Ruchika O'Niel

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I am motivated to complex interactions within cellular populations from a metabolic and epigenetic perspective, using a systems biology approach. My broad expertise in the field of molecular biology and biochemistry spans over 3 years. I'm very interested in the application of -OMICS approaches to dissect inter-cellular interactions, with the aim of gaining a systems perspective on tissue/ecosystem homeostasis.

TECHNICAL EXPERIENCE

- *Project:* **"Bioprocess Optimization for large scale target protein production"**
  Research Fellow *(2021 - till date)*
  Indian Institute of Technology, Department of Chemical Engineering *Mumbai - India*
  ***Supervisor*: Prof. Pramod Wangikar** *Sector: Academia*
  - Goal: To develop and refine production protocols for therapeutic protein (PGDF)
  - Large scale bioprocess optimization in *E.coli* using fedbatch and continuous fermention culture techniques on *Applikon* Bioreactors.
  - Genome editing, protein overexpression and purification from *E.coli*.
  - Method development for refolding misfolded protein. Further protein characterisation done using chromatography and spectrophotometric techniques.
  - Use untargeted metabolomics to remediate bioprocess bottlenecks to create high target compound titres.
- *Project:* **"Characterization of phenotypically heterogeneous yeast cells"**
  Research Assistant *(2018 - 2020)*
  Institute of Stem cell Science and Regenerative medicine *Bangalore - India*
  ***Supervisor*: Dr. Sunil Laxman** *Sector: Academia*
  - Investigation of metabolic state switching in prototrophic yeast strain using targeted metabolomics and transcriptomics approaches.
  - Enzyme kinetic studies of yeast trehalases.
- *Project:* **"Characterization of deep sea hydrothemal vent microbiota"**
  Research Intern *(2016)*
  National Centre for Antarctic and Oceanographic Reasearch *Goa - India*
  ***Supervisor*: Dr. K.P Krishnan** *Sector: Academia*
  - Isolation and characterization of bacterial samples from deep-sea environments
  - Culturing and maintenance of bacterial stocks and cultures
  - Enzyme profiling of bacteria and DNA isolation
- **Technical Assistant** *(2015)*
  Goa Medical College *Sector: Government/Medical*
  - *Microbiology Department:* Culture and identification of pathogen isolates - patient samples
  - *Biochemistry and Pathology Department:* Blood sample collection and preparation , ELISA tests.
  - *Forensic Department:* Collecting medico-legal evidence from cadavers.

THESIS STUDIES, RELEVANT COURSEWORK

- **Flavonoid profile of Marine brown algae of Goa.**
  (M.Sc Project | Guide: ***Prof. Urmila Maria Barros*** *|* ***Goa University****)* *(2016 - 2017)*
  Relevant course work:
  - Biochemistry, Enzymology, Marine Pharmacology, Cell and Developmental Biology, Bioprocess and Fermentation technology.
- **Characterization of Xylanase from marine Bacillus species**
  (B.Sc Project | Guide: ***Dr. Donna D'Souza Ticlo*** *|* ***Dhempe College of Arts and Science****)* *(2014 - 2015)*
  Relevant course work:
  - Microbiology, Biochemistry, Genetics, Molecular Biology, Chemistry (elective), Biostatistics and Bioinformatics

EDUCATION

Examination	University/Board	Institute/Department	Year	GPA/%
Graduation	Goa University	Marine Biotechnology	2015 - 17	68.8
Undergraduate	Goa University	Biotechnology	2012 - 2015	80.2
Intermediate(+2)	Goa Board	St. Xavier's	2010	86.3

TECHNICAL SKILLS

- **Instrumentation**: GCMS (Agilent systems), HPLC/LCMS/MS (ABSciEX 6500, and TSQ Vantage), AKTA workstations (AKTA flux and AKTA pure), Fluorecence microscopy, Circular Dichorism (JASCO), Spectrometry (Shimadzu series)
- **Programming & Libraries**: Python, R, LaTeX, Bioconductor package (edge R), MS-DIAL, XCMS
- **Laboratory skills**: Isolation and Culture maintenance, PCR, ELISA, Molecular cloning, Westernblot, SDS-PAGE, Immunoprecipitation assays,Biochemical enzyme assays, CRISPR- Cas9 for Site directed mutagenesis, DNA and RNA isolation, RNASeq analysis, Data Analysis and Technical Writing, NGS workflow and genome and transcriptome analysis, de-novo Genome assembly, SNP/translocation/indel/mutation analysis

PUBLICATION AND CONFERENCES

- **Publications**
  0.1cm Bhatia M, Thakur J, Suyal S, **Oniel R**, Chakraborty R, Pradhan S, Sharma M, Sengupta S, Laxman S, Masakapalli SK, Bachhawat AK. Allosteric inhibition of MTHFR prevents futile SAM cycling and maintains nucleotide pools in one carbon metabolism. J Biol Chem. 2020 Sep 15:jbc.RA120.015129. doi: 10.1074/jbc.RA120.015129. PMID: 32934008.

  Tripathi A, Anand K, Das M, **Oniel R**, P S S, Thakur C, R L, R R, Rajmani, R S, Chandra N, Laxman, Singh A. Mycobacterium Tuberculosis requires SulfT for Fe-S cluster maturation, metabolism, and survival in vivo. Plos Pathogens. 2022. doi: https://doi.org/10.1371/journal.ppat.1010475
- **Conferences**
  0.1cm Helped organize international workshop, CCCP - 2020 (Conflict and Cooperation in Cellular Populations)

ACCOLADES

- GATE – Biotechnology 2017 percentile 98.77
- DST Inspire Scholarship (stipend to carry out research fellowship)
- Satyajit Kerkar Gold Medal (2017) – First ranker in M.Sc. Marine Biotechnology
- First ranker – Honors (2015) B.Sc. Biotechnology.

REFERENCES

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