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### **Education:**

**MS (2015-2018):** Indian Institute of Science Education and Research, Kolkata. India.

(<https://www.iiserkol.ac.in/web/en/>)

**CGPA-7.14/10**

**B.Sc (2012-2015):** Ramakrishna Mission Vidyamandira, Belur-Math, Howrah, University of Calcutta, West Bengal. (<http://www.vidyamandira.ac.in/>)

**Cumulative Percentage:** 65.25(Microbiology Hons.), First Class.

**Higher Secondary (2010-2012):** Council for Indian School Certificate Examination, (ST. Thomas' High School, Dassnagar, Howrah). Cumulative Percentage: 78.5(General Science)

**Secondary Examination:** Council for Indian School Certificate Examination, (ST. Thomas' High School, Dassnagar, Howrah). Cumulative Percentage: 86(General Science)

### **Research Experience:**

1) Master Thesis Project: (June 2016-Present)

Supervised by: **Dr Bidisha Sinha** (Cell Biophysics Lab, IISER-Kolkata)

Work: Role of neighbours in determining Golgi-orientation in cells during Wound Healing.

2) I did an internship under **Dr Sanjit Dey** (Department of Physiology, University of Calcutta), during my final year of B.Sc(Hons) under a project titled Herbicide induced oxidative challenge through ROS-p53 axis in murine splenocyte.

### **Lab Rotations:**

**1) Dr Tapas Kumar Sengupta's Lab at IISER-Kolkata (February 2016- April 2016):** I did Cell-Culturing using Mammalian cancer cells (MCF-7) and had seen the operation of Flowcytometry in IISER-Kolkata central facility.

**2) Dr Bidisha Sinha's Lab at IISER Kolkata (January 2016-February 2016):** I made PDMS strips, using scalpel blades, of width approximately 500 microns for wound healing assay. I also handled the Nikon-Ti Eclipse Epifluorescence microscope to take measurements of the strips.

**3) Dr Punnyasloke Bhadury's Lab at IISER Kolkata (December 2015):** I did a short two week rotation under Dr. Bhadury and learned the analysis of Chromatogram.

**4) Dr Rupak Datta's Lab at IISER Kolkata (September 2015-November 2015):** I did Culturing of macrophage cells Raw 264.7 and subjected them to immunofluorescence to see the localization of Nramp1 protein inside the macrophage.

**5) Dr Amirul Islam Mallick's Lab at IISER Kolkata (August 2015-September 2015):** The lab was working on the bacterial expression of the M2e protein, to exploit it as a potent influenza vaccine component. I did colony PCR followed by agarose gel electrophoresis to find the gene band against that protein. Besides, I also learned Western Blotting and Plasmid DNA isolation of Gram-Positive Bacteria.

#### **Dissertation:**

During my final year of B.Sc (Hons), I did a dissertation under **Dr Pratap Kumar Das** (Retired Senior Scientist, Indian Institute of Chemical Biology, Kolkata) on *Helicobacter pylori* Eradication.

#### **Educational Achievements:**

- 1) Qualified ICMR NET JRF in Project Fellow Category (Roll No: 27629) in September 2019.
- 2) Qualified CSIR-UGC NET LS (Rank 34, Roll No: 340526) in December 2018.
- 3) Qualified GATE 2019 in Biotechnology (Registration Number: BT19S46051070) with an All-India Rank of 369.
- 4) Awarded fellowship for pursuing Integrated MS-PhD programme at IISER-Kolkata (Top 10 among 600(approx.) participants).
- 5) Qualified JGEEBILS (Roll No: 44723) conducted by Graduate School, Tata Institute of Fundamental Research in 2015 (TIFR GS-2015).

## Research Skills Learnt during B.Sc

Operation of a light microscope, use of oil immersion objective

### Microbiology Related:

**1) Preparation of culture media:** Complex media (Nutrient broth, Nutrient agar, Nutrient agar slant, lactose broth, chemically defined media (Czapek Dox media), YEPD/Selective media and potato-dextrose-agar (PDA) medium.

**2) Cultivation of microorganisms:** Streaking on agar slant/agar plate of Bacteria (*Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli*), Yeast (*Saccharomyces cerevisiae*), and Moulds (*Penicillium notatum*, *Aspergillus niger*).

### 3) Isolation of pure culture from natural resources:

a) Bacteria from the soil by serial dilution and pour-plate/spread plate method

b) Yeast from rotten banana or apple by pour plate/spread plate method

c) Molds from infected citrus fruit by streak plate method

d) Microbes from the air by agar exposure method.

4) Isolation of Protease, Amylase, Phosphatase producing microorganisms from soil

5) Microbiological examination of water by IMViC method.

6) Microbiological examination of milk: By Methylene-blue dye reduction test.

7) Determination of Phenol-coefficient using *E. coli*

8) Microbiological assay of antibiotics: Antibiotic sensitivity test by paper disc and by cup-plate method.

9) Determination of Minimal Inhibitory Concentration (MIC) by serial dilution method for assaying commonly used antibiotics.

10) **Study of microorganisms by staining techniques:** Preparation of heat fixed smear of bacteria. Simple staining (*B. subtilis*, *S. aureus*) and Gram staining (Gram-positive: *B. subtilis*, *S. aureus*, *Micrococcus luteus*; Gram-negative: *E. coli*, *Klebsiella aerogenes*). Staining of capsule (*Klebsiella aerogenes*) and endospore (*Bacillus subtilis*). Study of fungi following lactophenol cotton blue staining- *Mucor*, *Saccharomyces*, *Aspergillus* and *Penicillium*.

11) Enumeration of microbes (yeast) by haemocytometer.

12) Plasmid DNA isolation

13) Transformation of competent bacteria with plasmid.

**Biochemical methods:**

- 1) Qualitative tests for carbohydrates (glucose, fructose, sucrose). Estimation of Glucose by glucose-oxidase method.
- 2) Separation of amino acids (lysine, glycine, tryptophan, proline) by thin-layer chromatography.
- 3) Separation of lipids by thin-layer chromatography.
- 4) Estimation of amino acid (glycine) by formol titration.
- 5) Quantitative estimation of protein by Folin-Lowry method.

**Immunology related methods:**

1. Conjugation using standard protocol
2. Antigen-antibody reaction:
  - (a) Agglutination (blood typing)
  - (b) Ouchterlony's double diffusion method
  - (c) Mancini's radial Immunodiffusion technique
  - (d) Immunoelectrophoresis

## **Research Skills Learnt during MS**

### **Molecular Biology related:**

Western Blotting, PCR, PCR purification, Plasmid DNA isolation, Agarose Gel electrophoresis, Lipofectamine Based Transfection, Trizol Extraction of RNA, Primer Designing.

### **Mice-Dissection**

### **Mammalian Cell-culture:**

Experienced in handling and maintaining mammalian cancer cells and basic techniques such as cell splitting, cell-scraping, cell seeding etc.

### **Transfection:**

Experienced in transfection and co-transfection of mammalian cells, with Lipofectamine based transfection reagents.

### **Micropatterning**

**Wound Healing Assay** (with the administration of various drugs that inhibits some key Cellular processes)

### **Microscopy:**

Bright-Field Microscopy, Epifluorescence Microscopy, Confocal Microscopy.

**Software (For analysis of image):** ImageJ, Zen, Origin, MATLAB.

### **Scientific Exposure:**

1) Participated in a UGC-sponsored national level seminar titled “FRONTIERS OF MICROBIOLOGY: PROSPECTS AND CHALLENGES” at Ramakrishna Mission Vidyamandira, during 20-21<sup>st</sup> November 2014

2) Participated in Frontiers in Modern Biology 2015 symposium organized by Department of

Biological Sciences, Indian Institute of Science Education and Research, Kolkata on December 5<sup>th</sup> and 6<sup>th</sup>.

3) Participated in RUSA funded International seminar entitled “RECENT TRENDS IN MICROBIOLOGY” at Ramakrishna Mission Vidyamandira on 14th January 2017.

4) Participated in National Conference on “Chemistry Interfacing with Biology & Physics” at IISER Kolkata on 27th and 28th Jan 2017

5) Participated in Frontiers in Modern Biology 2018 organized by the Department of Biological Sciences, Indian Institute of Science Education and Research, Kolkata from January 19<sup>th</sup> -21<sup>st</sup>.

6) Participated in the two days’ workshop on “MATLAB and R training” organized by CPEPA held at N.R. Sen Hall, the University of Calcutta on 10th and 11th July 2018.

7) Participated in 43rd Indian Biophysical Society Meet held at Indian Institute of Science Education and Research Kolkata from 15th-17th March 2019.

8) Participated as a Teaching Assistant in Bioscopy 2019 (A Hands-on Microscopy Workshop), co-organized by Indian Institute of Science Education and Research Kolkata; Indian Association for Cultivation of Sciences, Kolkata; Raman Research Institute, Bangalore and Center for Cellular and Molecular Platforms, Bangalore; held at IISER-Kolkata from 17th-20th March 2019.

9) Participated as a Teaching Assistant in the Theory Course Bioinformatics held as an elective course in the Indian Institute of Science Education and Research, Kolkata.

10) Participated as a Teaching Assistant in the Lab Course Microbiology held as a core course in the Indian Institute of Science Education and Research, Kolkata.

11) Participated as a student organizer at the XXXIX Annual Meeting of Indian Academy of Neurosciences (IAN), Theme: "Neuroglia in Health and Disease" organized by Indian Institute of Science Education and Research Kolkata, Netaji Subhas Open University & CSIR-Indian Institute of Chemical Biology from December 16th to December 19th, 2021