# CurriculumVitae

**Dr. Bhawana Kharayat**
Research Associate
Microbiology Department, Patanjali Research Institute, Haridwar
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**Mobile no:** +91-7409287560

## Work Experience

Research Associate (RA) Department of Microbiology, Drug Discovery and Development Division Patanjali Research Institute, Haridwar, Uttarakhand, India.
**Duration:** 12th April 2021 to Present

**Job responsibilities:**

**Quality control**: Microbial Limit Test as per API, IP and USP 61,62 guidelines; proficient in testing more than 500 type of herbal samples.

**Assistant supervisor for NABL Accreditation process**: Involved in testing and calibration activities to meet the requirements of NABL Certification as per **ISO/IEC 17025:2005** guidelines like NABL Documentation (SOP's), scope, proficiency testing and cross-functional training.

**Proficient in HACCP, GMP, GLP, Traceability**.

**Microbial Environmental monitoring (EM)** for Drug Discovery and Development Division.

**Research:**

- To check the efficacy of herbal formulation on pathogenic microorganism.
- Antibiotic sensitivity test, antibacterial test, antifungal assay, biochemical tests for microbes etc.
- Anti-biofilm activity of herbal extracts: biofilm production and quantification.
- Evaluation of anti-microbial activity of herbal compounds, viz., Minimum Inhibitory Concentration (MIC), Minimum Bactericidal Concentration (MBC) as

per CLSI.

- Synergetic Development between two different drugs by using Checkerboard assay
- Development of Microbial Resistance strains
- Evaluation of antimicrobial action followed by mechanism of action viz., time-kill assay, nucleotide efflux, K+ leakage and growth kinetics study.
- **Molecular biology**: Isolation of plasmid & genomic DNA, PCR, gel electrophoresis.
- **Cell culture**: Culturing and maintenance of different cell lines A549, A431, BHK21, HaCaT, MDCK, HEK-293.
- Use of basic lab safety equipment and instructions, in accordance with Biosafety Regulation,1990 **(BSL-II Lab).**
- **Teaching Scholar** at Department of Bioscience and Biotechnology, Banasthali Vidyapith, Newai 304022, Rajasthan, India. Classes Teaching: B.Tech and B.Sc

**Duration:**

1st July 2018 to 30 December 2018.
1st July 2019 to 30 December 2019.

## Education

- **Doctor of Philosophy in Applied Microbiology and Biotechnology (2017-2021)**

  Department of Biosciences and Biotechnology, Banasthali Vidyapith Banasthali, India

  Topic: Microbial Production and Biochemical Characterization of L-methioninase

  **Supervisor**: **Dr. Priyanka Singh**, Associate Professor, Department of Bioscience andBiotechnology, Banasthali Vidyapith, Newai, Rajasthan, India.

- **Master of Science in Applied Microbiology and Biotechnology (2015-17)**
  Department of Biosciences and Biotechnology, Banasthali Vidyapith Banasthali, India

- **Bachelor of Bioscience (2012-15)**

  Sardar Bhagwan Singh Post Graduate Institute of Biomedical Sciences and Research,

Dehradun, India

## Research Articles

- Balkrishna, A., Rastogi, S., **Kharayat, B**., Tomer, M., Varshney, Y., Singh, K., Kumari, P., Dev, R., Srivastava, J., Haldar, S. and Varshney, A., 2022. Anu taila, an herbal nasal-drop, suppresses *Mucormycosis* by regulating host TNF-α response and fungal ergosterol biosynthesis. *Journal of applied microbiology*. *132*(4), pp.3355-3374.

- **Kharayat, B**. and Singh, P., (2021); Improvement of Production of L-Methioninase from *Pseudomonas stutzeri* by Partitioning Study using Polymeric Phase System. *Materials Today: Proceedings*.

- **Kharayat, B.** and Singh, P., (2021); Enhancement of production of L-methioninase after optimizing culture condition of *Pseudomonas stutzeri* using Artificial Neural Network", Vegetos

- **Kharayat, B.** and Singh, P., (2019) Study of media optimization and kinetic modeling of l-methioninase from *Pseudomonas stutzeri*. *Vegetos*, *32*(3), pp.370- 380.

- Singh, P. and **Kharayat, B.,** (2018) Statistical optimization of reaction condition of L-methioninase from *Bacillus subtilis*. *Research Reports*, *2*.

- **Kharayat, B** and Singh, P. (2018) Microbial Production of L- methioninase and its biotechnological application, International Journal of Scientific Research, 9(8C): 28439-28446

- Singh, P., Sharma, V., Tripathi, S., Verma, D. and **Kharayat, B**., (2018) Alzheimer's Disease and its Therapeutic Treatment: A Review. *Asian Journal of Pharmaceutical and Health Sciences*, *8*(1).

## Research Interest

- Purification and Characterization of proteins and enzymes Fermentation and Downstream techniques
- Microbiological sampling and testing Microbial Limit Test (MLT) for water, environmental samples and finished products in the facility

- Evaluation of antimicrobial action followed by Mechanism of Action *viz*., Nucleotide leakage, $K^+$ efflux and time killing Kinetics/Resistance Analysis/ Growth Kinetics
- Anti-biofilm activity of herbal extracts: EPS quantification/ Bio-film formation and quantification
- Restivity and Synergy Study using Checkerboard analysis
- Anti-microbial activity evaluation of herbal compounds, *viz*., ASI, MIC, MBC% Inhibition
- Environment monitoring of pilot plant area
- Probiotic Fermentation and dairy starter culture fermentation
- Sequence analysis and molecular weight determination of enzymes
- Extractive Fermentation of enzymes and proteins (Aqueous Two Phase System and Triple Phase Partitioning system)
- Nano biotechnology, Immobilization and crystallization technique

## Research Training

- Six month's dissertation project from Bhabha Atomic Research Centre, Mumbai under the supervision of Dr. Subhash C. Bihani, on the project entitled "**Site directed mutagenesis, purification, biochemical and biophysical characterization of SPAP, on alkaline phosphatase from *Sphingomonas Spp*"**(January 2017 to June 2017)
- One-month project from Forest Research Institute, Dehradun under the supervision of Dr. Ajay Thakur on project entitled **" In vitro plant regeneration studies"** (June2016)
- 15 day's project training from Nainital Dughdh Utpadak Sahakari sangh limited, Lalkuan, Uttarakhand (26 December 2015 to 9 January 2016)

## Conferences and Workshop

- National Symposium-Cum Workshop on Biomolecular Recognition and Dynamics, held on 11 to 13 January, 2020 at Centre of Bioinformatics Department of Bioscience and Biotechnology, Banasthali Vidyapith, Rajasthan
- 107th Indian Science Congress, held on 3 to 7 January, 2020 at University of Agricultural Sciences, Bangalore, presented poster entitled on "**Exploration of *Pseudomonas stutzeri* bacterial strain for production of therapeutic enzymes**"

- National Symposium on Avenues and Challenges in Biotechnology Education held on 10November ,2019 at Banasthali Vidyapith, Rajasthan, Presented Poster
- VII-Rajasthan Science Congress, held on 14 to 16 October, 2019 at Mohanlal Sukhadiya University, Udaipur Rajasthan, presented poster
- Workshop on "Principles of Protein Purification", held on 9 September,2019 at Department of Bioscience and Biotechnology, Banasthali Vidyapith, Rajasthan
- International conference on Molecular Basis of Diseases and Therapeutics, held on 8to 10March ,2019 at Central University of Rajasthan, Ajmer, presented poster
- National Conference on "Recent Advances in Basic Science Research "held on 21 to 22 December,2018 at Faculty of Life Sciences, Banasthali Vidyapith, Rajasthan, presented poster International Conference on Trends in Biochemical and Biomedical Research, held on 13 to 15 February, 2018 at Department of Biochemistry, at Banaras Hindu University.
- One- day conference on Intellectual Property Right, held on 7 February, 2018 at Banasthali Vidyapith, Rajasthan
- Workshop on Intellect Skill Demands of Industries and Professional Possibilities, held on 27 January 2015 at Sardar Bhagwan Singh post graduate institute of biomedical sciences and research, Balawala, Dehradun

## Awards

- **1st positionon National Symposium on Avenues and Challenges in Biotechnolgy** Education, held on 10 November, 2019 at Banasthali Vidyapith, Rajasthan on " Extractive fermentative production of L- methioninase from *Pseudomonas stutzeri* in Aqueous Two Phase System"
- **3rd position on National Conference** on Recent Advances in Basic

Sciences and Research, held on 21to 22 December, 2018 at Banasthali Vidyapith, Rajasthan on " Application of RSM in media optimization for production of L- methioninase from *Pseudomonasstutzeri*"

- **2nd Position on Scientific Writing** in 'JANUS' held on 23 to 25 September, 2016 at Faculty of Science and Technology, Banasthali Vidyapith, Rajasthan
- **3rd position on Debate in 'JANUS'**, held on 23 to 25 September, 2016 at Faculty of Science and Technology, Banasthali Vidyapith, Rajasthan.

## Technical Skills

- High Performance Liquid Chromatography, GE Akta Prime Liquid Chromatography, Column Chromatography
- Circular Dichroism, Dynamic Light Scattering, Fourier- Transform Infrared Spectroscopy
- Zeta Size Analyzer, UV/ Vis Spectroscopy, Polymerase Chain Reaction, Colony Countmeter, Microscopy, ELISA
- Gene expression, DNA isolation and Purification, Centrifugation, Sterilization, Lyophilizer, Polymerase Chain Reaction
- Assay Development, Data Collection, Data Analysis, Lab equipment
- Preperation of SOP's, Formats as per NABL guidelines **(ISO/IEC17025:2005)**
- Understanding and use of basic lab safety equipment and instructions, in accordance with **Biosafety Regulations, 1990 (BSL-IILab)**
- Computer Skills: Microsoft Office Package, R- statistical tools like QTL, eQTl and MatrixeQTL, UCSC Genome Browser, Intgrated Genomics Viewer, ImageJ, CellPro filer,cTrax, GraphPad Prism, Chromosome Analysis Software

## Personal Details

Date of Birth: 30 October,1995

Father's Name: Bhupendra Singh Kharayat

Mother's Name: Nirmala Kharayat

Category: General

Marital Status: Unmarried

Permanent Address: Purnagiri Colony, Tanakpur Road Amoun Khatima, U.S.Nagar, Uttarakhand

## Declaration

I hereby declare that all the information provided above is true and correct to the best of my knowledge and belief.

01 November, 2022 Bhawana Kharayat

Haridwar