), etc. In this direction, we have established an association of the human microbiome with the onset of Celiac Disease (CD), Chronic Obstructive Pulmonary Disease (COPD). Using a comparative genomics approach, we have also explored the differential genetic elements imparting commensalism to human gut microbes. Recently, we have established a correlation of microbial enterotypes with Ayurvedic host phenotype (Prakarti) in diverse human populations using the Ayurgenomics approach. Additionally, we have explored an association between microbial community dynamics with the onset of metabolic disorders to define microbial markers associated with the onset of these diseases. These catalogs of microbial markers could be harnessed as therapeutic and diagnostic targets to treat diseases. Simultaneously, we are trying to establish a link between host & microbial genetics, nutrient, and physiological factors to understand the establishment and maturation of host-microbiome.

❖ *Education*

Degree	Year	Institute	
Bachelor of Science	2002	Dronacharya Govt. College, Gurugram, Haryana	<i>First Division</i>
Master of Science (Biochemistry)	2004	Maharshi Dayanand University, Rohtak	<i>Gold Medal</i>
Masters in Business administration (HR)	2012	IASE Deemed University, Rajasthan	<i>First Division</i>
PhD	2010	CSIR- Institute of Genomics and Integrative Biology, Delhi (Research Institute) & SV Pune University Pune	

❖ *Work History*

<i>Work Duration</i>	<i>Work profile</i>	<i>Organization</i>
2008-2010	Senior Application Scientist	Roche Applied Sciences, Mumbai, India
2010- March 2022	Assistant Professor	Maharshi Dayanand University Rohtak, Haryana,
March 2022- till date	Associate Professor	Maharshi Dayanand University Rohtak, Haryana,

❖ *Research Expertise*

- ✚ Microbial System Biology
- ✚ Nutrigenomics
- ✚ Environmental Metagenomics
- ✚ Host -Microbe interactions
- ✚ Material Science

❖ *Research Performance*

A. Research Publications

1. Chauhan NS, Mukerji M and Gupta S (2022) Editorial: Role of microbiome in diseases diagnostics and therapeutics. *Front. Cell. Infect. Microbiol.* 12:1025837. doi: 10.3389/fcimb.2022.1025837
2. Yadav M, Kumar T, Kankan A, Maurya R, Pandey R, Chauhan NS. Isolation and Characterization of Human Intestinal Bacteria *Cytobacillus oceanisediminis* NB2 for Probiotic Potential. *Frontiers in Microbiology*, 2022 Jul 13;13:932795. doi: 10.3389/fmicb.2022.932795.
3. Yadav M, Lomash A, Kapoor S, Pandey R, Chauhan NS. Mapping of the benzoate metabolism by human gut microbiome indicates food-derived metagenome evolution. *Scientific Reports (Nature)*. 2021 Mar 10;11(1):5561. doi: 10.1038/s41598-021-84964-6.
4. Yadav M, Chauhan NS. Microbiome therapeutics: exploring the present scenario and challenges. *Gastroenterol Rep (Oxf)*. 2021 Nov 15;10:goab046. doi: 10.1093/gastro/goab046.
5. Chauhan NS, Mukerji M and Gupta S (2022) Role of microbiome in diseases diagnostics and therapeutics. *Frontiers in Cellular and Infection Microbiology*. 12:1025837. doi: 10.3389/fcimb.2022.1025837.

6. **Chauhan NS**, Joseph N, Shaligram S, Chavan N, Joshi A, Dhotre D, Lodha T, Shouche Y. *Paenibacillus oleatilyticus* sp. nov., isolated from soil. *Arch Microbiol.* 2022 Jul 22;204(8):516. doi: 10.1007/s00203-022-03116-0.
7. Mehta P, Yadav M, Ahmed V, Goyal K, Pandey R and **Chauhan NS** (2021) Culture-Independent Exploration of the Hypersaline Ecosystem Indicates the Environment-Specific Microbiome Evolution. *Front. Microbiol.* 12:686549. doi: 10.3389/fmicb.2021.686549
8. Gupta S., Shariff M., Chaturvedi G., Sharma A., Goel N., Yadav M., Mortensen MS., Sørensen SJ., Mukerji M. & **Chauhan NS**. Comparative Analysis of the alveolar microbiome in COPD, ECOPD, Sarcoidosis, and ILD patients to identify respiratory illnesses specific microbial signatures. *Sci Rep* 11, 3963 (2021). <https://doi.org/10.1038/s41598-021-83524-2>
9. Saifi S, Ravi V, Sharma S, Swaminathan A, **Chauhan NS**, Pandey R. SARS-CoV-2 VOCs, Mutational diversity and clinical outcome: Are they modulating drug efficacy by altered binding strength? *Genomics.* 2022 Aug 27;114(5):110466. doi: 10.1016/j.ygeno.2022.110466.
10. Mehta P, Ravi V, Devi P, Maurya R, Parveen S, Mishra P, Yadav A, Swaminathan A, Saifi S, Khare K, Chattopadhyay P, Yadav M, **Chauhan NS**, Tarai B, Budhiraja S, Shamim U, Pandey R. Mutational dynamics across VOCs in International travellers and Community transmission underscores importance of Spike-ACE2 interaction. *Microbiol Res.* 2022 Sep;262:127099. doi: 10.1016/j.micres.2022.127099.
11. Yadav M, Pandey R, **Chauhan NS**. Catabolic Machinery of the Human Gut Microbes Bestow Resilience Against Vanillin Antimicrobial Nature. *Frontiers in Microbiology.*, 2020 Oct 16;11:588545. doi: 10.3389/fmicb.2020.588545.
12. Sharma,P., Kumar, T., Yadav, M., Gill, SS., Chauhan,NS., Plant-microbe interactions for the sustainable agriculture and food security. *Plant Gene*, 28: 100325, 2021, ISSN 2352-4073. <https://doi.org/10.1016/j.plgene.2021.100325>.
13. Yadav Monika and **Chauhan NS**, Overview of the rules of the microbial engagement in the gut microbiome: a step towards microbiome therapeutics, *Journal of Applied Microbiology*, 130 (5), 1425-144. <https://doi.org/10.1111/jam.14883>. Online ISSN:1365-2672
14. Kumar T, Pandey R and **Chauhan NS**, Hypoxia Inducible Factor-1 α : The Curator of Gut Homeostasis. *Frontiers in Cellular and Infection Microbiology*, 2020, 10, 227. doi: 10.3389/fcimb.2020.0022

15. Singh UP, Singh S, Kumar R, **Chauhan NS**, Kumar A, Effects of allelochemicals from leachates of larvae of *Leucinodes orbonalis* Guenee and leaves of Brinjal, Chilli and Tomato on the foraging behaviour potential of Trichogrammatids. *Allelopathy Journal.*, 2020, 50 (2), 195-212. DOI: [10.26651/ALLELO.J/2020-50-2-1284](https://doi.org/10.26651/ALLELO.J/2020-50-2-1284).
16. Ahmed V, Verma MK, Gupta S, Mandhan V and **Chauhan NS** (2018) Metagenomic Profiling of Soil Microbes to Mine Salt Stress Tolerance Genes. *Front. Microbiol.* 9:159. doi: 10.3389/fmicb.2018.00159
17. **Chauhan NS**, Pandey R, Mondal AK, Gupta S, Verma MK, Jain S, Ahmed V, Patil R, Agarwal D, Girase B, Shrivastava A, Mobeen F, Sharma V, Srivastava TP, Juvekar SK, Prasher B, Mukerji M and Dash D (2018) Western Indian Rural Gut Microbial Diversity in Extreme *Prakriti* Endo-Phenotypes Reveals Signature Microbes. *Front. Microbiol.* 9:118. doi: 10.3389/fmicb.2018.00118
18. Verma, M.K., Ahmed, V., Gupta, S., Kumah J., Pandey, R., Mandhan,V., **Chauhan, N.S.** (2018) Functional metagenomics identifies novel genes *ABCTPP*, *TMSRP1* and *TLSRP1* among human gut enterotypes. *Sci Rep* **8**, 1397 <https://doi.org/10.1038/s41598-018-19862-5>
19. Mondal AK, Kumar J, Pandey R, Gupta S, Kumar M, Bansal G, Mukerji M, Dash D and **Chauhan NS** (2017) Comparative Genomics of Host–Symbiont and Free-Living *Oceanobacillus* Species, *Genome Biology and Evolution*, 9, 1175–1182, <https://doi.org/10.1093/gbe/evx076>
20. Kumar, J., Kumar, M., Gupta, S., Ahmed, V., Bhambi, M., Pandey, R., **Chauhan, N.S.** (2016). An Improved Methodology to Overcome Key Issues Associated with the Methods of Human Fecal Metagenomic DNA Extraction. *Genomics Proteomics and Bioinformatics*, 14 (2016), 371-378. <https://doi.org/10.1016/j.gpb.2016.06.002>
21. Kumar, J., Verma, M.K., Kumar, T. Pandey R, Chauhan **NS**, (2018) S9A Serine Protease Engender Antigenic Gluten Catabolic Competence to the Human Gut Microbe. *Indian J Microbiol* **58**, 294–300 (2018). <https://doi.org/10.1007/s12088-018-0732-2>
22. S. Gupta, M. Kumar, J. Kumar, V. Ahmad, R. Pandey & **N. S. Chauhan** (2017) Systemic analysis of soil microbiome deciphers anthropogenic influence on soil ecology and ecosystem functioning. **International Journal of Environmental Science and Technology**. (2017) 14: 2229. <https://doi.org/10.1007/s13762-017-1301-7>.
23. Kumar, J., Kumar, M., Pandey, R. and **Chauhan, N.S.** (2017), Physiopathology and Management of Gluten-Induced Celiac Disease. *Journal of Food Science*, 82: 270-277. doi:[10.1111/1750-3841.13612](https://doi.org/10.1111/1750-3841.13612)

24. **Chauhan, N.S.**, Nain, S. & Sharma, R. Identification of Arsenic Resistance Genes from Marine Sediment Metagenome. *Indian J Microbiol* **57**, 299–306 (2017). <https://doi.org/10.1007/s12088-017-0658-0>
25. Monika, Manoj Kumar Verma, Vasim Ahmed and **Nar Singh Chauhan** (2017), Human Gut Microbiome: an Imperative Element for Human Survival. *Curr Trends Biomedical Eng & Biosci*, Volume 6 Issue 1 - July 2017; DOI: 10.19080/CTBEB.2017.06.555680
26. Yadav, M., Verma, M.K. & **Chauhan, N.S.** (2018) A review of metabolic potential of human gut microbiome in human nutrition *Archives in Microbiology*. 200(2):203-217. doi: 10.1007/s00203-017-1459-x. Epub 2017 Nov 29.
27. Kumar J, Kumar M and **Chauhan NS.** (2015) *Oceanobacillus sp* HM6, a novel glutenase positive microbe isolated from human gut, *Journal of Biotechnology and Biomaterial* 5(6) pp 309.
28. Kumar R, Wani SI, **Chauhan NS**, Sharma R, Sareen D (2011) Cloning and characterization of an epoxide hydrolase from *Cupriavidus metallidurans*-CH34, **Protein Expression and Purification** 79(1):49-59. doi: 10.1016/j.pep.2011.04. 007.
29. Gupta HK, Gupta RD, Singh A, **Chauhan NS**, Sharma R. (2011) Genome sequence of *Rheinheimera sp.* strain A13L, isolated from Pangong Lake, India, *Journal of Bacteriology* ;193(20):5873-4. doi: 10.1128/JB.05636-11. Epub 2011 Jul 8.
30. Singh A, **Chauhan NS**, Thulasiram HV, Taneja V, Sharma R (2010) Identification of two flavin monooxygenases from an effluent treatment plant sludge metagenomic library, **Bioresource Technology**, Volume 101, Issue 21, November 2010, Pages 8481-8484.
31. **Chauhan NS**, Ranjan R, Purohit HJ, Kalia VC, Sharma R (2009) Identification of genes conferring arsenic resistance to *Escherichia coli* from an effluent treatment plant sludge metagenomic library, **FEMS Microbiology Ecology** 67(1) 2009,130-9.
32. Sharma, S., Kumar,N., Makgwane, P.R., Chauhan, N.S., Kumari, K., Rani, M., Maken,S. (2022) TiO₂/SnO₂ nano-composite: New insights in synthetic, structural, optical and photocatalytic aspects, *Inorganica Chimica Acta*, 529:120640, ISSN 0020-1693. <https://doi.org/10.1016/j.ica.2021.120640>.
33. Sharma,S., Mittal, A., Chauhan,NS., Makgwane, PR., Kumari,K., Maken,S., Kumar,N.(2021) Developments in visible-light active TiO₂/SnX (X = S and Se) and their environmental photocatalytic applications – A mini-review. *Inorganic Chemistry Communications*, 133, 108874. <https://doi.org/10.1016/j.inoche.2021.108874>
34. Kumar, N., **Chauhan, N.S.** Nano-Biocatalysts: Potential Biotechnological Applications. *Indian J Microbiol* 61, 441–448 (2021). <https://doi.org/10.1007/s12088-021-00975-x>

35. Naveen Kumar, Anuj Mittal, Monika Yadav, Shankar Sharma, Tarun Kumar, Rahul Chakraborty, Shantanu Sengupta & **Nar Singh Chauhan**. Photocatalytic TiO₂/CdS/ZnS nanocomposite induces *Bacillus subtilis* cell death by disrupting its metabolism and membrane integrity. *Indian J Microbiol* 61, 487–496 (2021). <https://doi.org/10.1007/s12088-021-00973-z>
36. S Sharma, N Kumar, B Mari, **NS Chauhan**, A Mittal, S Maken, K Kumari. Solution combustion synthesized TiO₂/Bi₂O₃/CuO nano-composites and their photocatalytic activity using visible LEDs assisted photoreactor, *Inorganic Chemistry Communications* (2021), 125, 108418. <https://doi.org/10.1016/j.inoche.2020.108418>
37. Yadav, S., Mittal, A., Sharma, S., Kumari, K., **Chauhan, NS.**, Kumar, N. (2020) Low temperature synthesized ZnO/Al₂O₃ nano-composites for photocatalytic and antibacterial applications, *Semiconductor Science and Technology* 35(5):055008. Print ISSN: 0268-1242
38. Mittal, A., Sharma, S., Kumar, T., **Chauhan NS.**, Kumari K., Maken S., Kumar N., Surfactant-assisted hydrothermally synthesized novel TiO₂/SnS@Pd nano-composite: structural, morphological and photocatalytic activity. *J Mater Sci: Mater Electron* 31, 2010–2021 (2020). <https://doi.org/10.1007/s10854-019-02720-z>, ISSN 0957-4522
39. G Kumar, E Lathwal, B Saroha, S Kumar, S Kumar, **NS Chauhan**, T Kumar Synthesis and Biological Evaluation of Quinoline-Based Novel Aurones. *Chemistry Select* 5 (12), 3539-3543 (2020). Online ISSN:2365-6549
40. Mittal A, Sharma S, Kumari V, Yadav S, **Chauhan NS**, Kumar N. Highly efficient, visible active TiO₂/CdS/ZnS photocatalyst, study of activity in an ultra low energy consumption LED based photo reactor. *J Mater Sci: Mater Electron* 30, 17933–17946 (2019). <https://doi.org/10.1007/s10854-019-02147-6>
41. Mittal A, Kumar N, **Chauhan NS**. Curcumin Encapsulated PEGylated Nanoliposomes: A Potential Anti-Infective Therapeutic Agent. *Indian Journal of Microbiology*, 59: 336–343 (2019). <https://doi.org/10.1007/s12088-019-00811-3>
42. Kumar N, **Chauhan NS**, Mittal A, Sharma S. (2018) TiO₂ and its composites as promising biomaterials: a review. *Biometals* 31, 147–159 (2018). <https://doi.org/10.1007/s10534-018-0078-6>
43. Vasim A, Kumar J, Kumar M, Chauhan MB, Vij M, Ganguli M and **Chauhan NS** (2013). Synthesis, Characterization of Penicillin G Capped Silver Nanoconjugates To Combat β-Lactamase Resistance In Infectious Microorganism. *Journal of Biotechnology* 163: 419-424.

44. Vasim A, Kumar J, Kumar M, Chauhan MB, Dahiya P and **Chauhan NS** (2015). Functionalized iron nanoparticle-penicillin G conjugates: a novel strategy to combat the rapid emergence of β -lactamase resistance among infectious microorganism. *Journal of Experimental Nanoscience* 10(9): 718-728.
45. Vasim A, Kumar M, Kumar J, Chauhan MB and **Chauhan NS** (2014). Nanogold/Polyaniline/Penicillin G Nanoconjugates: A Novel Nanomedicine. *International Journal of Polymeric Materials* 63: 87-92.
46. Vasim A, Kumar J, Kumar M, Chauhan MB and **Chauhan NS** (2014). Silver nanoparticles encapsulated polyacrylamide nanospheres: an efficient DNA binding nanomatrix. *International Journal of Polymeric Materials* 63: 1-5.
47. C.S. Pundir, Manu Bhambi and **Nar Singh Chauhan** (2009) Chemical activation of egg shell membrane for covalent immobilization of enzymes and its evaluation as inert support in urinary oxalate determination, *Talanta* 77 1688-1693.
48. C.S. Pundir, **N S. Chauhan**, M. Bhambi (2008) Activation of polyvinyl chloride sheet surface for covalent immobilization of oxalate oxidase and its evaluation as inert support in urinary oxalate determination. *Analytical Biochemistry* 374, 272-277.

(B) Research Projects

1. Correlation of Microbial Enterotypes and Prakrti in diverse population using Metagenomic approach. Project cost: (19.15372 lakhs), funded by CSIR Ayurgenomics Unit: TRISUTRA (2012-2016). Status: Completed.
2. Synthesis, Characterization of Nanocurcumin and its medicinal applications. Project cost: (22.79631 lakhs), funded by Department of Biotechnology, Govt of India, (2012-2015). Status: Completed.
3. Metagenomic analysis of the Human Gut Microbiome and elucidation of genes involved in the catabolism of wheat dietary proteins. Project cost: (9.48288 lakhs), funded by University Grants Commission New Delhi (2012- 2015). Status: Completed.
4. Functional Metagenomics to Mine the Human Gut Microbiome for Dietary Fiber, Gluten, and Polyphenol Catabolic Enzymes. Project cost: (43.19851lakhs), funded by CSIR, New Delhi (2012-2015). Status: Completed
5. Microbiome of the human lung in COPD patients attending Vallabh Bhai Patel Chest Institute, Delhi. Project cost: (27.4 lakhs), funded by the Department of Biotechnology, Govt. of India. (2015-2017). Status: Completed.

6. Bioactive molecules from Microbes and plant sources, Project cost: (Total Sanctioned grant to Scheme: 230.96572 lakhs, project sanction: 6.8 lac), funded by Department of Biotechnology, Govt. of India (2013-2018). Status: Completed
7. Water Security theme under Delhi Research Implementation and Innovation (DRIIV) Sanctioning agency: Principal Scientific Advisor, Govt of India, Duration: 3 years (2020-2023); Total Grant Sanctioned: Rs. 11.41/- lakhs
8. Next Generation Genome sequencing Laboratory, Sanctioning agency: Rockefeller foundation USA & PATH, Total Grant:~1.2 Cr. Duration 3 months (2021)
9. Genomic Sequencing of SARS CoV2, Sanctioning agency: Health Department, Haryana Government, Total Grant:~1.3 Cr. Duration: 2021-2022
10. Microlab-based SARS Cov2 genome surveillance, Sanctioning agency: CSIR-IGIB and FIND, Total Grant:86Lakhs, Duration: (Jan- December 2022).

(C) Genome/Metagenome Sequencing Projects

1. *Oceanobacillus caeni* strain:HM6 Genome sequencing (2015) National Centre for Biotechnological Information (NCBI); Genome Accession ID: PRJNA-290433.
2. Soil Metagenome Sequencing (2015) National Centre for Biotechnological Information (NCBI) Bio- Project Accession ID: PRJNA-267034
3. Human Gut Metagenome sequencing (2015) MG RAST server database, Submission ID: 4638260.3
4. Phylogenetic analysis of garden soil microbiome (2015) National Centre for Biotechnological Information (NCBI) 2015, Accession ID KP153551-KP159281.
5. Microbial community analysis of *Brassica rapa* rhizosphere microbiome in saline conditions (2015) National Centre for Biotechnological Information (NCBI) 2015, Accession ID KP153551-KP159281.
6. Lung Microbiome analysis of the patients suffering from COPD, ECOPD, Sarcoidosis, and ILD Patients (2019) National Centre for Biotechnological Information (NCBI) SRA submission ID SUB4935309 and Bioproject accession ID PRJNA512576.
7. Gut Microbiome analysis of the patients suffering from Celiac Diseases (2019) National Centre for Biotechnological Informations (NCBI)

(D) Patents

One Research patents were published

1. IMPROVED IMMOBILIZED PROTEINS COMPOSITION AND ITS PROCESS THEREOF" Application No. 2394/DEL/2004, Publication date (U/S 11A): 08/09/2006 .
- 2.

(E) Awards

1. Gold Medal with Certificate of Appreciation, Roche Diagnostics & Applied Sciences, 2009 at Pattaya, Thailand
2. First Prize in Poster Presentation in 3rd BRSI Convention & International Conference, 2006 at Vallabh Vidya Nagar, Gujrat
3. RS Rana Memorial Award in Annual meeting of Microbiologists of India (AMI) 2005 at Osmania University, Hyderabad
4. University Gold Medal and Merit Certificate in Post Graduation (Biochemistry) 2004 at M. D. University Rohtak
5. Merit Certificate in Academics in B.Sc. III (Medical) for Session 2001-2002
6. Academic Prize Certificate in B.Sc. I (Medical) for session 1999-2000
7. First Prize in Inter College Quiz Contest organized by Botanical Association on 28th September 2001

(F) Fellowships

1. UGC Senior Research Fellowship, 2006-2008
2. CSIR/UGC Junior Research Fellowship 2004-2006
3. Haryana Government Silver Jubilee Fellowship (2002-2004)

(G) Book & Conference Chapters

1. R. Sharma, R. Ranjan, R. Kishor, **N.S. Chauhan** and A. Grover (2005) Exploring and exploiting the unculturable microbial discovery using environmental genomics in a book entitled "Microbial diversity: Current perspective and potential application". Published by I.K. International Pvt. Ltd
2. **Chauhan NS (2011)** Metagenomics: A Culture-Independent Insight of Microbial Ecosystem, Biolixir, Volume 1: 32-36.
3. **Chauhan NS (2014)** Metagenomics, Next-generation sequencing, and Bioinformatics: A hot Recipe for quicker insights of the microbial world, in National Workshop in Genomics & Proteomics organized by the Department of Biochemistry, MDU in 3-5th March 2014.
4. **Chauhan NS (2014)** Experimental protocols for Genomic Studies in National Workshop in Genomics & Proteomics organized by Department of Biochemistry, MDU on 3-5th March 2014.
5. Kumar M, Kumar J, and **Chauhan NS (2015)**. Metagenomics: A Systemic Approach To Explore The Microbial World. In: Microbial Factories: Biodiversity, Biopolymers, Bioactive molecules. V. C. Kalia Eds. Springer-Heidelberg, pp 281-298.

6. Kundu P, Gill R, Ahlawat S, Anjum NA, Sharma KK, Ansari AA, Hasanuzzaman M, Ramakrishna A, **Chauhan N**, Tuteja N, Gill SS (2018) Targeting the Redox Regulatory Mechanisms for Abiotic Stress Tolerance in Crops In: Biochemical, Physiological and Molecular Avenues for Combating Abiotic Stress Tolerance in Plants, Wani SH (Editor), Elsevier, Academic Press, USA, ISBN: 9780128130667.
7. **NS Chauhan** (2019), Metagenome analysis and interpretation in The Data Processing Handbook for Complex Biological Data Sources Gauri Misra (Editor) Elsevier, Academic Press, USA, Elsevier, Academic Press, USA, ISBN: 9780128165485, pp. 139
8. Khushboo Goyal, Tarun Kumar, Pinki Sharma, Monika Rao, Vasim Ahmed, and **Nar Singh Chauhan** (2019) Crop Improvement Through Microbial Biotechnology: A Cross-Talk in Salt Stress, Microbes, and Plant Interactions: Mechanisms and Molecular Approaches, Mohd Sayeed Akhtar (Editor), Springer Nature, ISBN: 9789811388040, pp. 139.
9. **Nar Singh Chauhan**, Editor, "Role of Microbes in Human Health and Diseases,(2019) Intech Open, London, UK, ISBN 9781838802332
10. **Nar Singh Chauhan**, 2019, Introductory chapter, Human and Microbes in health and Diseases, in Role of Microbes in Human Health and Diseases" Chauhan NS (Editor) Intech Open, London, UK, ISBN 9781838802332
11. Sharma P., Monika, Goyal K., Kumar T., **Chauhan N.S.** (2020) Inimical Effects of Arsenic on the Plant Physiology and Possible Biotechnological Solutions to Mitigate Arsenic-Induced Toxicity. In: Naeem M., Ansari A., Gill S. (eds) Contaminants in Agriculture. Springer, Cham. ISBN-9783030415549, https://doi.org/10.1007/978-3-030-41552-5_20
12. **Chauhan NS.**, Yadav M., Tarun Kumar T., Sharma P., Goyal K., (2020) RNA beyond humans in Pandey R (Editor) RNA-Based Regulation in Human Health and Disease, Elsevier, Academic Press, USA, ISBN: 9780128171936
13. Kumar T., **Chauhan NS.** (2022), Microbiome therapeutics: a path toward sustainable healthcare, Reference Module in Food Science, Elsevier, <https://doi.org/10.1016/B978-0-12-819265-8.00010-3>. & Chauhan NS (Editor) Microbiome, therapeutics application and epigenetics, Elsevier, Academic Press, USA, ISBN 9780081005965,
14. Yadav M., **Chauhan NS.**, Prasher B., Mukerji M. (2022) Dissecting Human Microbiome for Personalized Therapy Reference Module in Food Science, Elsevier, & Chauhan NS (Editor) Microbiome, therapeutics application and epigenetics, Elsevier, Academic Press, USA, ISBN 9780081005965,

- 15. Chauhan NS** (2022) Microbiome, therapeutics application and epigenetics: Conclusion and Future Perspective, Reference Module in Food Science, Elsevier, <https://doi.org/10.1016/B978-0-12-819265-8.00025-5> & Chauhan NS (Editor) Microbiome, therapeutics application and epigenetics, Elsevier, Academic Press, USA, ISBN 9780081005965,
- 16. Monika Yadav, Pinki Sharma, Nar Singh Chauhan** (2021) Metal oxide based heterostructures for Antimicrobial Activity in Metal oxide based heterostructures: Fabrication and their applications, Editor Verma N, Elsevier, Academic Press, USA,
- 17. Chauhan NS** (2021) Lung Microbiome in Human Health and Diseases in Reference Module in Food Science, Elsevier, 2021, ISBN 9780081005965, <https://doi.org/10.1016/B978-0-12-819265-8.00077-2>
- 18. Monika Yadav, Nar Singh Chauhan** (2022) Spatial distribution of arsenic species in soil ecosystem and their effect on plant physiology, in HAZARDOUS AND TRACE MATERIALS IN SOIL AND PLANTS: SOURCES, EFFECTS AND MANAGEMENT" Elsevier, Inc., USA.

(H) Conference and workshops Organized (As Organizing Secretary)

- I. National workshop on "**Genomics and Proteomics**" 3-5th March 2014 at Department of Biochemistry, MDU Rohtak, Haryana
- II. one day national Seminar on "**Molecular Techniques: The face of Modern Science**" held on 24th October 2011, at Department of Biochemistry, MDU Rohtak, Haryana
- III. National workshop on "**Real-Time PCR technology**" 25th-26th November 2011, at Department of Biochemistry, MDU Rohtak, Haryana
- IV. National Conference on **Emerging Trends in Biochemistry** (ETIB 2017), 15th -16th September 2017, at Department of Biochemistry, MDU Rohtak, Haryana

(I) Invited Lectures

1. "**Overview of Genome sequencing**" at Department of Botany, MDU Rohtak on 20th October 2010.
2. "**Genome Sequencing: Applications & Future Perspective**" at the Department of Botany, MDU Rohtak on 20th October 2010.
3. "**Functional Metagenomics: Experimental Strategies**" in Human Microbiome Jamboree organized by CSIR - Institute of Genomics & Integrative Biology, Mall Road Delhi on 28th July 2012.

4. " **Importance of Next Generation Sequencing in Biology & Medicine**" in National Symposium at PGIMER Chandigarh on 17th December 2012.
5. " **Sample preparation for Human Microbiome Research**" in National Workshop on Training in sample processing for Metagenomic analysis using stool samples organized by CSIR Ayurgenomics unit: TRISUTRA, CSIR IGIB, New Delhi on 23rd September 2013.
6. " **Real-Time PCR-Basics and Applications**" in National workshop on Real-Time PCR: Introduction and applications at Centre for Medial Biotechnology MDU on 18th September 2015.
7. " **Experimental Strategies for Human Microbiome analysis**" in National workshop on Computational analysis of Genomes, Transcriptome, and metagenome at CSIR IGIB, New Delhi on 3rd March 2016.
8. " **Dissecting Human Microbiome for Personalized Therapy**" in Microbiome Matters: Data, Diet, and Treatment" workshop from September 29 to October 1, 2019, at the Shillim Hilton, Maharashtra
9. " **Microbiome and its association with Prakriti**" Centre of Excellence (CoE) for Applied Development of Ayurveda Prakriti and Genomics during CME Training the trainers workshop on November 25th, 2019 at CSIR- IGIB, Mathura Road New Delhi
10. **Drug Abuse and Tuberculosis eradication from society** during a National Youth Day celebration 13th Jan. 2020 at Government College, Mahendergarh, Haryana.
11. " **Good Research practices for an effective outcome**" on 24th Jan 2020 during a Two-day induction program organized by the Chaudhry Ranbir Singh Institute of Social & Economic Change, MDU Rohtak.
12. " **Human Gut Microbiome profiling with culture-independent approaches**" on 5th Feb 2020 during National Seminar on Metagenomics and Genome Editing organized by the Department of Microbiology at Ram Lal Anand College, New Delhi 110021
13. **Research Metrics** on 7th Feb 2020 during one week workshop on research methodology in the Social Sciences: An Introductory Workshop, organized by the Chaudhry Ranbir Singh Institute of Social & Economic Change, MDU Rohtak.
14. **Dissecting Human Microbiome for Personalized Therapy** on 10th Feb 2020 during 4th VV Modi Memorial, National Seminar on Genomics and Metagenomics of Microbial Ecosystems organized by the Department of Microbiology at Maharaja Sayajirao University of Baroda, Vadodara 390002, Gujrat

15. **Research Metrics, Indicators of Research quality and performance** on 15th Jan 2021 during a 21-day National level Refresher course organized by FDC, MD University Rohtak

16. **Research In Higher Education** on 2nd March 2021 during one month national level induction programme (2nd March -31st March 2021) organized by organized by FDC, MD University Rohtak

17. **Governance and Accreditation in Higher Education System** on 11th March 2021 during one month national level induction programme (2nd March -31st March 2021) organized by organized by FDC, MD University Rohtak

(J) Paper Presentations:

(A) International Conference /Symposia

- I. " **Microbial diversity of white-hot spring mat: A Culture-independent analysis** " in International Conference on Microbial Diversity 2005 organized by the Department of Microbiology, University of Delhi South Campus Delhi 16th to 20th April 2005.
- II. " **Metagenomic Elucidation of Arsenic Resistance mechanisms in unculturable bacteria**" in 3rd BRSI Convention & International Conference on Exploring Horizons in Biotechnology, A Global Avenue, BRD School of Bioscience at SP University from 2nd to 4th November 2006.
- III. "**454 GS FLX Next-generation sequencing Technology**" in International Symposium on the Role of Genomics in Clinical Practice at the SGPGIMS, Lucknow during 6th to 8th March 2010.
- IV. "**Gene Mining for Human Gut Microbiome**" in 2013 Next Gen Genomics and Bioinformatics (NGBT) International Conference at CSIR -IGIB, New Delhi from 14-16th November 2013.
- V. "**Novel Halotolerance Genes from Human gut Microbiome**" in International Symposium on Frontier Discoveries and innovations in Microbiology and its Interdisciplinary Relevance (FDMIR-2013) organized by the Department of Microbiology, at MDU Rohtak from 17th to 20th November 2013.
- VI. "**Anthropogenic influence on Ecosystem functioning and native Soil Microbiome**" in International Conference on Emerging Areas of Environmental Science & Engineering (EAESE-2017) at GJU S&T, Hisar from 16th to 18th Feb 2016.

- VII. **"Metagenomic Profiling of Human Gut Microbiome Unveils Antigenic Gluten Catabolic Machinery"** in the International EMBO event Big Data in Biomedicine Organized by CSIR-IGIB & EMBO J, Germany during 25th to 28th Feb 201

(B) National Conference / Symposia/ Workshops

- I. **"Characterization of oxalate oxides purified from leaves of grain sorghum"** in National Seminar on Role of Biochemistry in Modern-day agriculture held at CCS HAU Hisar on 24th Jan 2004.
- II. **"Immobilization of Lipase onto untreated & acetylated muslin cloth affixed on the plastic strip"** in the 73rd Annual Meeting, Society of Biological Chemists (India) at GB Pant University, Pant Nagar during 21-24 November 2004.
- III. **"Novel genes for arsenic tolerance using a Metagenomic approach"** in the 46th Annual Conference, Micro Biotech 2005, Department of Microbiology, Osmania University, Hyderabad during 8th-10th December 2006.
- IV. **"Metagenomic Survey Of Hot Spring Microbial Mat"** in 48th Annual Conference AMI at IIT Madras, during 18th-21st December 2007.
- V. **"Human Gut Metagenomics-A Culture Independent Insights of Gut Microbial Communities"** in National Conference on Biodiversity: Challenges and opportunities, at Department of Botany, MDU Rohtak, from 18th-19th Feb 2011.
- VI. **"Microbial Genomics: a potential tool for crop improvement"** in National Workshop on Genomics in Crop Improvement Organized by Centre for biotechnology, MDU Rohtak on 27th-28th Feb 2014.
- VII. **Comparative analysis of the Microbiome of garden soil sample and incinerator plant soil sample"** in National Conference cum Workshop on Molecular Modeling and Drug Design (MMDD 2015) at Bioinformatics Infrastructure facility, MDU, Rohtak during 20th -21st March 2015.
- VIII. **"Human Gut Microbiome: Friend or Foe?"** in UGC Sponsored Refresher Course in Environmental Studies, ASC, Jamia Millia Islamia, New Delhi during 9th -30th May 2013.

(K) Chaired Sessions

- I. National Workshop" Training in sample processing for Metagenomic analysis using stool samples organized by CSIR Ayurgenomics unit: TRISUTRA, CSIR IGIB, New Delhi on 24th September 2013.
- II. National Conference on "Current scenario in Forensic Investigative Techniques, organized by Department of Genetics, MDU Rohtak on 7th September 2017.

All details provided in my resume are up to date and correct.

Dr Nar Singh Chauhan

Date:30 th Sept. 2022

Place: Rohtak