Yogen Borkar

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Education

Birla Institute of Technology and Science, Pilani — Goa, India
Bachelor of Engineering in Chemical Engineering — *August 2018 – December 2021*
Cumulative GPA: 8.73/10

PTVA's Sathaye College — Mumbai, India
Maharashtra Higher Secondary School Certificate (Class 12) — *Graduated May 2018*

Research Experience

Bioprocess Engineer, Clarity Biosystems Ltd., SINE-IIT Bombay — August 2022 – Present
Under the supervision of Prof. Pramod Wangikar, Dr. Sneha Sathe
- Operating state-of-the-art bioreactor systems, handling model and non-model organisms, performing biochemical assays
- Conducting design of experiments for media optimization, leading to higher titres of product
- Optimizing liquid-liquid extraction, purification of product of interest from fermentation broth

Research Intern, Clarity Biosystems Ltd., SINE-IIT Bombay — February 2022 – August 2022
Under the supervision of Prof. Pramod Wangikar
- Extracted and analysed metabolic profiles using gas chromatography-mass spectrometry
- Conducted data analysis of GC-MS, LC-MS based metabolomic data
- Identified productivity markers in cell cultures using metabolomic analysis

Research Assistant, BITS Pilani, Goa — January 2022 – June 2022
Under the supervision of Prof. Raviprasad Aduri
- Studied effect of mutation in peptides on protein-peptide interactions
- Performed molecular modelling, docking and simulation studies

Research Assistant, BITS Pilani, Goa — August 2021 – December 2021
Thesis supervised by Prof. Sutapa Roy Ramanan
- Synthesized an electrochemical sensor for detecting glucose using a graphene-nickel nanocomposite
- Characterized the nanomaterial using FTIR, Raman, XRD, UV-Vis, CV and EIS spectroscopy
- Optimized and standardized the sensor response

Research Intern, Virtual Sense Global Technologies Ltd., Pune, India — May 2021 – July 2021
Supervised by Dr. Girish Arabale, Mr. Sanjay Phadke
- Fabricated functional nanomaterials for breath-based detection of diabetes
- Ideated and synthesized a new nanomaterial and optimized the composition of an existing sensor
- Increased sensitivity and unique response towards specific biomarkers

Projects

Study on the effect of coagulation bath on nanofibers synthesized via electrospinning — Aug 2020 – Dec 2020
Supervised by Prof. Sutapa Roy Ramanan
- Reviewed effects of various parameters involved in wet electrospinning on fabrication of different morphologies of polymeric nanofibers
- Examined applications of helically coiled nanofibers in fuel cells

Awards

International Genetically Engineered Machine (iGEM) 2020 — November 2019 – November 2020
Biochemical Modelling Head — *(Link to Project)*
- Awarded **Gold Medal and Special Prizes** for Best Composite Part and Best Software Tool
- Designed genetically engineered bacterial system to tackle post-harvest losses in sugarcane, under the supervision of Prof. Sumit Biswas
- Simulated the toxin-antitoxin system, fructose biosensor and protein-DNA interactions
- Developed a process to scale-up production, interacted with stakeholders and conducted economic feasibility analysis

Technical Skills

Lab Skills: Microbiology skills (BSL 2), culture maintenance, biochemical assays, SDS-PAGE, operated GC-MS (Shimadzu), UV spectrophotometer (Shimadzu)

Programming Languages: MATLAB, Python, C, R (tidyverse, plotly, highcharter)

Software: COMSOL, ASPEN Plus, GROMACS, MS-Dial, J-OCTA, AutoCAD

Relevant Courses

Chemical Engineering: Introduction to Nanoscience, Material Science and Engineering, Biochemical Engineering, Process Dynamics and Control, Transport Phenomena, Mass Transfer, Separation Processes

Biology/Chemistry: Molecular Biology of the Cell, Biological and Chemical Sensors, Supramolecular Chemistry, Polymer Chemistry

Mathematics: Mathematics I (Multivariable and Vector Calculus), Mathematics II (Linear Algebra and Complex Analysis), Mathematics III (Differential Equations), Probability and Statistics

Other Experience

- **Teaching Assistant for Heat Transfer and Separation Processes:** Responsibilities included conducting tutorials, preparing assignments and class tests, correcting answer sheets
- **Instructor for Applications of Engineering Principles to Life Sciences:** Responsibilities included teaching a module on chemical kinetics and mathematical modeling in biology

Volunteer Experience

- Volunteered to teach and help in solving doubts of students in BIO F111 General Biology for the on-campus Academic Assistance Program, an out-of-classroom, peer-based learning setup
- Taught the 9th and 10th class students of A. A. Padhye School, Devrukh, Ratnagiri, under the able guidance of Mrs. Jennifer Gadgil, giving me valuable knowledge and insight into the efforts that are put into teaching

Extra-Curricular Activities

- Coordinator and Convener at Srutilaya, the BITS Goa Indian Classical Music club; responsibilities involved organizing events with internationally acclaimed artists to improve awareness of Indian Classical Music on campus, maintaining faculty relations, event finances and logistics
- Harmonium Player; performed and accompanied on harmonium in multiple cultural events in school and college