

## **Dr. Meghanath Shambhu Prabhu**

### **Research experience (06 Y):**

- 2017- 2019 - **Post-Doctoral researcher** at Portal School of Environmental Studies (PSES), **Tel Aviv University, Israel**, under the mentorship of Dr. Alexander Golberg. Research topic: “Starch production and characterization from marine macroalgae (*Ulva* sp.) biomass and fermentation of biomass leftover to bioethanol with two-step fermentation” from 01.07.2017 to 30.06.2019.
- 2011-15 - Research experience during **Ph. D. thesis** entitled “**Resource recovery from wastewater for sustainable development**” under the guidance of **Dr. Srikanth Mutnuri**, in Biological Sciences Department, BITS-Pilani, K K Birla Goa Campus, Zuarinagar, Mormugoa-Goa, India; from 02.08.2011 to 07.10.2015.
- 2014-15 - **Project SRF** for DBT, India Sponsored project entitled “Biotransformation of phosphogypsum by sulphate reducing bacteria” from 01.03.2014 to 28.02.2015 at BITS Pilani K K Birla Goa Campus. PI: Dr. M. Srikanth.
- 2013-14 - **Project assistant** for consultancy project “Microbial degradation of Paracetamol from Sanofi pharmaceutical effluents” at BITS-Pilani, K. K. Birla Goa Campus, Zuarinagar, Mormugoa-Goa, India; from 02.05.2013 to 30.01.2014.
- 2011-12 - **Project fellow** on consultancy project by German Technical Cooperation on GIZ BMU – Waste to Energy project at BITS Pilani K K Birla Goa Campus, from 17.10.2011 - 01.12.2012. PI: Dr. M. Srikanth.
- 2011 -**PA-II** in MCMRD Department, National Institute of Oceanography (NIO), Donapaula Goa, India, for the project Ballast Water Control and Management (GAP-2429); PI: Dr. A.C. Anil from 19.01.2011 to 01.08.2011.
- 2009-10 -**M. Sc. Dissertation**: “Microbiology of waters: Village wells - filter units (Goa University campus) and characterization of pigment of the predominant isolate (*Pseudomonas*)”. Supervisor: Dr. Irene Furtado.
- 2007-08 -Minor project: “Food preservatives: A boon or a bane”, as a part of Bachelor’s Degree; under the guidance of Dr. Flory Pereira.

### **Teaching Experience (06 Y):**

- 2019- to till date **Assistant Professor**, Dept. of Biotechnology, **Goa University**, Taleigao, Goa (July 2019 – till date).
- 2016-2017 **Assistant Professor**, Dept. of Microbiology, **Goa University**, Taleigao, Goa (June 29, 2016 - May 3, 2017).
- 2015-2016 **Assistant Professor**, Dept. of Microbiology, **PES’s RSN college of Arts and Science**, Farmagudi Ponda Goa, India. Courses taught: (August 14, 2015 - March 30, 2016).
- 2011-2015 **Teaching Assistant**, Biological Sciences Dept., **BITS Pilani University, India**.  
**Courses assisted:** a) Instrumental Methods of Analysis. Trained undergraduate students in instrumentation techniques such as Gas Chromatography, Denaturing Gradient Gel Electrophoresis (DGGE), Gel electrophoresis, SDS-PAGE, PFGE, Ultracentrifugation, etc.  
b) Biology Laboratory. Conducted and evaluated under graduate students on experiments demonstrating basic principles of biology.

c) General Biology Course. Taught and evaluated general biology concepts of undergraduate students.

### **Work Experience:**

Worked in Sterile unit IX of CIPLA Pharmaceuticals, Verna-Goa, as Microbiology Analyst from 02.08.2010 to 18.01.2011. Responsible for environment monitoring sterile production area, air and water sampling and its analysis for microbial sterility, BET test for water and pharmaceuticals.

### **Master thesis guided (06)**

1. Anchit Parker and **Meghanath Prabhu** (2017). Preparation of bioformulation having anti plant pathogenic activity and plant growth promoting properties. Dept. of Microbiology, Goa University.
2. Prajakta Patil and **Meghanath Prabhu** (2017). Biotransformation of phosphogypsum to calcium carbonate by *Bacillus* sp. strain GUMP2. Dept. of Microbiology, Goa University.
3. Purva Sadhale and **Meghanath Prabhu** (2017). Bio-ethanol production from cooked rice waste- a sustainable solution for energy crisis and waste management. Dept. of Microbiology, Goa University.
4. Srutika Borker and **Meghanath Prabhu** (2017). Bio-methane potential of marine algal biomass. Dept. of Microbiology, Goa University.
5. Nazira Brito and **Meghanath Prabhu** (2017). Alternative method for detection of amylase producing microorganisms. Dept. of Microbiology, Goa University.
6. Oreste Rego and **Meghanath Prabhu** (2017). Nutrients recovery from wastewaters using sustainable environmental technology. Dept. of Microbiology, Goa University.

### **Honours and Awards:**

1. Received **DST SERB-National Post-Doctoral Fellowship** (N-PDF) award on October 2017 for duration of two years (did not take up the award as I already got enrolled for Post-doctoral research at Tel Aviv University).
2. Received **Sir Ratan Tata Foundation Post-doctoral Fellowship** award in September 2017 at Tel Aviv University.
3. Received **Post-doctoral research fellowship of Tel Aviv University**, Israel for the year 2017-18.
4. Selected for Indo-German Center for Sustainable development (**IGCS**) summer school 2013 at **RWTH Aachen University, Aachen Germany** on **Indian and German water and waste management scenarios**; was among ten Indian students to attend this summer school from 2-14 July 2013.

### **Scientific and Technical Advisor:**

1. **Chief technical officer (CTO)** at Residential Biogas LLP, Tel Aviv, Israel from 10<sup>th</sup> July 2017 to 18<sup>th</sup> October 2017. We were among top three at Climate Launchpad 2017- the Green Business Ideas Competition in Tel Aiv Israel and represented the global grand finals of the same at Cyprus.
2. **Technical advisor** at Goa Shipyard Limited (GSL), Vasco Goa – Successful re-commissioning of 10 m<sup>3</sup> food waste based biogas plant (March 2017 to till date). Continuous monitoring and guidance regarding the operation of biogas plant from March 2017 till date.

3. **Research advisor** at Sustainable Bio-solutions LLP, BITS Pilani Goa – Guidance on sewage water treatment and resource recovery from wastes (2013-14).

#### **Peer reviewed journal articles:**

1. **Meghanath Prabhu** & Srikanth Mutnuri (2014). Cow urine as a potential source for struvite production. *International Journal of Recycling of Organic Waste in Agriculture* 3 (1):49. DOI 10.1007/s40093-014-0049-z. ISSN: 22517715. IF- 1.185.
2. **Meghanath S. Prabhu**, Yogesh D. Walawalkar & Irene Furtado (2014). Purification and molecular and biological characterisation of the 1-hydroxyphenazine, produced by an environmental strain of *Pseudomonas aeruginosa*. *World Journal of Microbiology and Biotechnology*. 30:3091–3099. DOI 10.1007/s11274-014-1736-7. ISSN: 0959-3993. IF- 2.1
3. **Meghanath Prabhu**, Srikanth Mutnuri, Santosh Kumar Dubey and Milind Mohan Naik. (2014). One-Pot Rapid Synthesis of Face-Centered Cubic Silver Nanoparticles Using Fermented Cow Urine, A Nanoweapon Against Fungal and Bacterial Pathogens. *Journal of Bionanoscience*. 8: 1–9. ISSN: 1557-7910 E- 15577929.
4. R. K. Kunkalekar, **M. S. Prabhu**, M.M. Naik and A.V. Salker (2014) Silver-doped manganese dioxide and trioxide nanoparticles inhibit both Gram positive and Gram negative pathogenic bacteria. *Colloids and Surfaces B: Biointerfaces* 113: 429– 434. ISSN: 09277765. IF- 4.3
5. **Meghanath Prabhu** and Srikanth Mutnuri (2016). Anaerobic Co-digestion of Sewage Sludge and Food Waste. *Waste management and research*. 34(4):307-15. DOI: 10.1177/0734242X16628976. ISSN: 0734-242X. IF-1.631.
6. Milind Mohan Naik, **Meghanath Shambhu Prabhu**, Sanika Naik Samant, Pranaya Milind Naik and Shilpa Shirodkar (2017). Synergistic action of silver nanoparticles synthesized from Silver resistant estuarine *Pseudomonas aeruginosa* strain SN5 with antibiotics against antibiotic resistant bacterial human pathogens. *Thalassas: An International Journal of Marine Sciences*. 33:1 73-80. <https://doi.org/10.1007/s41208-017-0023-4>. ISSN: 2366-1674. IF- 0.5
7. Milind Mohan Naik, **Meghanath Shambhu Prabhu** and Veda Manerikar (2018). The First report on AHL enhanced expression of virulence factor, hemolysin in Gram positive, *Listeria monocytogenes* isolated from dairy industry. *Indian J of dairy science*. 71(3); 313-318. ISSN 00195146  
<http://epubs.icar.org.in/ejournal/index.php/IJDS/article/view/75149/33663>
8. **Meghanath Prabhu**, Alexander Chemodanov; Ruth Gottlieb; Meital Kazir; Omri Nahor; Michael Gozin; Alvaro Israel; Yoav Livney; Alexander Golberg. (2019). Starch from the sea: the green macroalga *Ulva* sp. as a potential source for sustainable starch production in the marine biorefinery. *Algal Research*. 37; 215-227. ISSN: 2211-9264. IF. 3.8
9. Meiron Zollmann, Arthur Robin, **Meghanath Prabhu**, Mark Polikovsky, Amichai Gillis, Semion Greiserman, Alexander Golberg (2019). Green Technology in Green Macroalgae Biorefinery. *Journal of Applied phycology*. (Just Accepted).
10. High-voltage pulsed electric fields preprocessing enhances extraction of starch, proteins and ash from marine macroalgae *Ulva ohnoi*. *ACS Sustainable Chemistry & Engineering*. (Under revision-Manuscript ID: sc-2019-00380t.R1).

#### **Conference full papers (peer reviewed)**

1. **M. Prabhu**, M. Horvat, L. Lorenz, R.Otterpohl, T. Bettendorf, S. Mutnuri (2014). Terra Preta as an Alternative for the Management of Sludge from Wastewater

- Treatment Plants, in: Bettendorf, T.; Wendland, C.; Otterpohl, R. *Terra Preta Sanitation*. (29-31 August 2013) ISBN 978-3-00-046586-4.
2. **M. Prabhu**, M. Horvat, L. Lorenz, R. Otterpohl, T. Bettendorf, S. Mutnuri (2014). Effect of terra preta compost on growth of *Vigna radiata*, in: Bettendorf, T.; Wendland, C.; Otterpohl, R. *Terra Preta Sanitation*. ISBN 978-3-00-046586-4.

### **Book Chapters**

1. **Meghanath Shambhu Prabhu** and Srikanth Mutnuri (2019). Advances and microbial techniques for phosphorus recovery in sustainable wastewater. In: Advances in Biological Science Research: A Practical Approach. Edited by Surya Nandan Meena and Milind Naik. Elsevier publisher, Vol 1. Page 275-289. ISBN: 978-0-12-817497-5.
2. **Meghanath S Prabhu** and Milind M Naik (2018). Quorum Sensing Controlled Gene Expression Systems in Gram Positive and Gram Negative Bacteria. *in: Recent Advances in Microbial Quorum sensing and Biofilm Formation (VOLUME 2)* (Accepted, to appear in ).
3. Golberg A, Zollmann M, Prabu M, Palatnik, RR. Enabling bioeconomy with offshore macroalgae biorefineries. In Bioeconomy for Sustainable H.B. Singh Editor. Springer-Nature. *To appear October 2019*.

### **Papers/posters presented in International Conferences:**

1. Meghanath Prabhu and Srikanth Mutnuri. Anaerobic Co-digestion of Food Waste and Sewage sludge. Poster presentation at SPE.ZG - Student Chapter - Society of Petroleum Engineers, 4-7<sup>th</sup> March 2019, Zagreb, Croatia.
2. **Meghanath Prabhu**, Alexander Golberg, Alvaro Israel. Marine biorefinery with co-production of salts, starch, lipids, ulvan, protein and cellulose from green macroalgae *Ulva ohnoi*. Oral Presentation at EUAlgae – European network for algal-bioproducts 26-27 February 2019, Madrid, Spain.
3. **Meghanath Prabhu**, Ruth Gotliv, Yoav Livney, Alvaro Israel, Alexander Golberg (2018). Seaweed as the potential source for starch production in an offshore biorefinery. Oral presentation at the Symposium on Innovations in Bioengineering Technologies in the Service of Humanity and Society. 28<sup>th</sup> March 2018, Tel Aviv University, Israel.
4. **Meghanath Prabhu**, Ruth Gotliv, Yoav Livney, Alvaro Israel, Alexander Golberg (2017). Starch extraction from the green macroalgae *Ulva* sp. for sustainable food systems. Oral presentation at the 4<sup>th</sup> Conference of the Israel Society for Biotechnology Engineering (ISBE), December 17<sup>th</sup> 2017, Tel Aviv, Israel.
5. **Meghanath Prabhu** (Organizing committee member) for 2<sup>nd</sup> International Terra Preta Sanitation Conference and Decentralized wastewater system, 19-21 November, 2015 at BITS Pilani, K K Birla Goa campus.
6. **Meghanath Prabhu** and Srikanth Mutnuri (2014). Cow Urine as a potential source for Struvite production. Oral presentation at the 3<sup>rd</sup> International Conference on Recycling and Reuse of Materials (ICRM 2014) 11-13 April 2014, at Kottayam, Kerala, India.
7. **M. Prabhu**, M. Horvat, L. Lorenz, R. Otterpohl, T. Bettendorf, S. Mutnuri. (2013). **Terra Preta as an Alternative for the Management of Sludge from Waste Water Treatment Plant**. Oral presentation at the 1st International Conference, Terra-Preta-Sanitation 2013, 28-31 August 2013, Hamburg University of Technology, Germany.

8. **M. Prabhu**, M. Horvat, L. Lorenz, R. Otterpohl, T. Bettendorf, S. Mutnuri (2014). **Effect of terra preta compost on growth of *Vigna radiate***. Oal presentation at the 1st International Conference, Terra-Preta-Sanitation 2013, 28-31 August 2013 at Hamburg University of Technology, Germany).
9. Participated in 4<sup>th</sup> Asia Pacific - International Society of Microbial Electrochemistry and Technology (AP-ISMET), 13-16<sup>th</sup> Nov 2018, BITS-Pilani Goa, India

**Papers/posters presented in National Conferences/workshops:**

1. **Meghanath Prabhu** and Oreste Rego (2017) Recovery of nutrients from wastewater using sustainable environmental technology. Poster presented at seminar organized by PES's RSN College of Arts and Science
2. **Meghanath Prabhu** and Srikanth Mutnuri (2016). Terra Preta as an Alternative for the Management of Sludge from Wastewater Treatment Plants. Oral Presentation at the Seminar New Frontiers in Microbiology and Applied Biology by Department of Microbiology St Xavier's College on 7-8<sup>th</sup> January 2016.
3. **Meghanath Prabhu** and Srikanth Mutnuri (2015). Community analysis of methanogens during anaerobic co-digestion using T-RFLP. (3<sup>rd</sup> best oral presentation) at one day state level seminar on "Archaea: Microbes of the third Domain of Life" 28 September 2015, at PES's SRSN college of Arts and Science, Ponda, Goa, India.
4. **Meghanath Prabhu** and Srikanth Putnuri (2015). Discovery of Methane, Uncovering the eerie marsh Will-o'-the -Wisp: It's a Gas! (2<sup>rd</sup> best poster award) at one day state level seminar on "Archaea: Microbes of the third Domain of Life" 28 September 2015, at PES's SRSN college of Arts and Science, Farmagudi, Ponda, Goa, India.
5. **Meghanath Prabhu** (Organizing committee member) Participated and presented posters entitled "Anaerobic Co-digestion of Septage and Solid Organic Waste for Energy Production" and "Anaerobic Co-digestion of Food Waste and Sewage sludge" in conference "Decentralized biogas digesters and their slurry management (DBDSM 2014)" 20-21 November, 2014 at BITS Pilani, K K Birla Goa campus.
6. **Meghanath Prabhu** (Organizing committee member) Interdisciplinary Research Workshop. Initiative under vision 2020, mission 2015. 14-15 November 2014. BITS Pilani K K Birla Goa Campus.
7. **Meghanath Prabhu** (organizing committee member) 3<sup>rd</sup> Annual Toxinological Society of India-TSICON-2013; held at BITS- Pilani, K K BIRLA Goa campus, Goa.
8. **Meghanath Prabhu** and Srikanth Mutnuri (2012). Anaerobic digestion of septage and food waste – a waste to energy project in Nashik. (Oral presentation) at National convention on "Current and emerging trends in Indian Biogas and Bio-fertilizers development" at IIT Delhi during 15-17<sup>th</sup> September 2012. New Delhi, India.
9. **Meghanath Prabhu** (Organizing committee member) for "RNA to Protein, A Comprehensive Workshop" organised by BITS Pilani, K K Birla Goa Campus-India on 3 rd - 9 th June 2012.
10. Attended Sensitization Workshop and skill development training on sub megawatt scale biomass power generation for southern region at IISc Bangalore on 26-27<sup>th</sup> April 2013.
11. Attended and volunteered for a four day **International symposium on Vector Borne Diseases** organized by NAVBD in collaboration with Goa University and Malarial Research Centre Goa.

12. Attended 50<sup>th</sup> Annual Conference of Associations of Microbiologist of India, **AMI** 2009 held at Pune.

### **Other publications:**

1. Submitted and published a partial 16S rRNA gene sequence of the novel type strain bacterial isolate *Pseudomonas aeruginosa*, isolate fb14. 2012. EMBL nucleotide sequence database. Accession number HF562852. (<http://www.ebi.ac.uk/ena/data/view/HF562852>).
2. Submitted and published a partial 16S rRNA gene sequence of the novel type strain bacterial isolate *Lysinibacillus fusiformis* strain GUMA1. 2018. NCBI Sequence Read Archive (SRA) submission: SRR6757013 (<https://www.ncbi.nlm.nih.gov/biosample/SAMN08574415>).

### **Invited Speaker Talk**

1. Talk on “High-voltage pulsed electric fields pre-processing enhances extraction of starch, proteins and ash from marine macroalgae *Ulva ohnoi*” on 05<sup>th</sup> April 2019, IIT Indore, Madhya Pradesh, India.
2. Talk on “Anaerobic co-digestion of food waste and septage” at Novel Sanitation approaches and Emerging Trends in Wastewater Treatment Technology, December 19 -21 2017, BITS Pilani K K Birla Goa Campus Goa, India.
3. Talk on “Food waste: a source of clean energy and a must soil nutrition (A decentralized approach for management of city waste)” at Certificate course on Advances in food technology, 26-30 December 2017, PES’s RSN College of Arts and Science, Goa.

### **Other Activities:**

1. Member of American Society for Microbiology (No.: 56996473).
2. Member and participant in the activities of Science club- All India Science Teachers Association, Nature club of India (World Wide Fund for nature of India), Survival Nature Club, and National Service Scheme (NSS).