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Silkworms are susceptible to a variety of microbial diseases and are colonized by specially adapted microbiomes. Nevertheless, the interactions between different bacterial phyla and their syntrophic growth patterns are not yet established. Systematic understanding of these interactions will enable us to understand microbial pathogenicity and its effects on the silkworm fitness under distinct climates. Since most of the bacteria are uncultivable in nature, modern molecular “omics” methods and advanced microscopic tools have been widely using to decipher microbial interactions and their metabolic processes. At CMER&TI, Lahdoigarh, we are implementing combination of microscopic tools and molecular approaches in silkworm pathological research to understand microbe-host interactions, microbe-microbe interactions and their biofilm patterns at molecular levels. Particularly, special emphasis is being given to high throughput genomics and transcriptomics for developing point-of-care diagnostic platforms in molecular epidemiology of Vanya silkworm infectious diseases.

Academic Qualification

- **M. Sc. Microbiology**, College of Science and Technology, Andhra University Campus, Vizag, India, April 2006.
- **Ph. D. Microbial Ecology**, The Maharaja Sayajirao University of Baroda, Vadodara, India and in Research Centre for Eco-Environmental Sciences (RCEES), Chinese Academy of Sciences (CAS), Beijing, China, March 2013

Research Interest

- **Microbial Ecology of Silkworm**
- **Host-Pathogen Interactions / Silkworm Pathology**
- **Metagenomics and Microbial Transcriptomics of Silkworm Diseases.**

Research Experience (Chronological order)

- **Project entitled “Isolation and partial characterization of bacteriophage specific to *E. coli* from domestic sewage”** was completed in Virology Department, Sri Venkateswara University, Tirupati, Andhra Pradesh, India during April 2005 – June 2005.
- **Worked as a guest teaching faculty** in Bioinformatics, Applied Mathematics department, The M.S. University of Baroda. Vadodara, Gujarat during June 2007 – June 2008.
- **Worked as a guest teaching faculty for PG students** in Department of Fishery Microbiology, College of Fisheries, KVAFSU, Mangalore, May 2013 to June 2014.
- **Worked as a Junior Research Fellow** in Department of Science and Technology (DST), Gov. of India funded Project entitled “**Microbial community structure and activity in shallow subsurface soils around Baroda in relation to land use**” from June 2006 – February 2009, The M.S. University of Baroda, Vadodara, Gujarat , India
- **Worked as a Senior Research Fellow** in Department of Science and Technology (DST), Gov. of India funded Project entitled “**Microbial community structure and activity in shallow subsurface soil around Baroda in relation to land use**” from March 2009- March 2011, The M.S. University of Baroda. Vadodara, Gujarat , India
- **Worked as an International TWAS-CAS postgraduate research fellow** in Research Center for Eco- environmental Science (RCEES), Chinese Academy of Sciences (CAS), Beijing, China from March 2011 to Jan 2012, RCEES, CAS, Beijing, China.
- **Guided 7 M. Sc. Students** in their dissertation work.

- **Worked as a Research Associate** in UNESCO MIRCEN for Marine Biotechnology, Karnataka Veterinary, Animal and Fisheries Sciences University, College of Fisheries, Mangalore-575002, India during May, 2013 to July 2014.
- **Worked as an Assistant Professor** Faculty position in Department of Biomedical Science, Nitte University, Mangalore, Aug 2014 to Oct 2015.
- **Currently working as a Scientist-B in Pathology Department**, CMER&TI, Lahdoigarh, Assam (since Nov 2015 onwards).

International Research Exposure

- **Worked as a TWAS-CAS postgraduate research fellow** in Research Centre for Eco environmental Science (RCEES),
- Chinese Academy of Sciences (CAS), Beijing, China from March 2011 to Jan 2012, RCEES, CAS, Beijing, PR China.
- **Visited Cottbus, Germany** for a week and completed international workshop by MYRES (meeting of young researchers in earth sciences), Sep 20–24, 2010, Cottbus, Germany. Both travel and accommodation grants were secured
- **Presented research work** in prestigious Asian plant growth promoting rhizobacteria (PGPR) congress held at China Agricultural University, during August 21-24, 2011, Beijing, PR China.

Academic achievements/ Awards (Chronological order)

- **Invited speaker for brain storming session** in DST Field Workshop on Quaternary Carbonate Deposits of Saurashtra and Kachchh, Gujarat., December 4-10, 2006, Diu, India
- **Invited speaker in International Conference** and Field Workshop on Paleopedology: Paleosols, Geomorphic Evolution of Landscape and paleoclimate change, Anna University, January 10-14, 2008, Chennai- 600 044, India.
- **Best oral presentation award** in DST PAMC meeting on science of shallow subsurface (SSS), October 12-14, 2009, National Geophysical Research Institute (NGRI), Hyderabad- 500 606, India.
- **Best poster presentation award** in International workshop on Rhizosphere Biology of Agriculture, Horticulture and Forestry: Present and Future., February 25-27, 2010, J.B. Pant agricultural university and technology (J.B.P.U.&T.), Pantnagar- 263 145, India.
- **Junior research fellowship (2006-2009) and senior research fellowship (2009 onwards)** from Department of Science and Technology (DST), New Delhi, India.
- **Selected for international workshop by MYRES (meeting of young researchers in earth sciences), 2010, Cottbus, Germany**. Both travel and accommodation grants were secured.
- **Secured prestigious TWAS-CAS/PG international fellowship for the year 2010** for conducting final year PhD in Chinese academy of science (CAS) institute, RCEES, Beijing, China.
- **Delivered a guest lecture** entitled “Geomicrobiology and its significance to Earth science” in National Geophysical Research Institute, Hyderabad on 22-4-2012.
- **Best oral presentation award** in Indian group meeting of Asian PGPR, ‘Recent Trends in Sustainable Agriculture’. October 22-23, 2012, Department of Biochemistry, M. S. University of Baroda, Vadodara-390002, India.

Nucleotide sequence submissions to GenBank (<http://www.ncbi.nlm.nih.gov/genbank/>)

520 new nucleotide sequences have been added to the GenBank database. Out of these 80 are 16S rRNA gene sequences from cultivated microbes as well as clones. They represent bacteria present in hitherto unexplored environmental settings. Remaining 445 are sequences of AOA-*amoA* and AOB-*amoA* genes. These sequences represent potential ammonia oxidizing microbes in polluted soil.

Published / Accepted research articles in scientific journals -14, Cumulative impact factor is 14.0 (Thomson Reuters Journal Citation Reports 2015)

1. **Subrahmanyam G**, Shen JP, Liu YR, Archana G, Zhnag LM (2016). Effect of long-term industrial waste effluent pollution on soil enzyme activities and bacterial community composition. *Environmental Monitoring and Assessment*. Accepted, In press.
2. **Subrahmanyam G**, Sharma R, Kumar GN, Archana G. (2015). *Vigna radiata* GM4 Plant Growth Enhancement and Root Colonization by a Multi-metal Resistant Plant Growth Promoting Bacterium in Cr (VI) Amended Soils. *Pedosphere*. Accepted, In press.
3. Reddy AD, **Subrahmanyam G**, Naveen S, Karunasagar I, Karunasagar I. (2015). Isolation of ammonia oxidizing bacteria (AOB) from fish processing effluents. *National academy of Science Letters*, **38**: 393-397.
4. Reddy AD, **Subrahmanyam G**, Rajeswari V, Nayak BB, Karunasagar I. (2014). Ammonia oxidizing microbes and physiochemical parameters of effluent treatment plants of fish processing industries. *Frontier Journal of Veterinary and Animal Sciences*, **3**: 188-193.
5. Reddy AD, **Subrahmanyam G**, Kallappa GS, Karunasagar I, Karunasagar I. (2014). Detection of ammonia-oxidizing archaea in fish processing effluent treatment plants. *Indian Journal of Microbiology*, **54**: 434-438.
6. Gürtler V, **Subrahmanyam G**, Shekar M, Maiti B, Karunasagar I (2014) Bacterial typing and identification by genomic analysis of 16S-23S rRNA intergenic spacer (ITS) sequences. "In: New Approaches to Prokaryotic Systematics, Methods in Microbiology, Chapter 12, **41**: 253-274. Elsevier Academic Press, San Diego, CA.
7. **Subrahmanyam G**, Hu HW, Zheng YM, Archana G, He JZ, and Liu YR. (2014). Response of ammonia oxidizing microbes to the stresses of arsenic and copper in two acidic alfisols. *Applied Soil Ecology*, **77**: 59-67.
8. **Subrahmanyam G**, Shen J, Liu YR, Archana G, He JZ. (2014). Response of ammonia oxidizing archaea and bacteria to long-term industrial effluent polluted soils, Gujarat, western India, *Environmental Monitoring and Assessment*, **186**: 4037-4050.
9. **Subrahmanyam G**, Khonde N, Maurya DM, Chamyal LS and Archana G. (2014). Microbial activity and culturable bacterial diversity in the sediments of Great Rann of Kutch, a unique ecosystem, Western India, *Pedosphere*, **24**: 45-55.
10. **Subrahmanyam G**, Vaghela R, Bhatt N and Archana G. (2012). Carbonate dissolving bacteria from 'miliolite', a bioclastic limestone, from Gopnath, Gujarat, western India. *Microbes and Environments*, **27**: 334-337.
11. **Subrahmanyam G**, Archana G and Chamyal LS. (2011). Soil microbial activity and its relation to soil indigenous properties in semiarid alluvial and estuarine soils of Mahi River basin, Western India. *International Journal of Soil Science*, **6**: 224-237.
12. **Subrahmanyam G**, Archana G and Chamyal LS. (2011). Microbial activity and diversity in the late Pleistocene paleosols of alluvial Mahi River basin, Gujarat, western India. *Current Science*, **101**: 202-209.
13. **Subrahmanyam G** and Gupta NC. (2011). Insilco proteome analysis of *Pseudomonas aeruginosa* for identification of novel and potential drug target: a bio-informatic approach. *National Academy of Science letters*, **34**: 63-68.
14. **Subrahmanyam G**, Sarovar B, Rao GS, Prasad PD and Saigopal DVR. (2010). Occurrence and partial characterization of coliphage from domestic sewage around Tirupati, southern India. *National Academy of Science letters*, **33**: 21-25.

International Book Chapters published in Books: 1

Gürtler V, **Subrahmanyam G**, Shekar M, Maiti B, Karunasagar I (2014) Bacterial typing and identification by genomic analysis of 16S-23S rRNA intergenic spacer (ITS) sequences. "In: **New Approaches to Prokaryotic Systematics, Methods in Microbiology, Chapter 12, 41**: 253-274. **Elsevier Academic Press**, San Diego, CA.

Full length research articles published in books as conference proceedings: 3

1. **Subrahmanyam G** and Archana G. (2011). Plant growth promoting activity of *Enterobacter* sp. C1D in heavy metal contaminated soils. pp. 436-442. Proceedings of the 2nd Asian PGPR Conference, August 21- 24, 2011, China Agricultural University, Beijing, PR China.
2. **Subrahmanyam G**, Ravi V, Bhatt N, Archana G. (2010). Bacteriology of miliolite, a bioclastic lime stone: bacterial diversity and activity in weathering of miliolite. pp. 119-122. Proceedings of Initial Ecosystems, MYRES, September 20-24th, The Brandenburg University of Technology, Cottbus, Germany.
3. **Subrahmanyam G**, Karunasagar I. (2014). Diversity and activity of ammonia-oxidizing archaea and bacteria in long-term industrial effluent-polluted soils, Gujarat, Western India. pp. 262-263. Proceedings of Workshop cum Nineteenth National Symposium on Environment (NSE-19), December 11-13, M.G. University, Kottayam, India.

No. of research conferences/symposia attended: 22

No. of Research papers presented in national and international conferences: 14

National/International training programmes/Courses completed: 3

1. Completed international training workshop on Responsible conduct of Science/Research organized jointly by National Academy of Science, USA and Nitte University, India during April 30th - May 3rd, 2015, Nitte University, Mangalore, India
2. Completed national training programme on “Microbial identification and gene mining: A bioinformatics approach” held at National bureau of agriculturally important microorganisms (NBAIM) during September, 1-10, 2010, Mau, U.P, India.
3. Journal Author Academy, Springer, Part I and Part II courses for author.

Membership in Organizations/ Body

1. Member in International Society for Subsurface Microbiology (ISSM)
 2. Member in Society of Anaerobic Microbiology (SAM)
 3. Annual membership in Association of Microbiologists of India (AMI)
 4. Annual membership in Society of Biological Chemists of India (SBC)
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