

# Rishi Rajendra Gandhi

A-51, Pebble Bay, Katara Hills, Bhopal, Madhya Pradesh, India - 462043.

✉ [gandhirishi.rg@gmail.com](mailto:gandhirishi.rg@gmail.com) ☎ +91 78692 86037 🌐 [mysteriousluca.github.io/home](https://mysteriousluca.github.io/home)

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## Research Interests

- My major interest lies in Evolutionary biology. I am also fascinated by Astrobiology, Microbiology, Synthetic biology, and Evo-Devo biology.

## Education

- **CSIR - National Institute of Oceanography, Goa,**  
Degree - AcSIR Ph.D. **Aug. 2021 - Present**
- **Indian Institute of Science Education and Research Bhopal,**  
Degree - BS-MS (Integrated Bachelor of Science and Master of Science),  
Major - Biological Sciences. **Aug. 2015 - May. 2020**

## Projects & Internships

- **AcSIR Ph.D. Scholar** **Duration:** Aug 2021 - Present  
**Dr. Rakhee D Sinai Khandeparker**, Principal Scientist,  
CSIR - National Institute of Oceanography.  
**Title: Acido-tolerant thermophilic lignocellulolytic enzymes from marine microbes**  
**Summary:** Isolated and characterised microorganisms from mangrove environments, emphasising acidothermophilic polyextremozymes for the saccharification of cellulose and lignin. Characterising cellulases and laccases through the analysis of their structural and functional attributes. Enhancing enzyme efficacy for the efficient saccharification of lignocellulose to improve its utility in biofuel generation.
- **Analog Astronaut** **Duration:** Oct 2021 - Oct 2021  
**Dr. Julio Rezende**, Chapter coordinator for Latin America at Space Renaissance International  
**Title: Virtual Space analogue station Habitat Marte staged space analogue mission simulation 83.**  
**Summary:** The mission's purpose is to examine the use of sustainability on a future Mars space home. During this mission, the following activities were developed: thoughts on implementing sustainability in space, research and development of space habitat design, and Installation of air conditioning in the facilities of Habitat Marte (caçara do Rio do Vento - Brazil).
- **MS thesis** **Duration:** May 2019 - June 2020  
**Dr Varun Chaudhary**, Assistant Professor,  
Indian Institute of Science Education and Research, Bhopal.  
**Title: Developing a Split-GFP complementation based sensor for canonical Wnt signaling activity in *Drosophila* S2R+ cells.**  
**Summary:** My thesis work encompasses, generating a biosensor capable of sensing live readouts for canonical WNT signalling. Since *Drosophila* lacks a dynamic live readout system for canonical WNT signalling activation, we propose a split-GFP model to perceive live readout of canonical Wnt signalling.
- **Winter Internship** **Duration:** Nov 2018 - Dec 2018  
**Dr Nagarjun Vijay**, Assistant Professor,  
Indian Institute of Science Education and Research, Bhopal.  
**Title: Isolation and Characterization of novel tardigrades around the central region of India.**  
**Summary:** This internship aimed to uncover the novel species of tardigrade from the ponds, lichens and mosses across Bhopal. Over this period, I also learnt various isolation techniques and read about different methods for culturing tardigrades.

- **iGEM Competition 2018** **Duration:** Feb 2018 - Nov 2018  
**Principal Investigators:** Dr Vineet Sharma, Dr Chandan Sahi and Dr Lavanya Bhagvatula,  
 Department of Biology Sciences, Indian Institute of Science Education and Research, Bhopal.  
**Title: Methnote: A prototype to methane sensor.**  
**Summary:** Our iGEM project addressed local methane leaks. Here we formed the prototype of a robust field-applicable methane biosensor, **MethNote**. I was also involved in creating illustrations for a better representation of our project.
- **Summer Internship** **Duration:** May 2016 - June 2016  
**Dr Anurag Sharma**, Assistant Professor,  
 Amity University, Noida.  
**Title: Studying underlying factors affecting protein aggregations.**  
**Summary:** The target of this internship was to understand formation and destruction of protein aggregations by both intrinsic and extrinsic alterations.

## Publications & Preprints

- Li, S., Addey, C. I., Roman, R., Hayashida.... **Gandhi R** "Early career ocean professionals' declaration on ocean negative carbon emissions for our ocean and future." The Innovation 6.9 (2025). <https://doi.org/10.1016/j.xinn.2025.101007>
- **iGEM Interlab Study Contributor in**  
 Beal, J., Farny, N.G., Haddock-Angelli, T., Selvarajah, V., Baldwin, G.S., Buckley-Taylor, R., Gershater, M., Kiga, D., Marken, J., Sanchania, V. and Sison, A., 2020. Robust estimation of bacterial cell count from optical density. *Communications Biology*, 3(1), pp.1-29. <https://doi.org/10.1038/s42003-020-01127-5>.
- **iGEM Interlab Study Contributor in**  
 Beal J, Baldwin GS, Farny NG, Gershater M, Haddock-Angelli T, Buckley-Taylor R, et al. (2021) Comparative analysis of three studies measuring fluorescence from engineered bacterial genetic constructs. *PLoS ONE* 16(6): e0252263. <https://doi.org/10.1371/journal.pone.0252263>.
- Wasnik, H., **Gandhi, R.**, Patil, N., Behera, R., Golait, A., Patel, T. and Baruah, T., 2021. A Comprehensive Review of Molecular Biology and Genetics of Cataract. *International Journal for Research in Applied Sciences and Biotechnology*, 8(2), pp.11-20. <https://doi.org/10.31033/ijrasb.8.2.2>
- Wasnik H., **Gandhi, R.**, Lucinda E., Gupta I. (2020). Soil microbiome of Cold Deserts and their biotechnologically useful adaptations for a life on Earth and beyond with Atacama desert as a special case study. (Yet to come in online domain) <https://doi.org/10.1201/9781003354031-4>

## Presentations & Conferences

- **PowerPoint presentation:** Mar 2025  
 Current Perspectives on Extremophiles and Their Biomolecules, Bhopal, India.  
 Presented "**Tales of Harnessing Poly-Extremozymes**"
- **Poster presentation:** Feb 2025  
 OSICON 2025, Panaji, India.  
 Presented "**Poly-extremophilic Cellulases: Goan Mangroves' Answer to Climate-Friendly Biofuels**"
- **PowerPoint and Poster presentation:** Sept 2023  
 Samudramanthan 2023, Panaji, India.  
 Presented "**Poly-extremophiles: Exploring their diversity and potential for industrial applications.**"
- **PowerPoint presentation:** Sept 2022  
 World Biotechnology Industry Conference-2022, Qingdao, China.  
 Presented "**Mysteries of Poly-Extremophiles for sustainable future**"
- **EO Dashboard Hackathon** 23 Jun 2021 - 29 Jun 2021  
 Project Elevate competed amongst 233 projects and was one of 32 Global finalists. Explored COVID-19 impacts on tribal communities via EO satellite data (NASA, ESA, JAXA).

	<ul style="list-style-type: none"> <li>• <b>PowerPoint and Poster presentation:</b> Oct 2018 iGEM Giant Jamboree 2018, Boston, USA. Presented "<b>MethNote - A prototype of Methane Biosensor</b>" and secured Bronze Medal.</li> <li>• <b>PowerPoint and Poster presentation:</b> July 2018 All-India iGEM Meetup, IISc Bangalore. Presented "<b>MethNote - A Methane Biosensor</b>".</li> </ul>
<b>Workshops</b>	<ul style="list-style-type: none"> <li>• <b>Skill India,</b> <b>Duration:</b> 29-31 Jan 2024 CSIR-NIO, Goa, India Hands-on workshop on "Mass Spectrometry for Proteomics".</li> <li>• <b>Skill India,</b> <b>Duration:</b> 18-22 Nov 2024 CSIR-MTCC, Chandigarh, India Hands-on workshop on "Microbial Taxonomy &amp; Genomics: Bridging The Knowledge Gap".</li> <li>• <b>Skill India,</b> <b>Duration:</b> 16-18 Jan 2024 CSIR-NIO, Goa, India Hands-on training on "Biodiversity Assessment through Molecular Approach".</li> <li>• <b>Dr Abin Mani,</b> Assistant Professor, <b>Duration:</b> May - Jun 2017 People's University, Bhopal, India. Training in basic techniques in Molecular Biology and Genetics.</li> </ul>
<b>Fellowships &amp; Achievements</b>	<ul style="list-style-type: none"> <li>• <b>Graduate Aptitude Test in Engineering (GATE)</b> Feb 2020 Secured AIR 170.</li> <li>• <b>CSIR NET Junior Research Fellowship</b> Jun 2019 Secured AIR 147.</li> <li>• <b>INSPIRE Fellowship, DST India</b> Aug 2015 - Jun 2020</li> </ul>
<b>Courses</b>	<ul style="list-style-type: none"> <li>• <b>Introduction to Astrobiology</b> 12 Sept 2020 - 25 Oct 2020 Amity Centre of Excellence in Astrobiology, Amity University Mumbai, India.</li> <li>• <b>Astrobiology Australasia Meeting (AAM)</b> 9 - 11 Sept 2020 Online.</li> </ul>
<b>Leadership &amp; Community Services</b>	<ul style="list-style-type: none"> <li>• <b>General Secretary, Sethu</b> (CSIR-NIO Goa) Jul 2022 - Jul 2023 As Student Representative, launched: – Samudra Manthan'23 (First National Oceanography Scholars' Meet) – Health outreach: Breast camp, Senior Citizen Camp, One week-one lab, Ocean Day.</li> <li>• <b>Biology Club Coordinator</b> (IISER Bhopal) Aug 2017 - Aug 2018 Initiated: – "Tag Me If You Can" tree-awareness drive – Synthetic biology session series (later led to iGEM team).</li> </ul>
<b>Members</b>	<ul style="list-style-type: none"> <li>• <b>Ocean Society of India</b> Dec 2022 - Present</li> <li>• <b>Mangrove Society of India</b> Jul 2022 - Present</li> <li>• <b>Astrobiology Society of Britain</b> Jun 2022 - Jun 2023</li> <li>• <b>Peer Reviewer,</b> Science Publishing Group Nov 2021 - Present</li> </ul>