CURRICULUM VITAE

ANKITA KUMARI

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Personal Profile	
Full Name	Ankita Kumari
Date of Birth	January 14, 1993
Nationality	Indian
Marital Status	Unmarried
Languages Known	Hindi and English

Education

Doctor of Philosophy (Ph.D.), Animal Biochemistry 2015-2021
National Dairy Research Institute (NDRI), Karnal, India
Major Advisor: Dr. Rajeev Kapila

Master of Science (M.Sc.), Biochemistry 2012-2014
Punjab Agricultural University, Ludhiana, India
Major Advisor: Dr. Neena Chawla

Bachelor of Science (B.Sc.), Biotechnology (Hons.) 2009-2012
Himachal Pradesh University, Shimla, India

Research Experience

Research Associate, Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) **2021-2022**
Title of Project: Chemical biosynthesis of post-transcriptionally modified amyloid-beta peptides and their implications to Alzheimer's disease.
Brief description: In this project, the mechanism of action of chemically synthesized compounds that have therapeutic potential against Alzheimer's disease was studied.

Research Scholar, National Dairy Research Institute (NDRI), Karnal, India **2015-2021**
Research topic: Deciphering the role of probiotic Lactobacilli on DNA and histone modifications in intestinal epithelial cell model
Brief description: In this project, the mechanism of action of two probiotic lactobacilli strains (L. fermentum and L. rhamnosus) in intestinal cells (Caco-2) was studied. It was found that probiotic bacteria contribute to maintaining intestinal homeostasis via modifying H3 histone acetylation opposite to pathogens. Also, it was found that the two probiotics have different mechanisms of action. So, these probiotics can be employed in therapeutic areas due to their unique mechanism of action.

Research Scholar, Punjab Agricultural University, Ludhiana, India **2012-2014**
Research topic: A study on anthocyanins and other biochemical constituents in different plant parts of brinjal (*Solanum melongena* L.)
Brief description: In this project, the biochemical profile of brinjal especially anthocyanins and phenols known for their anti-oxidant properties was assessed. Also, the activity of enzymes involved in anthocyanin biosynthesis pathways was studied to know the period of high anthocyanin production. It was found that brinjal is a rich source of anthocyanins and phenolic compounds and is a cheap source of anthocyanins rather than cranberries and other sources.

Skills

Cell culture and *in vivo* models: Experience in handling culture of cancer cell lines and Swiss-albino mice model.

Bioinformatics software: Basic knowledge of bioinformatics. Worked on (1) Synthesis of primers for RT-PCR, ChIP and methylation-specific studies, cloning and expression studies and for amplification of full-length gene (2) Prediction of binding sites (TFBS) of Transcription factor binding sites (3) Prediction of phylogenetic trees.

Microbiology techniques: Experience in handling probiotic as well as pathogenic bacteria. Various techniques such as pouring, plating, serial dilution, cell count, streaking and morphological characterization of bacterial cells are handled.

Molecular biology techniques: Experience with different techniques for (1) total RNA and DNA from bacterial and animal cells, (2) cDNA synthesis, (3) PCR and quantitative real-time PCR, (4) Cloning, (5) Protein isolation, expression and purification with Ni-NTA column, (6) ChIP assay, (7) SDS-PAGE (8) Agarose gel electrophoresis (9) MTT assay (10) Dot blot assay.

Cloning techniques: Experience in (1) Preparation of competent cells, (2) Revival of host bacteria (Dh5-Alpha competent *E. coli*), (3) Inoculation of culture, (4) Plasmid isolation, (5) Ligation of desire insert, (6) Plasmid transformation to the host and conformation of insert using PCR.

Biochemical techniques: Experience in (1) Estimation of various biochemicals such as sugars, protein, phenols, anthocyanin from plant sources (2) Estimation of protein and global acetylation of histone proteins (H3 and H4) in Caco-2 cells (3) Assessment of global DNA methylation in Caco-2 cell line (4) Enzymatic assays in plants as well as animal origin (5) AAS spectrophotometric analysis (6) HPLC (7) Circular Dichroism spectroscopy (8) Protein aggregation assays.

Awards/Achievements

2022	Poster selection in the **top 20** for **Young Investigator Poster Presentation Award** in the **12th Indian Probiotic symposium** organized by the Gut Microbiota and Probiotic Science Foundation (India) on 5th and 6th March 2022.
2021	Third prize for **Young Investigator Poster Presentation Award** in the **11th Indian Probiotic symposium** organized by the Gut Microbiota and Probiotic Science Foundation (India) on 13th and 14th March 2021. SRM University, Sonipat.
2020	**Winner** of **ANVESHAN-2020** (AIU North Zone Student Research Convention) for the project "Deciphering the role of probiotic lactobacilli on DNA and histone modifications in the intestinal epithelial cell model" under the category of Basic & Applied Sciences. Amity University Haryana (AUH), Manesar, Gurugram.
2017	Qualified **CSIR UGC NET** conducted by Council of Scientific and Industrial Research (CSIR), India for the position of Assistant Professor in life sciences.
2016	Awarded **Junior Research Fellowship for Ph.D.** by Indian Council of Medical Research (ICMR), India.
2016	Qualified **Graduate Aptitude Test in Engineering (GATE)** conducted by the Indian Institute of Science in Life Sciences.
2015	Qualified **Agricultural Research Service National Eligibility Test (ARS-NET)** was conducted by the Indian Council of Agricultural Research (ICAR), India.

2015	Qualified **UGC NET** was conducted by the National Educational Testing Bureau for the position of Assistant Professor in Environmental Sciences.
2010	**Second** Prize winner at **state level quiz competition** conducted by Shoolini Institute Life Sciences and Business Management on World Food Day.

Publications

1. Bhawal S, **Kumari A**, Kapila S and Kapila R (2022) Biofunctional Attributes of Surface Layer Protein and Cell-Bound Exopolysaccharide from Probiotic *Limosilactobacillus fermentum* (MTCC 5898). *Probiotics and Antimicrobial Proteins.* DOI: 10.1007/s12602-021-09891-4.
2. **Kumari A**, Bhawal S, Kapila S, Yadav H and Kapila R (2022) Health-promoting role of dietary bioactive compounds through epigenetic modulations: a novel prophylactic and therapeutic approach. *Critical Reviews in Food Science and Nutrition*, *62*(3), 619-639.
3. Bhat MI, **Kumari A**, Kapila S and Kapila R (2022) Gut Microbiome Composition as the Key Factor for Immunomodulation in the Host. In: Sayyed R.Z., Khan M. (eds.) *Microbiome-Gut-Brain Axis*. Springer, Singapore. DOI:10.1007/978-981-16-1626-6_7
4. Bhawal S, **Kumari A**, Kapila S and Kapila R (2021) Physiochemical characterization of novel cell-bound exopolysaccharide from probiotic *Limosilactobacillus fermentum* MTCC 5898 and its relation to antioxidative activities. *Journal of Agricultural and Food Chemistry 69*(35), pp.10338-10349.
5. Rana S, Bhawal S, **Kumari A**, Kapila S and Kapila R (2020) pH-dependent inhibition of AHL-mediated quorum sensing by cell-free supernatant of lactic acid bacteria in *Pseudomonas aeruginosa* PAO1. *Microbial Pathogenesis* p.104105.
6. Bhat MI, **Kumari A**, Kapila S, and Kapila R (2019) Probiotic lactobacilli mediated changes in global epigenetic signatures of human intestinal epithelial cells during the *Escherichia coli* challenge. *Annals of Microbiology* 69 (6):603-612. DOI: 10.1007/s13213-019-01451-0.
7. **Kumari A**, Chawla N and Dhatt AS (2018) PHENYLALANINE AND TYROSINE AMMONIA LYASE ACTIVITIES DURING GROWTH OF BRINJAL (*Solanum melongena* L.). *Agricultural Research Journal* 55 (4): 761-764. DOI: *10.5958/2395146X.2018.00140.0.*
8. Chawla N, **Kumari A**, Dhatt AS and Chawla R (2017) Anthocyanidin Synthase in Leaves Fruits of Brinjal (Solanum melongena L.). *Indian Journal of Agricultural Biochemistry* 30(1):105-106. DOI: 10.5958/0974-4479.2017.00017.X.

Oral Presentations

1. Presented on "Probiotic *Lactobacillus fermentum* mediates its immunoregulatory function by targeting epigenomic modulations" in the 11th Indian Probiotic symposium organized by the Gut Microbiota and Probiotic Science Foundation (India) on 13th and 14th March 2021. SRM University, Sonipat. (Online)
2. Presented on "Epigenetic regulation of immune genes by probiotic lactobacilli in intestinal epithelial cells" in *5th Biennial conference of PAi and International symposium on probiotics and immunity way forward to microbial therapy* (2020) organized by NDRI, Karnal, Haryana, India. (Online)
3. Presented on "Deciphering the role of probiotic lactobacilli on DNA and histone modifications in the intestinal epithelial cell model" in *Online Anveshan: National Student Research Convention 2020* organized by Rajiv Gandhi Pradyogic Viswa Vidyalaya, Bhopal on December 15-16, 2020.

Abstracts and Poster Presentations

1. **Ankita Kumari**, Shalaka Bhawal, Suman Kapila and Rajeev Kapila. "Probiotic *Lactobacillus fermentum* mediates its immunoregulatory function by targeting epigenomic modulations" in the 11th Indian Probiotic symposium organized by the Gut Microbiota and Probiotic Science Foundation (India) on 13th and 14th March 2021. SRM University, Sonipat. (Online).
2. **Ankita Kumari**, Shalaka Bhawal, Suman Kapila and Rajeev Kapila. "Strain-specific effects of probiotic lactobacilli on epigenetic modifiers in intestinal epithelial cells" in the Conference Proceedings of the First *International Conference on Innovations in Biotechnology and Life Sciences (ICIBLS 2020)* organized by the Department of Biotechnology, Delhi Technical University, India from December 18-20, 2020.
3. Shalaka Bhawal, **Ankita Kumari**, Suman Kapila and Rajeev Kapila. "Biofunctional attributes of surface layer protein from *Lactobacillus fermentum* MTCC 5898" in the Conference Proceedings of the First *International Conference on Innovations in Biotechnology and Life Sciences (ICIBLS 2020)* organized by the Department of Biotechnology, Delhi Technical University, India from December 18-20, 2020.
4. **Ankita Kumari**, Shalaka Bhawal, Suman Kapila and Rajeev Kapila. "Epigenetic regulation of immune genes by probiotic lactobacilli in intestinal epithelial cells" presented in the *5th Biennial conference of PAi and International symposium on probiotics and immunity way forward to microbial therapy* (2020). NDRI, Karnal, Haryana, India.
5. Mrinal Samtiya, **Ankita Kumari**, Suman Kapila and Rajeev Kapila. "Safety evaluation of in potential probiotic *Lactobacillus fermentum* (MTCC: 5898) through inflammatory and immune markers and gut-barrier integrity" presented in *5th Biennial conference of PAi and International symposium on probiotics and immunity way forward to microbial therapy* (2020). NDRI, Karnal, Haryana, India.
6. Shalaka Bhawal, **Ankita Kumari**, Suman Kapila and Rajeev Kapila. "Radical scavenging and immunomodulatory potential of surface proteins from *Lactobacillus fermentum* MTCC 5898" presented in *5th Biennial conference of PAi and International symposium on probiotics and immunity way forward to microbial therapy* (2020). NDRI, Karnal, Haryana, India.
7. **Ankita Kumari**, Shalaka Bhawal, Suman Kapila and Rajeev Kapila. "Temporal changes in DNA and histone modifiers induced by probiotic lactobacilli and *E. coli* in intestinal epithelial cell line" presented in *88th Annual Meeting of the Society of Biological Chemists, India (SBCI-2019) and Conference on Advances at the Interface of Biology & Chemistry* (2019). BARC, Mumbai, India.
8. Shalaka Bhawal, **Ankita Kumari**, Suman Kapila and Rajeev Kapila. "Surface Layer Protein: Major contributor in adhesion of *L. fermentum* MTCC 5898 to mucin" presented in *88th Annual Meeting of the Society of Biological Chemists, India (SBCI-2019) and Conference on Advances at the Interface of Biology & Chemistry* (2019). BARC, Mumbai, India.
9. **Ankita Kumari,** Neena Chawla and Ajmer Singh Dhatt. "Activities of phenylalanine and tyrosine ammonia-lyase in leaves and fruits of brinjal (*Solanum melongena* L.) at different stages of growth" presented in *86th Annual meeting of Society of Biological Chemists, India, and Conference on Emerging Discoveries in Health and Agricultural Sciences* (2017). JNU, Delhi, India.
10. **Ankita Kumari,** Neena Chawla and Ajmer Singh Dhatt. "Activity of anthocyanidin synthase (Ans) in leaves and fruits of eggplant (*Solanum melongena* L.)" presented in *National Symposium on Crop Improvement for Inclusive Sustainable Development,* (2014). Ludhiana, India.

Workshops and Seminars

2021	15 Days of virtual training on **digital modules of Genome Informatics**-Second edition organized by Decode Life from December 6 to December 20, 2021.
2021	15 Days of virtual training on **applications of *in silico* tools-Microbiology** organized by Biosristhi from September 20 to October 7, 2021.
2021	International webinar on "**Diet-Microbe Interactions and Human Health**" organized by National Dairy Research Institute, Karnal under the Institutional Development Plan (IDP), National Agricultural Higher Education Project (NAHEAP) Project on August 21 & 28, 2021.
2020	Online workshop on "**Molecular docking & Biomolecular interactions**" conducted by Center for BIOINFORMATICS, COMPUTATIONAL AND SYSTEM BIOLOGY, Pathfinder Research and Training Foundation on July 6-10, 2020.
2020	Webinar on "**IMMUNOTHERAPY APPROACHES IN CANCER DRUG DISCOVERY**" organized by Mizoram University, Aizwal, India on August 5, 2020.
2020	Webinar on "**MICROBIOME - PERCEPTIONS AND PERSPECTIVES**" organized by Biotecnika Info Labs Pvt. Ltd. India on June 27, 2020.
2020	National Webinar series on "**Research Methodology**" organized by Loyola College (Autonomous), Chennai, Tamil Nadu, India on 12th & 13th June 2020.
2019	Workshop on "**Mammalian Genome Editing by CRISPER Technique**" conducted by National Dairy Research Institute, Karnal under the Institutional Development Plan (IDP), National Agricultural Higher Education Project (NAHEAP) Project.

References

1. Dr. Rajeev Kapila, Principal Research Scientist, Animal Biochemistry Division, NDRI, Karnal, India - 132001.
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2. Dr. Suman Kapila, Principal Research Scientist, Animal Biochemistry Division, NDRI, Karnal, India - 132001.
   Email: skapila69@gmail.com
   Contact: +918295008019
3. Dr. Neena Chawla, Principal Biochemist, Department of Vegetable Science, Punjab Agricultural University, Ludhiana, India-141004
   Email: chawlaneena@pau.edu
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Declaration

I hereby declare that the above information given by me is correct to the best of my knowledge and belief.

ANKITA KUMARI

Place: Nurpur, Himachal Pradesh
Date: April 2022