Name: Dr. Kalisa Amarsingh Bogati
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EDUCATION:

Bachelor studies	Master's Studies	PhD studies
B.Sc. Microbiology (2010-2013) St. Xavier's college, Mapusa-Goa India, affiliated to Goa University	M.Sc. Microbiology (2013-2015) PIMS, Bangalore-India, affiliated to Bangalore University	2019-2023: Department of Environmental Microbiology and Biotechnology, Faculty of Biological and Veterinary Sciences, Nicolaus Copernicus University, Lwowska 1, 87-100 Torun-Poland.

PROFILE SUMMARY

Ph.D. in Environmental Microbiology and Biotechnology and all together over 7 years of research and laboratory experience (plus approx. 1 year postdoc experience), including molecular biology, microbial ecology, soil health, immunoassays, Biochemical techniques and bioinformatics. Skilled in molecular techniques, microbial community analysis, and laboratory practices. Proficient in leading multidisciplinary teams, optimizing workflows, and driving scientific innovation with a strong publication writing record in international journals. Multilingual communicator with a proven ability to work in dynamic, multicultural environments. Other microbiology related skills include:

- Phylogenetic, Taxonomic & genomic analysis
- Microbial-Plant Interactions
- Marine & environmental microbiology
- Cultivating microbial strains, microbial morphology, taxonomy, staining, aseptic techniques
- Bacterial cloning and transformation
- Skilled in laboratory automation Biolog system
- Lead research projects in environmental microbiology focusing on genetically modified microorganism, environmental contaminants, bioremediation and microbial consortium.
- Develop and optimize experimental protocols integrating molecular, biochemical, and bioinformatic techniques.
- Mentor junior researchers and coordinate cross-functional collaborations to enhance team productivity.
- Isolation of cultivable microorganisms using specific microbiological media from soil, water, and plant samples.
- Collaborated with interdisciplinary teams to publish findings in peer-reviewed journals as main and co-author.
- Assisted in training graduate students and technical personnel.
- Maintained laboratory compliance with quality and safety standards.
- Technical, calibration & computer skills including MS
- Teamwork, time management plans, multi-tasking & leadership
- Effective communication & critical thinking

SKILLS AND EXPERIENCE:

Microbial analysis, soil health & bioinformatic analysis

- Flow cytometry analysis of genetically modified *Pseudomonas putida* alone and in combination with several other bacterial strains, and its survival in the presence of Trinitrotoluene (TNT).
- Experience in analysing soil contaminants using LC-MS.
- Evaluating Community Level Physiological Profiling (CLPP) using 96-well Biolog Eco plates and determining soil humidity and pH.
- Soil health and biology: Biochemical analysis - enzyme activity such as hydrolases, dehydrogenases, phosphatases (acid and alkaline) and urease.
- Soil microbial analysis using scientific programming: RStudio and Linux environment- Basic understanding on processing scientific data using specific pipelines (eg. QIIME2, DADA2, PANDAseq etc.) and statistics.
- Basics on latest technologies (eg, phenotyping Microarray Omnilog system), techniques and bioinformatics tools (software and platforms) associated with prokaryotic systematics (polyphasic taxonomy) and genomic of Actinomycetes.

Molecular & Biochemical Techniques

- Molecular techniques and interpretation- Deoxyribonucleic acid (DNA) extraction from soil, plants, bacteria, and fungi; Polymerase Chain Reaction (PCR); Gel electrophoresis; DNA quantification with Nanodrop spectrophotometer; GelDoc; Sequencing; Amplicon sequencing (16S and ITS regions).
- Basics on sodium dodecyl-sulfate polyacrylamide gel electrophoresis (SDS-PAGE), western blotting, cloning, NGC Chromatography system, protein modelling (via GUI and CLI) (structural homology), and protein expression, purification, biological formulations, and assessment of protein.
- Immuno assays (staining) for determination of immunolocalisation of Abscisic acid, pectin and control plant tissue samples grown under normal and drought conditions.

Phylogenetic, Taxonomic & genomic analysis

- Polyphasic taxonomic studies based on phenotypic studies: includes phenotypic analyses based on morphological and growth culture properties, chemotaxonomic markers related to diaminopimelic acid, whole cell hydrolysates and polar lipids using standards chromatographic procedures, enzymatic profile of the microbial strains and their ability to metabolise a wide range of carbon and nitrogen sources, to grow in the presence of several inhibitory compounds and their resistance to antibiotics using API ZYM and GENIII microplates in an OmniLog system, respectively.
- Phylogenetic studies based on 16S rRNA gene sequences: bioinformatics tools (databases, software, and programs) for phylogenetic analysis based on a single gene. Construction of phylogenetic trees using Neighbor joining (NJ), Maximum parsimony (MP) and Maximum Likelihood (ML) algorithms. Analysis of the phylogenetic relationship of the microbial strains with their close neighbours and within the evolutionary radiation of their genera.
- Genome analysis: annotation of the genomes of the studied strains and screening for biosynthetic gene clusters (BGCs) related to secondary metabolites (antibiotics).
- Evaluation of the antimicrobial potential of the microbial strains based on plug essay tests.

Microbial-Plant Interactions

- Microbial plant interactions: Salt tolerance, liquid inoculants, inhibition assay, biostimulants and *In vitro* experiments with plant-microbe association.
- Isolation of cultivable microorganisms using specific microbiological media from soil, water, and plant samples.

Marine & Environmental Microbiology

- Taxonomic studies of zooplankton, total bacterial count (TBC) by DAPI method, estimation and extraction of chlorophyll, lipid extraction from seawater sample (phytoplankton) and filtered water sample (from filtered paper). Experience in fluorescent microscopic analysis of bacterial samples.
- Phytoplankton ciliate association from the seawater samples, copepod ciliate association from the seawater samples and primary productivity using ^{14}C radioisotope experiment and bacterial productivity using thymidine experiment on RV Sindhu Sadhana Research Cruises (SSD_40, SSD_44 and SSD_55).

Technical & Computer Skills

- Curator- Database Analyst. The area of work includes building database (methods and protocols) from scientific research articles.
- Other computer skills: Microsoft Office (Word, PowerPoint, Excel), email communication, data visualization, spreadsheets, data entry and analysis.

LANGUAGES:

- English- fluent.
- Polish as basic.
- Nepali, Hindi, and Konkani-fluent
- Marathi- Conversational level; intermediate
- Punjabi, Gujarati, Haryanvi, Bengali- intermediate

WORK EXPERIENCE:

1. **Current position as Postdoctoral research faculty (since September 2024):** at the Department of Biology and Biotechnology, Life Sciences and Bioengineering Center, Worcester Polytechnic Institute, 60 Prescott St Worcester MA 01609.
2. **Research and technical Assistant (September 2023 to June 2024):** at the Department of Biochemistry and Cell Biology, Uniwersytet Kazimierza Wielkiego, ul. Poniatowskiego 12, 85-671 Bydgoszcz, Poland.
3. **Internships: Total 6 months**
    a) 4 months duration (January-April 2023): Julius Kühn – Institut, Federal Research Centre for Cultivated Plants (JKI) Institute for Epidemiology and Pathogen Diagnostics Messeweg 11-12, 38104 Braunschweig, Germany.
    b) 2 months duration (May-July 2022): Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures, 38124 Braunschweig, Germany.
4. **Project Assistant (April 2017-October 2019):** at Biological Oceanography, CSIR-National Institute of Oceanography (CSIR-NIO), Goa-India.
5. **Scientific Analyst (July 2015-March 2017):** at Molecular Connection Pvt. Ltd. Bangalore-India.

SCIENTIFIC INTERNATIONAL PUBLICATIONS:

1. Wilmowicz, E.; Kućko, A.; Kapusta, M.; Popielarska-Konieczna, M.; **Bogati, K.**; Wolska, M.; Karwaszewski, J.; Burkowska-But, A. & Walczak, M. (2025). The ability of potato to counteract drought in cooperation with microbial allies – *Glomus* sp. and *Bacillus* sp. Plant and Soil (under review). IF: 3.9.
2. **Bogati, K. A.**, Sewerniak, P., & Walczak, M. (2025). Unraveling the Effect of Soil Moisture on Microbial Diversity and Enzymatic Activity in Agricultural Soils. Microorganisms, 13(6), 1245. IF: 4.1.
3. **Bogati, K. A.**, Sewerniak, P., & Walczak, M. (2023). Effect of changes in soil moisture on agriculture soils: response of microbial community, enzymatic and physiological diversity. Ecological Questions, 34(3). doi: 10.12775/EQ.2023.0431. IF: 1.1.
4. **Bogati, K. A.**, Golińska, P., Sewerniak, P., Burkowska-But, A., & Walczak, M. (2023). Deciphering the Impact of Induced Drought in Agriculture Soils: Changes in Microbial Community Structure, Enzymatic and Metabolic Diversity. Agronomy, 13(5), 1417. doi: 10.3390/agronomy13051417. IF: 3.7.
5. **Bogati, K.,** & Walczak, M. (2022). Review- The impact of drought stress on soil microbial community, enzyme activities and plants. Agronomy, 12(1):189. doi: 10.3390/agronomy12010189. IF: 3.7.
6. Wilmowicz, E., Kućko, A., **Bogati, K.,** Wolska, M., Świdziński, M., Burkowska-But, A., & Walczak, M. (2022). *Glomus* sp. and *Bacillus* sp. strains mitigate the adverse effects of drought on maize (*Zea mays* L.). Frontiers in Plant Science, 13. doi: 10.3389/fpls.2022.958004. IF: 5.6.
7. Fernandes, V., & **Bogati, K.** (2022). Analysis of Bacteria–Phytoplankton relationships at three discrete locations in the Eastern Arabian Sea during winter. Continental Shelf Research, 243, 104751. doi: 10.1016/j.csr.2022.104751. IF: 2.41.
8. Chatterjee, T., Dovgal, I., Nanajkar, M., **Bogati, K.** (2019) Note on the genus *Lecanophryella* (Ciliophora: Suctorea) with description of a new species from west coast of India. Zootaxa, 4612 (4): 494-500. doi: 10.11646/zootaxa.4612.4.2. IF: 0.959.
9. Fernandes, V., & **Bogati, K.** (2019) Persistence of Fecal Indicator Bacteria associated with Zooplankton in a Tropical Estuary-West Coast of India. Environmental Monitoring and Assessment, 191:420. doi: 10.1007/s10661-019-7531-z. IF: 3.
10. Nanajkar, M., Fernandes, V., **Bogati**, K., Chatterjee, T. (2019) Gregarious growth of ciliate *Vorticella oceanica*, on a chain forming diatom *Chaetoceros coarctatus*: Indicating change in the function of association. Symbiosis, 1-9. doi: 10.1007/s13199-019-00640-4. IF: 2.5.

ACHIEVEMENTS, AWARDS AND GRANTS:

- Awarded multiple international research mobility grants (Erasmus+ (**€2390**), IDUB Excellence Initiative (**42,344 PLN**), PROM Laureate (**6099 PLN**), Grants4NCUStudents (**5000 PLN**)) for scientific traineeships, research activities, and conference participation in Germany, Poland, and Austria.
- Selected for fully funded 3 marine research expeditions (R.V. Sindhu Sadhana, Arabian sea & Indian Ocean) on climate and ecology projects.
- Won 3rd prize for an M.Sc. thesis presentation at a national biotechnology conference in India.
- (Full list available on LinkedIn)

PARTICIPATION IN CONFERENCES AND WORKSHOPS:

- Presented research posters and talks on soil microbiology, drought stress, and plant resilience at major international conferences including the 7th International Conference on Microbiome Engineering (Tufts University, USA), miCROPe Symposium (Vienna), and multiple European and Indian conferences (2020–2024).
- Contributed to scientific exchange at both virtual and in-person events, with topics focusing on microbial diversity, enzymatic activity, and plant-microbe interactions in agriculture.
- Completed numerous hands-on and online workshops in Python programming, bioinformatics (QIIME2, R, MEGA), protein modelling, and phylogenetic analysis.
- Attended specialized seminars/webinars on scientific writing, research ethics, plant science, next-generation sequencing, and bioprocessing.
- Gained advanced training in research methods, data analysis, metagenomics, oral presentations, and career development from international and national institutions (2015–2023).

Referees:

1. Prof. Natalie G. Farny, PhD, Department of Biology and Biotechnology, Worcester Polytechnic Institute, Life Sciences and Bioengineering Center 4020, 60 Prescott St Worcester MA 01605. Email: nfarny@wpi.edu.
2. Prof. dr hab. Maciej Walczak. Department of Environmental Microbiology and Biotechnology, Nicolaus Copernicus University, Torun Poland. Email address: maciej.walczak@umk.pl.
3. Dr. Belle Damodara Shenoy (Principal Scientist). CSIR-National Institute of Oceanography Visakhapatnam, India. Email: belleshenoy@nio.org.
4. Dr. Imen Nouioui (Curator of Actinomycetales, Senior scientist). Leibniz Institute DSMZ-German Collection of Microorganisms and Cell Cultures GmbH, Inhoffenstraße 7B, 38124 Braunschweig Germany. Email: ino20@dsmz.de and imen.nouioui@dsmz.de.

HOBBIES

Playing musical instrument (drums), travelling, photography, art, learning languages, reading, Indian classical dance, listening to music, gardening, cooking, and passion in sports activities.