

POORNA MANASA BHAMIDIMARRI

PhD in Biochemistry

Postdoctoral Research Associate

Sharjah Institute of Medical Research

University of Sharjah, UAE

A trained protein biochemist and a molecular biologist with more than 10 years of research experience in diverse fields like micro-, molecular and protein biology. Technical skills include Next Generation Sequencing, Real time PCR, molecular cloning, affinity & ion-exchange chromatography, bacterial & mammalian cell culture, protein expression & purification, light and fluorescent microscopy. Proficient in scientific writing and in bioinformatics for phylogenetics, modeling tools and database search.

Research Experience

Sep, 2021-till date: Postdoctoral Research Associate, Bioinformatics and functional genomics group, Research institute of medical and health sciences, University of Sharjah, Sharjah, UAE.

Sep, 2019-Aug, 2021: Postdoctoral Research Assistant with Professor Rifat Hamoudi at Sharjah Institute of Medical Research, College of Medicine, University of Sharjah in collaboration with Sharjah Research Academy, Sharjah, UAE.

Project 1: Understanding the molecular mechanism of asthma using systems engineering approach.

Project 2: The use of bioinformatics and engineering mathematics followed by biological *in vitro* and *in vivo* validation to decipher the molecular mechanism of COVID-19 infection of the respiratory tract.

Project 3: Deciphering the immunological mechanism involved in early lung cancer in the UAE population.

Aug, 2012- June, 2018: Senior Research Fellow in University of Hyderabad, Hyderabad, India.

Research: A comparative biochemical and molecular analyses of lysosomal enzymes and their receptors in *Lamellidens corrianus* and *Hydra vulgaris*.

The major contribution from the thesis was to report for the first time the occurrence of cation dependent mannose 6-phosphate receptor (CDMPR) in Hydra vulgaris (a Cnidarian) and proved that mannose 6-phosphate (M6P) dependent lysosomal enzyme transport mechanism has evolved at least 60 million years ago. Other contributions

*include: biochemical characterization of two glycosidases (α -mannosidase and α -fucosidase) from *Lamellidens corrianus* (a mollusc); cloning, sequencing and structural validation of functional domains of CIMPR from *Biomphalaria glabarata* (a mollusc); tissue-level localization study of lysosomal glycosidase and CDMPR in *Hydra vulgaris*.*

July, 2013- Dec, 2013 and Oct, 2014- Dec, 2014: Visiting fellow (Indo-German research program), University of Muenster, Muenster, Germany.

*Conducted de novo sequencing of glycoproteins using ESI QTOF Mass Spectrometer. The primary protein sequence for the lysosomal α - fucosidase obtained from *Lamellidens corrianus* was analysed using tryptic digested peptides from purified protein. Approx. 40% of the primary sequence was deduced by this method.*

Dec, 2009- July, 2012: Project Assistant in Centre for Cellular and Molecular Biology (CCMB), Hyderabad, India.

Research: Arctic bacteria as work horses of biotechnology: Biodiversity of bacteria and bioprospecting for biomolecules.

The project dealt with isolation, identification and biochemical characterization of extremophilic bacteria from Arctic and Antarctic soil samples; molecular phylogeny of the psychrophilic bacteria obtained; Polyphasic taxonomy studies; Techniques involved 16s rDNA sequencing, MEGA for phylogeny, Characterisation of Polar lipids by TLC, Quinones by HPLC and fatty acids by GC-MS.

2007-2009: MSc in Biotechnology at Pondicherry Central University, Puducherry, India.

2008-2009: MSc Thesis research- Standardisation of rice tissue culture conditions for seven *indica* varieties.

May-July, 2008: Summer Research_ In Bioinformatics, Indian Institute of Chemical Technology (IICT), Hyderabad, India.

Project title - Deciphering the interrelation and effects of various physico-chemical factors on hydrophobicity of AGC kinase protein family: a bioinformatics approach.

Education:

2012-2018: PhD in Biochemistry, Department of Biochemistry, University of Hyderabad, Hyderabad, India.

Student Member, International Research Training Group (IRTG)-Molecular and Cellular Glyco- Science (MCGS), an Indo-German exchange program. A part of the PhD thesis work was conducted in Dr Michael Mormann's Lab, Mass spectrometry division, University of Muenster, Muenster, Germany.

2007-2009: MSc in Biotechnology, Department of Biotechnology, Pondicherry University, Puducherry, India.

2004-2007: BSc in Biotechnology, Microbiology and Chemistry at Avanthi Degree College, Osmania University, Hyderabad, India.

Publications:

Published: **20**; In review:**2**; Under preparation: **2**; h index: **11**

1. **Poorna Manasa Bhamidimarri**, Rifat Hamoudi, Optimized and cost-effective transcriptomic assay for diagnostic salivary liquid biopsy biomarker testing (Manuscript Under Preparation)
2. **Poorna Manasa Bhamidimarri**, Rifat Hamoudi. A panel of six salivary mRNA biomarkers for severe asthma: a pilot study on a small cohort of UAE residents. (Manuscript Under Preparation)
3. **Poorna Manasa Bhamidimarri**, Laila Salameh, Youssef Dairi, Sara hammoudeh, Amna Mahdami, Mouza Alsharhan, Syed Hammad Tirmazy, Qutayba Hamid, Saba Al Heialy*, Rifat Hamoudi1*, Bassam Mahboub, In silico bioinformatics followed by molecular validation using archival FFPE tissue identifies genetic biomarker panel associated with asthma and lung cancer. *Frontiers in Oncology* (Under review)
4. Riyadh Bendardaf#, **Poorna Manasa Bhamidimarri**#, Zainab Alabadlla, Noura Alkhalayal, Ramy Refaat Georgy, Alaa Elkhider, Sadiq Qadri, Rifat Hamoudi and Salah Abusnana. 2021. Integrative clinical, radiological and biochemical characteristics determines ICU admission in COVID-19 positive UAE patients. *PLOS One* (Under review)
5. Sarah Musa Hammoudeh, Arabella Musa Hammoudeh, **Poorna Manasa Bhamidimarri**, Bassam Mahboub, Habiba Al Safar, Qutayba Hamid, Mohamed Rahmani and Rifat Hamoudi. 2021. Systems Immunology Analysis Reveals the contribution of pulmonary and extrapulmonary tissues to the immunopathogenesis of severe COVID-19 patients. *Frontiers in Immunology* <https://www.frontiersin.org/articles/10.3389/fimmu.2021.595150/full>
6. Sarah Musa Hammoudeh, Arabella Musa Hammoudeh, **Poorna Manasa Bhamidimarri**, Bassam Mahboub, Rabih Halwani, Qutayba Hamid, Mohamed Rahmani and Rifat Hamoudi. 2021. Insight into molecular mechanisms underlying hepatic dysfunction in severe COVID-19 patients using systems biology. *World J Gastroenterology* 2021; 27(21): 2850-2870 <https://www.wjnet.com/1007-9327/full/v27/i21/2850.htm>
7. **Poorna Manasa Bhamidimarri**, Lakshmi Surekha Krishnapati, Surendra Ghaskadbi, Siva Kumar Nadimpalli. 2018. Mannose 6-phosphate-dependent lysosomal enzyme targeting in hydra: A biochemical, immunological and structural elucidation. *FEBS letters*. 592(8):1366-1377.
8. Nadimpalli Siva Kumar, Ashapogu Venugopal, **Poorna Manasa Bhamidimarri**. 2016. Recent developments in the studies on lysosomal biogenesis among invertebrates. *Science Spectrum*. 1(3):331-338.
9. Nadimpalli Siva Kumar, **Poorna M Bhamidimarri**. Lysosomal enzymes and their receptors in invertebrates: an evolutionary perspective. 2015. *Current Protein and Peptide Science*. 16(1):49-65.
10. T N R Srinivas, P. Anil Kumar, M Tank, B Sunil, **Poorna Manasa**, Zareena Begum, S Shivaji. 2015. *Aquipuribacter nitratireducens* sp. nov., isolated from a soil sample of a mud volcano. *International Journal of Systematic and Evolutionary Microbiology*. 65(8):2391-2396.
11. Sathish Prasad, **Poorna Manasa**, Sailaja Buddhi, Preethi Tirunagari, Zareena Begum, Sivaraman Rajan, Sisinthy Shivaji. 2014. Diversity and Bioprospective Potential (Cold-Active Enzymes) of Cultivable Marine Bacteria from the Subarctic Glacial Fjord, Kongsfjorden. *Current Microbiology*. 68(2):233-238.
12. S Shivaji, Sreenivas Ara, Sathish Prasad, **Poorna Manasa**, Zareena Begum, Aditya Singh, Anil Kumar Pinnaka. 2013. Draft Genome Sequence of *Arcticibacter svalbardensis* Strain MN12-7T, a Member of the Family *Sphingobacteriaceae* Isolated from an Arctic Soil Sample. *Genome Announcements*. 11;1(4).
13. G S N Reddy, **Poorna Manasa**, Sanjay K Singh, S Shivaji. 2013. *Paenisporosarcina indica* sp. nov., a psychrophilic bacterium from a glacier, and reclassification of *Sporosarcina antarctica* Yu *et al.*, 2008 as *Paenisporosarcina antarctica* comb. nov. and emended description of the genus *Paenisporosarcina*. *International Journal of Systematic and Evolutionary Microbiology*. 63(Pt8):2927-2933.
14. T N R Srinivas, **Poorna Manasa**, Z Begum, B Sunil, B Sailaja, S K Singh, S Prasad, S Shivaji. 2013. *Iodobacter arcticus* sp. nov., a psychrotolerant bacterium isolated from meltwater stream sediment of an Arctic glacier. *International Journal of Systematic and Evolutionary Microbiology*. 63(Pt8):2800-

2805.

15. Shivaji S, Begum Z, Shiva Nageswara Rao SS, Vishnu Vardhan Reddy PV, **Poorna Manasa**, Sailaja B, Prathiba MS, Thamban M, K. P. Krishnan, Singh SM, Srinivas TNR. 2013. Antarctic ice core sample: culturable bacterial diversity. *Research in Microbiology*. 164(1):70-82.

16. Sathish Prasad, Mambatta Shankaranarayanan Pratibha, **Poorna Manasa**, Sailaja Buddhi, Zareena Begum, Sisinthy Shivaji. 2013. Diversity of Chemotactic Heterotrophic Bacteria Associated with Arctic Cyanobacteria. *Current Microbiology*. 66(1):64-71.

17. Zareena Begum, T N R Srinivas, **Poorna Manasa**, B Sailaja, B Sunil, Sathish Prasad, S Shivaji. 2013. *Winogradskyella psychrotolerans* sp. nov., a marine bacterium of the family *Flavobacteriaceae* isolated from Arctic sediment. *International Journal of Systematic and Evolutionary Microbiology*. 63(Pt5):1646-1652.

18. Sathish Prasad, **B. Poorna Manasa**, Sailaja Buddhi, Mambatta S Pratibha, Zareena Begum, Sunil Bandi, Preethi Tirunagari, Sisinthy Shivaji. 2013. *Arcticibacter svalbardensis* gen. nov., sp nov., of the family *Sphingobacteriaceae* in the phylum Bacteroidetes, isolated from Arctic soil. *International Journal of Systematic and Evolutionary Microbiology*. 63(Pt5):1627-1632.

19. T N R Srinivas, Sathish Prasad, **Poorna Manasa**, B Sailaja, Zareena Begum, S Shivaji. 2013. *Lacinutrix himadriensis* sp. nov., a psychrophilic bacterium isolated from a marine sediment, and emended description of the genus *Lacinutrix*. *International Journal of Systematic and Evolutionary Microbiology*. 63(Pt 2):729-734.

20. Sathish Prasad, **Poorna Manasa**, Sailaja Buddhi, Shiv Mohan Singh, Sisinthy Shivaji. Antagonistic interaction networks among bacteria from a cold soil environment. *FEMS Microbiology Ecology*. 78(2):376-385.

21. S Shivaji, P Vishnu Vardhan Reddy, S S S Nageswara Rao, Zareena Begum, **Poorna Manasa**, T N R Srinivas. *Cyclobacterium qasimii* sp nov., a psychrotolerant bacterium isolated from Arctic marine sediment. *International Journal of Systematic and Evolutionary Microbiology*. 62(Pt9):2133-2139.

22. P Anil Kumar, T N R Srinivas, **Poorna Manasa**, S Madhu, S Shivaji. 2011. *Lutibaculum baratangense* gen. nov., sp nov., a proteobacterium isolated from a mud volcano. *International Journal of Systematic and Evolutionary Microbiology*. 62(Pt8):2025-2031.

23. T N R Srinivas, P Vishnu Vardhan Reddy, Z Begum, **Poorna Manasa**, S Shivaji. 2011. *Oceanisphaera arctica* sp nov., isolated from Arctic marine sediment, and emended description of the genus *Oceanisphaera*. *International Journal of Systematic and Evolutionary Microbiology*. 62(Pt8):1926-1931.

24. Amit Kumar Banerjee, **B Poorna Manasa**, Upadhyayula Suryanarayana Murty. 2010. Assessing the relationship among physicochemical properties of proteins with respect to hydrophobicity: A case study on AGC kinase superfamily. *Indian journal of biochemistry & biophysics*. 47(6):370-377.

Technical skills:

Molecular techniques: Sanger's DNA sequencing (ABI 3730) and Next Generation Sequencing (ion torrent platforms), Access array (Fluidigm), PCR, real time PCR, cloning, restriction digestion, RNA and DNA isolation, protein expression and purification (in bacteria, mammalian cells and yeast systems), Northern Blot, *in situ* Hybridization and agarose gel electrophoresis.

Cell culture methods: primary cell lines, mammalian cell culture and *Biomphalaria glabarata* embryonic cell lines maintenance. Transient and stable transfection, immunofluorescence, reporter assays like Dual-Glo luciferase assay.

Biochemical techniques: enzyme assays, kinetics, protein purification, SDS-PAGE, Western Blot, antibody generation in rabbit, EMSA and co-immunoprecipitation.

Chromatography techniques: TLC, HPLC (Shimadzu and Agilent platforms), gel filtration, affinity chromatography and ion-exchange chromatography.

Microbiological techniques: culturing of microbes, isolation and species level identification of bacteria, 16s rRNA analysis, basic morphological and biochemical

analysis of bacteria, 16s metagenomics, Light (Olympus) and Fluorescent Microscopy (Leica).

Bioinformatics tools: GSEA, DE-Seq, Alignment tools like BLAST, CLUSTAL, and Bioedit, sequence retrieval from databases, Primer3 and other primer designing software, Expasy tools like ProtParam, ProtScale, HMMER, Pfam and structural analysis tools like Swiss Modeller, UCSF-Chimera for Homology Modeling, Phylogenetic software like MEGA.

Mass Spectrometry: Trypsin digestion and *de novo* sequencing of peptides and glycopeptides using ESI-QTOF-MS (Micromass)

Software:

GraphPad Prism, SPSS statistical analysis, Microsoft Office package (Word, Excel, and Power Point), Adobe Photoshop and EndNote

Conferences and Workshops:

Poster presentations

1. PM Bhamidimarri, LS Krishnapati, S Ghaskadbi, SK Nadimpalli. 'Lysosomal enzyme targeting in *Hydra vulgaris*, a Cnidarian (lower invertebrate)'. Poster presented in 'Protein trafficking in Health and Disease' symposium conducted by DFG Research training group 1459 (GRK) at Hamburg University, Hamburg Germany, 7th – 9th, June 2017.

2. PM Bhamidimarri, Michael Mormann, Gottfried Pohlentz, SK Nadimpalli. 'The tale of lysosomal biogenesis in the kingdom *Animalia*.' Poster presented at 27th International carbohydrate symposium conducted by International Carbohydrate Organization at Indian Institute of Science (IISc), Bangalore, 12th -17th, Jan 2014.

Workshops/Training

3. Attended workshop on “**Ion GeneStudio S5 Workflow Training**” at Thermo Fisher Scientific Centre, Dubai, UAE from 6th -7th August, 2019

4. Participated in Level 1 of **Science Journalism workshop** organized by Newton Bhaba Fund of British Council along with IISER, Pune, India during 13-17th November, 2017

5. Participated in 1st Hands-on training **workshop on Hydra Biology** conducted at MACS-Agharkar Research Institute, Pune, India during 4-8th July, 2016.

6. Attended workshop on “**Biosimilars Bio-characterization using Mass spectrometry**” conducted by Center for Cellular and Molecular Platforms (C-CAMP), Bangalore, India in 2015.

7. Participated in **Glycobiology** training during a winter workshop conducted by Molecular and Cellular Glyco-science (MCGS) group, Germany in collaboration with UOH, India in 2012.

Achievements/ Merits/ Scholarship:

1. Selected as a student member of International Research Training Group (IRTG) of DFG (German Funding Group) in Molecular and Cellular Glycoscience (MCGS), an Indo-German collaboration in the field of Glycobiology in September 2012.
2. Qualified CSIR-UGC NET for UGC-JRF, an exam conducted to award fellowships for doctoral programme and Lectureship by Council for Scientific and Industrial Research and University Grants Commission, Government of India in June 2011 [All India 67th rank].
3. Qualified GATE-2010 with a percentile of 97 in the stream of Life Sciences
4. Cleared TOEFL-iBT in June 2010 with a score of 101 out of 120.
5. Recipient of '*fellowship for biotechnology*' from Department of Biotechnology (DBT), Government of India for MSc program 2007-2009.

Languages:

English, Hindi and Telugu (writing, reading and speaking),
German (basic level reading and speaking),
Tamil (basic level speaking).

Social network links:

LinkedIn: <https://www.linkedin.com/in/poorna-manasa-b-6a1466114/>

ResearchGate: https://www.researchgate.net/profile/Poorna_Manasa_Bhamidimarri2

GoogleScholar: <https://scholar.google.co.in/citations?user=IUnmZm0AAAAJ&hl=en>

Personal details

Name : Poorna Manasa Bhamidimarri

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