ERIC MACWAN

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RESEARCH EXPERIENCE

National Institute of Biological Sciences (NCBS) **Bangalore, Karnataka, India**

Graduate Researcher August 2018 – July 2019

- Supervisor: **Dr. Sabarinathan Radhakrishnan**
- Lab theme: Computational and Functional Genomics of Cancer
- Project: Unraveling the zygosity selection and allelic expression imbalance of cancer driver mutations.
- Project summary: The products of Dominant-negative mutation (DNM) affect wild type allele's function. DNMs in tumor suppressor genes have been reported in multiple cancers and it can drive tumor progression. The project involved fishing and understanding the nature of DNMs in tumor suppressor genes across tumor types using TCGA and PCAWG cancer datasets.
- Supervisor contact: sabari@ncbs.res.in

Indian Institute of Science Education and Research (IISER, Pune) **Pune, Maharashtra, India**

Dissertation Project Student May 2017 – November 2017

- Supervisor: **Dr. Sudha Rajamani**
- Lab theme: Chemical Origin of Life
- Project: Binding of Nucleobases to Prebiotic Amphiphilic Assemblies; Implications for the origin of life.
- The project involved checking the possibility of membrane (fatty acid vesicles) playing a role as a selection pressure in the selection of canonical nucleobases during the primitive time.
- Project summary: The primitive cell-like structure, the proto-cell, is supposed to be an RNA like genetic polymer encapsulated in amphiphilic ordered aggregates. The membrane might have played a crucial role as a selection pressure in the selection of present nucleobases. To test this hypothesis, I used fatty acid vesicles as a membrane and allowed them to interact with canonical and non-canonical bases.
- Supervisor contact: srajamani@iiserpune.ac.in

Indian Institute of Science Education and Research (IISER, Pune) **Pune, Maharashtra, India**

Research Intern May 2016 – July 2016

- Supervisor: **Dr. Neelesh Dahanukar**
- Lab theme: Molecular Phylogenetics and Conservation Biology
- Project: Molecular Phylogeny and phylogeography of freshwater fishes of sub-family Danioninae from India.

- Project summary: Project involved barcoding of Danioninae fish family, DNA extraction, PCR of barcoding gene (Cytochrome C oxidase), Purification of the PCR product, sequence editing, genetic data mining, sequence alignment, phylogenetic hypothesis testing, and phylogeographical mapping**.**
- Supervisor contact: n.dahanukar@iiserpune.ac.in

Institute of Mathematical Sciences (IMSC) **Chennai, Tamil Nadu, India**

Research Intern May 2015 – July 2015

- Supervisor: **Dr. Rahul Siddharthan**
- Lab theme: Computational Biology
- Project: Prototype development of alignment software (BLAST, Cluster-Buster) by using a probability-based model for predicting transcription factor (TF) binding sites.
- Project summary: Project involved understanding the working and mathematical background of different alignment software. Python programming language was used for scripting.
- Supervisor contact: rsidd@imsc.res.in

EDUCATION

Dr. Vikram Sarabhai Institute of Cell and Molecular Biology,
The Maharaja Sayajirao University of Baroda **Vadodara, Gujarat, India**

- **Integrated M.Sc. in Cell and Molecular Biology** July 2013 – April 2018
  CGPA 5.95/10, Second Class

Parth School (Senior Secondary School) **Vadodara, Gujarat, India**
(2012 – 2013)

- Scored percentage in aggregate: 68%
- Subjects studied: Physics, Chemistry, Biology, Computer Education, and English

St. Joseph's School (Secondary School) **Vadodara, Gujarat, India**
(2010 – 2011)

- Scored percentage in aggregate: 85.2%
- Subjects studied: Mathematics, Science & Technology, Social Science, Computer Education, Gujarati, Hindi, and English

POSTERS PRESENTED

- **"Binding of prebiotic nucleobases to prebiotic amphiphile assemblies and their implications for the origins of life",** BioConclave (2017), IISER Pune

- **"Unraveling the zygosity selection and allelic expression imbalance of cancer driver mutations",** NCBS Annual Talks – The Language of Biology (2019), inStem Annual Review of Research (2019)

SKILLS & INTERESTS

- **Programming**: Python, R, Bash, MATLAB.
- **Genomics**: Big data/Genomics data management, Cancer genomics data analysis (TCGA, PCAWG), NGS Data Analysis.
- **Molecular Phylogenetic Analysis**: Multiple Sequence alignment, MEGA 7, BLAST, CLUSTAL, MUSCLE, FASTA.
- **Molecular Biology Techniques**: DNA and RNA isolation from animal cells (fish gills), Gel Electrophoresis, PCR, UV spectroscopy.
- **Github Profile**: https://github.com/MacwanEric
- **Portfolio**: http://macwaneric.github.io/
- **Languages**: English, Hindi, and Gujarati.
- **Interests**: Programming, Music.

EXTRACURRICULAR ACTIVITIES

- Volunteered in educating children living in slums with **Change Vadodara Campaign (NGO)**, (2016 – 2017)
- Completed 347th Basic Course in Rock Climbing conducted by **Pandit Dindayal Upadhyay Mountaineering Training Centre, Junagadh, Gujarat**, (October 2009)
- Participated as Amateur Astronomer in Total Solar Eclipse 2009 Observation Campaign conducted by **Association of Eclipse Observers of Vadodara – Gujarat State**, (June 2009 – July 2009)
- Summer Camps and Weekend Camps in **ANKUR** as part of **Ashadeep Human Development Centre Vidyanagar, Anand – Gujarat State**, (2008, 2009, 2010)

REFERENCES

- **Dr. Sabarinathan Radhakrishnan**
  Reader-F at National Centre for Biological Sciences (**NCBS**), Bengaluru, Karnataka, India (560065). sabari@ncbs.res.in

- **Dr. Neelesh Dahanukar**
  Professor at Indian Institute of Science Education and Research (**IISER PUNE**), Pune, Maharashtra, India (411008.) n.dahanukar@iiserpune.ac.in

- **Dr. Vihas Vasu**
  Professor at Zoology Department, Faculty of Science, The Maharaja Sayajirao University of Baroda (**MSU**), Vadodara, Gujarat, India (390002). vihasv@gmail.com