
YAMINI JANGIR

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Experience:

- May 2018 - present *California Institute of Technology, Pasadena, USA*
Postdoctoral Scholar Research Associate (Biology and Biological Engineering)
Advisor: Prof. Victoria J. Orphan
- Sept 2016 - Dec 2017 *University of Oxford, Oxford, UK*
Research Visitor (Department of Physics)

Education:

- 2010–2016 *University of Southern California, Los Angeles, USA*
Ph.D. (Biophysics)
Advisor: Prof. Mohamed Y. El-Naggar
- 2007–2009 *Indian Institute of Technology, Bombay, India*
M.Sc. (Physics)
Advisor: Prof. R. Vijaya
- 2004–2007 *University of Delhi, Delhi, India*
B.Sc. (Physics)

Research Expertise:

- Microbe - mineral interaction
- Microbial electrochemistry
- Anaerobic microbiology

Research Experience:

Postdoctoral Research Associate

- Uncovered genes involved in anaerobic chitin degradation in marine sediments by employing 'omics tools
- Coupled nanoscale secondary ion mass spectrometry (nano-SIMS) with 16S rRNA gene fluorescent *in situ* hybridization (FISH) to reveal the spatial metabolic stratification within the electrode-attached biofilm
- Isolated novel microbes capable of anaerobic chitin degradation and/or mineral reduction
- Investigated translationally active microbes during insoluble biopolymer degradation by applying bioorthogonal non-canonical amino acid tagging (BONCAT) using click chemistry
- Studied the effect of environment on community composition and its structure using genomics and transcriptomics.

Graduate Research Assistant

- Led first *in situ* electrochemical incubation in the terrestrial deep subsurface
- Isolated novel microbes capable of extracellular electron transfer to and/or from electrodes from subsurface biosphere
- Performed electrochemical studies to reveal the role of flavins in electron transport during microbe-electrode interaction
- Expressed green fluorescent protein in the periplasmic region of *Shewanella oneidensis* MR-1

List of Publications:

1. *In situ* electrochemical studies of subsurface microbes at the Sanford Underground Research Facility, USA [\[Link\]](#)
Y. Jangir, A. Karbelkar, N. Beedle, L. Zinke, B. Kiel Reese, G. Wanger, C. Anderson, J.P. Amend, and M.Y. El-Naggar
Frontiers in Energy Research, 2019
Citations: 9
Journal impact factor: 3.8
2. *Isolation and characterization of electrochemically active subsurface Delftia and Azonexus species* [\[Link\]](#)
Y. Jangir, S. French, L.M. Momper, D.P. Moser, J.P. Amend, and M.Y. El-Naggar
Frontiers in Microbiology, 2016
Citations: 52
Journal impact factor: 8.2
3. *Disentangling the roles of free and cytochrome-bound flavins in extracellular electron transport from Shewanella oneidensis MR-1* [\[Link\]](#)
S. Xu, **Y. Jangir**, and M. Y. El-Naggar
Electrochimica Acta, 2016
Citations: 127
Journal impact factor: 7.33
4. *Shewanella oneidensis MR-1 nanowires are outer membrane and periplasmic extensions of the extracellular electron transport components* [\[Link\]](#)
S. Pirbadian, S. Barchinger, K.M. Leung, H.S. Byun, **Y. Jangir**, R.A. Bouhenni, S.B. Reed, M.F. Romine, D.A. Saffarini, L. Shi, Y.A. Gorby, J. H. Golbeck, and M.Y. El-Naggar
Proceedings of the National Sciences, USA, 2014
Citations: 560
Journal impact factor: 12.77

Upcoming Publications:

1. Microbial succession of anaerobic chitin-degrading community in bio-electrochemical reactors
Y. Jangir, S. Lim, F. Wu, and V. J. Orphan
In preparation, 2023
2. Single cell and population-level coexistence at the aerobic and anaerobic transition in marine denitrifier *Mari-nobacter str. D2M19*
Y. Jangir, Y. Guo, E. Zakem, and V. J. Orphan
In preparation, 2023

Conferences and Seminars:

Selected Conference Presentation

- 2021 From chitin degradation to breathing rocks – living in subseafloor sediments
North-America International Society for Microbial Electrochemistry and Technology
- 2021 Stable coexistence at the aerobic and anaerobic transition - an experimental validation
Goldschmidt Conference
- 2020 Anaerobic chitin degrading community grown in a bioelectrochemical reactor
Principles of Microbial Ecology (PriME), Simons Foundation, Fall Meeting
- 2019 Investigating chitin degrading microbial community in bioelectrochemical Reactors
American Geophysical Union (AGU), Fall Meeting
- 2018 Investigating continental subsurface biosphere with *in situ* electrochemical colonization
North-America International Society for Microbial Electrochemistry and Technology
- 2017 *In situ* electrochemical enrichment of subsurface bacteria at the Sanford Underground Research Facility
Astrobiology Science Conference (AbSciCon)
- 2016 Electrochemical Studies of Subsurface Microorganisms
Southern California Geobiology Symposium
- 2015 Laboratory and *In Situ* Cultivation of Subsurface Microorganisms
Astrobiology Science Conference (AbSciCon)
- 2014 Electrode Cultivation of Subsurface Microorganisms
International Symposium on Subsurface Microbiology (ISSM)

Seminar Talks

- 2022 Degrading chitin to breathing minerals - living in the deep-sea sediments
Women - International Society for Microbial Electrochemistry and Technology, Zoom-talk
- 2020 Anaerobic chitin degradation in bio-electrochemical cells
Center for Environmental Microbial Interactions, California Institute of Technology, CA, USA
- 2018 Investigating the Microbe-Mineral Interactions with Bioelectrochemical Techniques
Department of Biochemical Engineering and Biotechnology, Indian Institute of Technology, Delhi, India

Seminar Talks (cont.)

2016 Electrochemical Studies of Subsurface Microorganisms
Department of Engineering Science, University of Oxford, Begbroke Science Park, Oxford, UK

2016 Electrochemical Studies of Subsurface Microorganisms
Department of Chemistry, University of East Anglia, Norwich, UK

Invited Public-level Talk

2020 USC Dornsife PhD Academy Panel

2014 Executive Council Meeting at USC “Cultivation of Novel Deep Subsurface Microbes”

2013 USC Trustee Conference “The Search for Intraterrestrial Life”

Awards and Recognition:

2018 Travel grant by Center for Environmental Microbial Interactions (CEMI), CalTech, Pasadena, USA

2015 Women in Science and Education (WiSE) Merit Fellowship for Current Doctoral Students, USC, Los Angeles, USA

2013 Scholarship to attend the International Summer School in Astrobiology in Santander, Spain

2009 Research Scholarship by National Institute of Material Sciences, Japan and National University of Singapore, Singapore (Waived)

2009 Indian Institute of Technology Graduate Aptitude Test in Engineering Rank 96 (India-wide)

2009 Junior Research Fellowship of the Council of Scientific and Industrial Research (CSIR), India

2007 Indian Institute of Technology, M.Sc. Joint Admissions Examination Rank 40 (India-wide)

2004 Scholarship from the University Grants Commission (UGC), India

Press Coverage:

2016 [Life but not as we know it](#) (BBC Focus, 2016)

2016 [New life found that lives off electricity](#) (Quanta Magazine, 2016)

2014 [Meet the electric life forms that live on pure energy](#) (New Scientist, 2014)

2014 [Suffocating cells for science](#) (Public Broadcasting Service USA, 2014)

Summer Schools & Workshops:

- 2017 AbSciCon pre-conference school on academic writing at Arizona State University (Arizona, USA)
- 2015 Bioinformatics workshop on MOTHUR by Prof. Patrick Schloss (Detroit, MI, USA)
- 2014 Summer course on “Microbial Diversity” at Marine Biological Laboratory (Woods Hole, MA, USA)
- 2013 International astrobiology summer school on “Biosignatures-The Fingerprints of Life” (Santander, Spain)
- 2012 New England Biolabs molecular biology summer workshops (Smith College, MA, USA)
- 2009 Summer internship program for Indian students (National University of Singapore, Singapore)
- 2008 Plasma physics summer school (Institute for Plasma Research, India)

Mentoring and Teaching Experience:

- 2021-now *Mentor, California Institute of Technology, USA*
Trained graduate and SURF undergraduate students on designing research questions in microbial electrochemistry field
- 2016-2017 *Demonstrator, Computing Lab, Department of Physics, University of Oxford, Oxford, UK*
Introduced first-year physics undergraduate students to programming languages: R, Python, and MATLAB.
- 2015 *Mentor, Physics, University of Southern California, USA*
Advised undergraduate and high school students as part of the Student Opportunities for Academic Research, SOAR-USC, and the Young Research program, YRP-USC, respectively.
- 2012 *Lecture Support Laboratory Assistant, Physics, University of Southern California, USA*
Assisted and designed scientific demonstrations for undergraduate-level physics courses.
- 2010–2012 *Teaching Assistant, Physics, University of Southern California, USA*
Led 4 sections of 20 undergraduate students each to carry out physics experiments.

Science Outreach:

- 2016-2017 *Volunteer, Oxford University Museum of Natural History, Oxford, UK*
Led mineralogy activity within the ‘Science Saturday’ volunteer group aimed to introduce skills needed to examine and test naturally-occurring mineral specimens.
- 2015 *Volunteer, Iridescent Learning, Los Angeles, USA*
Led STEM education classes themed ‘Natural Disasters’ at a local elementary school.