

# CURRICULUM VITAE

**KUMARI SHANTI KIRAN**

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## EDUCATION

**Ph.D. IN BIOTECHNOLOGY | 2013- 2021 | INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR, WEST BENGAL**

**Thesis title:** Isolation, Purification and Characterization of Bioactive EPS from *Aphanothece* sp.

**M.Sc. Plant Biotechnology | 2010- 2012 | BANARAS HINDU UNIVERSITY, UTTAR PRADESH (84.6%)**

**B.Sc. Biotechnology | 2006-2009| MAGADH UNIVERSITY, BIHAR (70%)**

## TECHNICAL SKILLS

### PLANT CELL CULTURE TECHNIQUES

Media preparation, surface sterilization, callus induction, suspension culture maintenance, clonal micro-propagation, protoplast isolation & fusion.

### ANIMAL CELL CULTURE AND ANIMAL HANDLLING TECHNIQUES

Maintenance of primary and secondary culture cell lines, handling of *in vitro* cell based anti-proliferative, anti-obesity (effect of EPS on adipogenesis in 3T3 L1 cells, estimation of triglyceride content in 3T3 L1 cells, Oil Red O uptake in 3T3 L1 cells) anti-diabetic (glucose uptake in 3T3 L1 cells, 3T3 L1 proliferation assay) immunomodulatory assays (Macrophage proliferation assay, phagocytosis assay, NO assay, H2O2 assay ) and performing *in vivo* anti- diabetic (SCFA & GLP-1 estimation in colon and caecum, liver , kidney function test) anti-obesity (Total cholesterol, HDL , LDL, Triglyceride measurement, microtomy of liver, kidney n intestine) and antioxidative experiments (estimation of DPPH, ABTS, OH radical, superoxide dismutase enzyme in liver extract) in mouse models (Swiss albino, C57BL/6J).

### MOLECULAR BIOLOGY TECHNIQUES

DNA and RNA extraction and quantification, quantification of short chain fatty acids in colon and

caecum of mice, estimation of glucagon like peptide 1 in colon, caecum and ileum of mice, RT PCR, ELISA, western blotting, primer designing,

### **MICROBIOLOGY TECHNIQUES**

Sterilization, microbial cultures and samples preparation, growth, isolation and identification of microorganisms, anti-microbial assays, MIC determination, testing of antibiotic resistance, biofilm assay (2D n 3D), prebiotic score determination of probiotic strains, preservation of bacterial strains, bacteria enumeration by serial dilution, plate counts and spectrophotometry, staining techniques (gram staining, endospore staining, alcian blue staining, live dead staining using fluorescent dye SYTO green 9)

### **ANALYTICAL TECHNIQUES**

Protein, carbohydrate, lipid, chlorophyll and endotoxin estimation, determination of monosaccharides, methylation of carbohydrate, derivatization of acidic and basic sugars for GC MS analysis, dialysis, paper chromatography, gel filtration Chromatography, ion exchange chromatography, UV visible spectroscopy

### **INSTRUMENTATION**

Lyophilizer, Orbital incubator and shaker, rotary evaporator, ELISA microplate reader, High Performance Thin Layer Chromatography (HPTLC), High Performance Liquid Chromatography (HPLC), Gas chromatography mass spectrometry (GC MS), Liquid chromatography mass spectrometry (LC-MS/MS), Nuclear magnetic resonance (NMR: 1 D and 2 D), Phase contrast microscopy, Confocal microscopy, fluorescence microscopy, Scanning electron microscopy (SEM), Fourier transform Infrared spectroscopy (FT-IR), CO<sub>2</sub> Incubator, Microtome, Agarose Gel Electrophoresis, Bioreactor (Airlift and Bubble column reactor)

### **TEACHING SKILL**

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Worked as TA (Teaching assistant) for four years at IIT Kharagpur (2014-2018), where I was assigned to take practical as well as theoretical classes of subject Plant Tissue Culture.

I mentored Six B. tech (Hydroponics) and three M. Tech students (Aeroponics) of Department of Biotechnology & Biochemical Engg. IIT Kharagpur in their BTP (Bachelor's thesis project) and MTP (Master's thesis project) respectively

## PROJECT WORK

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One month project work on “Diagnostic tests used in Clinical pathology, Microbiology & Biochemistry” in **Indira Gandhi Institute of Medical Sciences**, Patna.

Two months Project work on Biocontrol agent and Quorum sensing under the guidance of **Dr. B. K. Sarma (Professor, Department of Mycology & Plant Pathology, BHU, Varanasi)**.

One year dissertation work on “Isolation and Characterization of Resistance Genes in Mungbean (*Vigna radiata*) under the guidance of **Dr. B. K. Sarma (Professor, Department of Mycology & Plant Pathology, BHU, Varanasi)**.

## ADDITIONAL INFORMATION

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### LANGUAGES KNOWN

Proficient in English and Hindi

### COMPUTER SKILLS

MS Office, MS Project, MS Excel, MS power point, Origin, Sigma plot, Corel draw, Adobe photo shop, Image J, SPSS, LAS X software

## PERSONAL INFORMATION

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**Date of Birth:** - 15<sup>th</sup> January 1990

**Gender:** - Female

**Father's Name:** - Dr. Basudeo Narayan

**Marital Status:** - Single

**Nationality:** - Indian

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**CONFERENCES AND  
PRESENTATIONS**

- **Kumari Shanti Kiran**, Satyahari Dey. Nutraceutical implication of marine carbohydrate extracted from *Aphanothece* sp. Paper presented in *the 13th Asian Congress on Biotechnology (ACB 2017): Bioinnovation and Bioeconomy* in Khon Kaen, Thailand on July 23-27, 2017
- **Kumari Shanti Kiran**, Satyahari Dey. "Exploration of immunomodulatory activity of algal EPS *in vitro* and *in vivo* condition". 43<sup>rd</sup> Annual Conference of the Indian Immunological Society (IMMUNOCON 2016), February 16-18, 2017, Vishakhapatnam, India.
- **Kumari Shanti Kiran**, Satyahari Dey. "Isolation, purification and characterization of marine EPS from *Aphanothece* sp. as novel prebiotic molecule". Indo-German workshop on *Recent Applications of Carbohydrates in Chemistry and Biology (RACCB-2017)*, IIT (BHU)-Varanasi on February 14-16, 2017
- **Kumari Shanti Kiran**, Satyahari Dey. "Nutraceutical implication of exopolysaccharide extracted from marine cyanobacteria *Aphanothece* sp." International Conference on Nutraceuticals and Functional Foods. (ICNFF-16- ISAB): The Challenges and Opportunities, December 6-8, 2016, Anand (Gujarat), India.

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## PUBLICATIONS

- Mallick, S., **Kiran, S.**, Maiti, T. K., & Ghosh, A. S. (2021). PBP4 and PBP5 are involved in regulating exopolysaccharide synthesis during *Escherichia coli* biofilm formation. *Microbiology*, 167(3), 001031.
- Venkatesh, Y., **Kiran, K. S.**, Shah, S. S., Chaudhuri, A., Dey, S., & Singh, N. P. (2019). One-and two-photon responsive sulfur dioxide (SO<sub>2</sub>) donors: a combinatorial drug delivery for improved antibiotic therapy. *Organic & Biomolecular Chemistry*, 17(10), 2640-2645.
- Verma, D. K., Mohapatra, B., Kumar, C., Bajwa, N., **Kiran, K. S.**, Kimmy, G., ... & Srivastav, P. P. (2019). Molecular techniques for detection of foodborne pathogens: *Salmonella* and *Bacillus cereus*. In *Microbiology for Food and Health* (pp. 231-296). Apple Academic Press.

## ABSTRACT SUBMITTED

- Kusumakar A.L., **Kiran S.** and Savita (2007). Legalizing Euthanasia: An Ethical and Debatable Issue. In: 33rd Congress, Bihar Philosophical Council, held at Kisan College, Sohsarai, Nalanda, Magadh University, Bihar from 24-25th Nov, 2007; pp 198-198.
- Savita, Kusumakar A.L. and **Kiran S.** (2007). Ethical Challenges engulfing Stem Cell Research. In: 33rd Congress, Bihar Philosophical Council, held at Kisan College, Sohsarai, Nalanda, Magadh University, Bihar from 24-25th Nov, 2007; pp 197-197.

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## **WORKSHOPS ATTENDED**

- Workshop on Ethics in Clinical Research-Good Clinical Practice, organized by Academy for Applied Research n Training in India, Kolkata, June 11, 2015, IIT Kharagpur
- LATEX Workshop on Technical Report Writing, organized by IEEE, May 09, 2017, IIT Kharagpur

## **PATENTS**

**Two patents** have been filed in association with DRDO (currently in stage two)

## **HONOURS AND AWARDS**

- ICMR -JRF/SRF, AIR 9 (2012, AUGUST)
- Best oral presentation award (Asian Congress of Biotechnology, Thailand, 2017)
- GATE 2012
- JNU CBEE (2010)
- Incelligent Expert award by MERCK, 2019

## REFERENCES

### 1. Dr. Satyahari Dey

Professor, Department of Biotechnology

Indian Institute of Technology Kharagpur, Kharagpur, India -721302.

Ex-Managing Director, Science & Technology Entrepreneurs' Park (STEP) Indian

Institute of Technology Kharagpur

Deputy Secretary General, Asian Federation of Biotechnology and chair Bioeconomy

& Bio business

Phone: 91- 3222-283782 or 282247 (Office)

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### 2. Dr. B. K. Sarma

Professor, Department of Mycology and Plant Pathology

Banaras Hindu University, Varanasi

Phone: 09454350649

E-mail ID: birinchi\_ks@yahoo.com

**STATEMENT:** I hereby declare that the above curriculum vitae is true to the best of my knowledge.

Dr. KUMARI SHANTI KIRAN

Date: 23<sup>rd</sup> August 2022

Place: Manmad