Ojasvi Bhagwat

B. Tech, Life Sciences

I am a motivated third-year life science student with a keen interest in sustainable development, environmental science and science communication. I am particularly passionate about using academia and research to create impactful change, and eager to contribute to research and communication efforts focused on addressing environmental challenges.

Contact

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Education

1st Year, Atria University	**86%**
Grade 12, PCMB, CBSE	**92.8%**
Grade 10, PCMB, CBSE	**96.8%**

SAT India Top Performer Awardee – March 2020

96th Percentile – PSAT 2019

Skills

Bioinformatics

- Using bioinformatics tools and databanks like BLAST, NCBI Genbank, MUSCLE EBI/ Clustalw, Jalview, Protein Data Bank, Swissprot
- Writing basic bioinformatics programs in python

Histology

- Tissue fixation, sectioning, staining, and visualization

Microbiology

- Media preparation for microorganisms
- Preparation of chemical reagents in required concentrations, stock and working solutions, and dilutions
- Microbial sample collection, culture (streaking), inoculation and isolation
- Extraction of plasmid and genomic DNA of bacteria; genomic DNA of plant and animal samples (human buccal swabs)
- DNA gel electrophoresis

Biochemistry

- Protein extraction, estimation (Lowry's method), visualization (SDS-PAGE)

Statistical, Computational and Communication

- Hypothesis testing (T-test, F-test)
- Data collection, Data analysis
- Using R for Data Visualisation
- Using tools to perform calculus
- Writing simple python programs
- Writing Scientific Reports

Projects and Courses

Identifying Mutations in Viral Genomes:

We analysed a novel plasmid genome for a Colistin antibiotic resistance gene. We also wrote some basic bioinformatics programs in python with Google Colabs (to find forward and reverse DNA primers for an input sequence and validate them, to find ORFs in an input sequence).

Basic Histology and Microtomy

We prepared animal tissues for microscopy and analyzed different organ tissues under the microscope. We learned the principles and techniques of tissue fixation, sectioning, staining and visualization, and compiled our results in a report. I also compiled a microscopic review of some common ornamental plants.

Molecular Biology and Genomics

We collected bacterial samples, cultured and isolated the bacteria, and then performed plasmid and genomic DNA extraction in the lab. We visualized and analyzed the isolated DNA with agarose gel electrophoresis. We prepared required chemical reagents and their stock and working solutions in appropriate concentrations. We have also collected buccal swabs and extracted human DNA, and extracted plant DNA and analyzed the differences in the DNA of chemically treated and untreated samples by counting the number of cells in different phases of mitosis.

Protein Biochemistry

We extracted proteins from three plant samples and then quantified the protein using Lowry's method (predictive linear regression of absorbance of protein samples using prepared BSA standards of known absorbance), and visualized it with SDS-PAGE. We also performed a statistical analysis of the quantification of protein, comparing (1) two protein samples from separate sources of different species and (2) two protein samples from separate sources of the same species using Student's T-test and F-test for variance.

Basic Data Sciences

Evaluation of Perceived Changes in Women's Working Hours during the COVID-19 Lockdown

As a two-person team we drafted points to come up with relevant data and created a questionnaire to collect data from women about their perception of the change in their working hours during the lockdown. We then analysed the collected data using several statistical tests (Chi-square goodness-of-fit, Student's T-test, testing correlation) to come up with relevant conclusions. We analysed the perceived changes in productivity, changes in stress levels, and the perceived changes in effort to domestic labour by self and others. We also studied basic probability, statistics and hypothesis testing.

Data Visualization with R

We used R to create simple but engaging visualisations of large amounts of data.

Mathematical design and simple prototype of a 3-peak parabolic roller coaster

Using tools like wxMaxima to perform calculus, we studied the mathematical principles behind a simple roller coaster design and then created a physical prototype of the same. We also studied the basic principles of calculus and solved related real-world problems.

Basic Programming with Python

I designed and wrote a simple python program to give book recommendations as per user's genre preferences and moods, as part of a team.