Bhargava Reddy Morampalli

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Career Summary

Research professional with over 10 years of combined experience in academic and biotech industry settings, bridging the gap between experimental molecular biology and computational bioinformatics. Possessing a unique dual expertise in advanced wet lab techniques (NGS library prep, cell culture, molecular assays) and robust dry lab skills (Python, R, Bash, Nextflow pipeline development, HPC). Proven ability to lead projects, analyze complex biological data, develop and optimize assays, and collaborate effectively with cross-functional teams. Currently completing a Ph.D. focused on identifying RNA modifications using nanopore sequencing. Eager to leverage this comprehensive skill set to drive impactful research and development in a challenging bioinformatics role.

Skills

- **Bioinformatics & Computational:** Python (Pandas, Matplotlib, Seaborn, Biopython, Data Wrangling, Automation and Visualization), Nextflow (Pipeline development and execution), Bash Scripting, Unix/Linux Environments, High-Performance Computing (HPC), Git/Version Control, NGS Data Analysis (RNAseq, Genomics, Nanopore Data Analysis), Genome Assembly (Basic understanding)
- **Wet Lab and Molecular Biology**: Nanopore Sequencing Library Prep (Direct RNA, cDNA), DNA/RNA Isolation & QC, Mammalian Cell Culture (Primary & Cell Lines), Transfection & Electroporation, Stable Cell Line Generation, PCR & qPCR (Assay Design, Optimization, Execution), Molecular Cloning, Site-Directed Mutagenesis, Western Blot, ELISA, Immunofluorescence (IF), Immunohistochemistry (IHC), Fluorescence Microscopy, High Content Imaging.
- **Software & Tools**: JIRA, Matrix ALM, Confluence
- **Other**: nf-core mentorship program (2023), Scientific Writing, Cross-functional Collaboration, Project Management, Mentoring & Training

Professional Experience

Product Owner/SME (Bioinformatics) | Persistent Systems (India) | November 2024 – Present

- Completed knowledge transfer for a large-scale qPCR data analysis software product
- Successfully led the team to the first Change Request and full release after the knowledge transfer
- Served as the primary Subject Matter Expert (SME) for biological concepts and software functionality, providing critical training and guidance throughout the development lifecycle.

Research Scientist (Bioinformatician) | Alfred Health (Melbourne, Australia) | July 2023 – July 2024

- Curated and standardized diverse global antimicrobial resistance (AMR) pathogen datasets, focusing on carbapenem resistance, establishing a robust foundation for downstream large-scale meta-analysis.
- Performed comprehensive meta-analysis using R and Python to characterize the genetic contexts and transmission dynamics of key carbapenem resistance determinants, contributing to genomic epidemiology insights presented at ESCMID Global 2024 (Manuscript ready for submission – co-first author).

R & D Scientist (Part-time) | Ubiquitome Bio (Auckland, New Zealand) | December 2018 – June 2023

- Enhanced the performance of saliva-based SARS-CoV-2 detection assays for portable qPCR devices by systematically optimizing reaction conditions and primer/probe designs, contributing to reliable field deployment.
- Established and executed rigorous validation protocols for new portable qPCR devices, running standardized reactions to confirm production quality and rapidly troubleshooting instrument or assay issues.
- Periodically monitor the SNPs in new variants of SARS-CoV-2 by extracting sequences from public databases (e.g.., GSAID). ensuring the diagnostic assays remained effective against new variants.

Senior Research Associate | Biocon Bristol Myers Squibb Research & Development Center (Bangalore, India) | February 2018 – July 2018

- Successfully developed and optimized a complex, high-throughput primary cell-based assay using patient-derived PBMCs for screening immuno-oncology drug candidates, meeting critical project timelines in the Discovery Biology group.
- Collaborated with translational science teams to ensure assay relevance and robustness for downstream applications.

Associate Scientist II | AbbVie Inc. (Cambridge, USA) | December 2016 – June 2017
- Contributed to Alzheimer's disease drug discovery by developing and implementing novel cell-based assays (including high-content imaging using Perkin Elmer systems) to model disease pathology within the Proteostasis team.
- Generated and characterized multiple stable cell lines expressing key target proteins via transfection and selection, providing essential tools for compound screening and target validation studies.
- Significantly streamlined a key experimental workflow by optimizing assay setup protocols, reducing hands-on time from hours to minutes and increasing throughput.
- Evaluated the efficacy and specificity of in-house developed antibodies using optimized cell-based assays.

Research Assistant II | Boston Children's Hospital (Boston, USA) | December 2014 – December 2016
- Investigated the molecular basis of Gordon-Holmes syndrome by developing an *in vitro* assay utilizing SILAC (Stable Isotope Labeling by Amino acids in Cell culture) coupled with Mass Spectrometry to assess the functional impact of mutations in the RNF16 E3 ubiquitin ligase.
- Designed, constructed, and validated multiple plasmid vectors expressing variants of SEMA3A, a gene implicated in delayed puberty, for use in functional *in vitro* assays.

Research Assistant | Harvard Stem Cell Institute (Boston, USA) | August 2013 – November 2014
- Culture, Maintenance of airway basal stem cells and various mammalian cell lines (HEK293, P19, primary Lung fibroblasts).
- Design and production of diverse plasmid constructs and subsequent lenti-virus particle generation for gene overexpression and knockout studies in air-liquid interface cultures.
- Performed SDS-PAGE, Western blots for analysis of signaling pathways after the knockout or over-expression.
- IHC for evaluating expressions of different transcription factors after injury to mouse trachea.

Education

DOCTOR OF PHILOSOPHY IN GENETICS | 2025 (EXPECTED) | MASSEY UNIVERSITY, AUCKLAND, NEW ZEALAND
Thesis: Identification and comparison of RNA modifications in natural isolates of *Escherichia coli* using nanopore sequencing

MASTER OF SCEINCE IN PHARMACOLOGY | MAY 2014 | NORTHEASTERN UNIVERSITY, BOSTON, USA
BACHELOR OF PHARMACY | DECEMBER 2011 | JSS COLLEGE OF PHARMACY, MYSORE, INDIA

Publications

Vlková, Markéta, **Bhargava Reddy Morampalli**, and Olin K. Silander. "Efficiency of the Synthetic Self-Splicing RiboJ Ribozyme Is Robust to Cis- and Trans-Changes in Genetic Background." *MicrobiologyOpen* 10, no. 4 (2021): e1232. https://doi.org/10.1002/mbo3.1232.

Ben Vezina[+], **Bhargava Reddy Morampalli**[+] (**co-first author**), Hoai-An Nguyen, Anton Y. Peleg, Nenad Macesic. "Genomic epidemiology of IMP carbapenemases: an emerging global problem with diverse IMP variants, bacterial host strains and plasmid types", *manuscript ready for submission*

Bhargava Reddy Morampalli. "Synthesis of in vitro transcribed RNA from whole bacterial transcriptome", *Protocols.io,* https://www.protocols.io/view/synthesis-of-in-vitro-transcribed-rna-from-whole-b-brbmm2k6, *manuscript in preparation*

Bhargava Reddy Morampalli, Olin K. Silander. "Comparison of tools for identification of rRNA modifications in bacteria using nanopore direct RNA sequencing", *manuscript in preparation*

Posters and talks

Talk: ESCMID Global 2024: Genomic epidemiology of IMP carbapenemases.

Poster: Queenstown Molecular Biology Conference 2022: Identification and comparison of RNA modifications across natural isolates of *Escherichia coli*. (Recipient: QMB 2022 travel scholarship, Massey University post-grad student scholarship 2022)

Invited Talk: Nanopore Day 2021 (Remote): Identification and comparison of RNA modifications across natural isolates of *Escherichia coli*.

Talk: New Zealand Microbiological Society 2021 (Remote): Identification and comparison of RNA modifications across natural isolates of *Escherichia coli*.

Poster: PostGrad Student Conference 2020 (Massey University): Detecting RNA modifications in bacteria with nanopore sequencing.

Poster: PostGrad Student Conference 2019 (Massey University): Full length cDNA sequencing to study transcriptional regulation in bacteria - a proof of concept. (3rd place award)

Poster: PostGrad Student Conference 2018 (Massey University): Cappable-seq and Nanopore sequencing as tools for studying bacterial transcription. (2nd place award)