SUMAIYA SHARMIN

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SUMMARY

- Scientific Officer at National Institute of Biotechnology (NIB), Dhaka, Bangladesh-1349 (URL: https://nib.portal.gov.bd/site/biography/b4c53a90-4f31-43fe-8025-acdd112b026d#top) with 3 years of experience in Microbial Biotechnology.
- Possess experience in Microbiology, molecular biology, and bioinformatic analysis.

EDUCATION

Department of Microbiology, University of Dhaka
MS in Microbiology | Passing Year: 2015
GPA: 3.79 out of 4.00

BS (Honor's) in Microbiology; Minor in Biostatistics, Chemistry, and Biochemistry | Passing Year: 2014
CGPA: 3.88 out of 4.00

TECHNICAL EXPERTISE

- **Microbiology skills**
  - Collection of clinical and environmental samples using sterile technique
  - Preparation of general, selective, and differential media
  - Isolation of bacterial pure culture from mixed population and stock preparation
  - Putative identification of bacterial isolates using microscopy and biochemical tests
  - Antibiogram
  - High throughput molecular and biochemical assay designing, troubleshooting, analysis, and interpretation
- **Molecular biology skills**
  - Bacterial genomic DNA extraction and plasmid profiling
  - Primer/probe designing
  - PCR: General, long, Multiplex, Gradient, and RT-PCR
  - Gel electrophoresis, SDS-PAGE, and ELISA
  - Measuring bacterial enzyme activity and protein content from a crude sample
  - Molecular cloning, plasmid preparation, and transformation
  - Designing and conducting CRISPR/Cas-based genome editing in bacteria
- **Cross-functional skills**
  - Microscopy: Gram-staining, wet mount, and phase-contrast
  - Centrifugation, Nanodrop, Spectrophotometry
  - Familiar with bacteriophage transfection
  - Strong understanding of good laboratory practice (GLP)
  - Adept at working in a team and think critically to come out with ideas to address problems
  - Ability to project goals, writing proposals, and effective report presentation

- **Data analysis**
  - Next Generation Sequence data and whole genome sequence data analysis
  - Sanger sequence data retrieval, and analysis, phylogenetic analysis
  - Familiar with comparative genomics
  - RNA structure prediction
  - Expression data analysis: Microarray and proteomics
  - Mega and T-COFFEE
  - Trained in basic statistical analysis and R
  - Adobe Illustrator, Adobe Photoshop, Microsoft Office (Word, Excel, PowerPoint presentation)

LINGUISTIC SKILLS

- Bengali (native), English (fluent)
- IELTS: Overall band score: 8.0 (L: 8.5, R: 8.0, W: 7.0, S: 7.5)

RESEARCH EXPERIENCE

- **NATIONAL INSTITUTE OF BIOTECHNOLOGY (NIB)** | **Sep, 2020-present**

  Scientific Officer

  - **Project director** of the project entitled **"Gene sequencing and protein structure analysis of Keratinase enzyme produced by *Pseudomonas aeruginosa*."**
    - Extracted whole genome from 5 potent keratinolytic strains while ensuring their quality
    - Amplified and sequenced both 16S region and keratinase genes for bioinformatic analysis
    - Performed in silico analysis of primary, secondary, and tertiary structures of the protein products
  - **Co-principal investigator** of project **entitled "Development of Eco-Friendly Microbial Enzymes for Leather and Textile Processing."**
    - Developed standardized protocol for insert preparation and cloning of keratinase gene into *E. coli* DE3 strain
    - Prepared protocol for "Application and Performance Study of Alkaline Protease and Keratinase Enzyme for Leather Processing at Semi-pilot Scale."
  - **Researcher** of project entitled **"Screening and Characterization of Potential Microbes for Biotechnological Applications."**
    - Collected two (2) environmental samples and carried out primary as well as secondary screening to identify potential microbes containing antimicrobial compounds
  - **Others:**
    - Took necessary steps to keep all equipment in active condition and implementation
    - Prepared required chemicals and reagents for research purpose
    - Developed inventory of all available commercial kits in Microbial Biotechnology Division, NIB
    - Produced SOP for accreditation of the lab
    - Revival, and maintenance of stock cultures and other facilities in the lab
    - Presented an oral presentation of work progress of each month in monthly co-ordination meetings

- **PRIMEASIA UNIVERSITY (PAU)**

  Sep, 2017-Sep, 2020

  Lecturer

  - **Prepared protocols and supervised following BS (Honor's) projects-**
    - Isolation, Putative Identification, and MDR Profiling of Bacteria Isolated From Paper Currency.
    - Antimicrobial Activity of Silver Nanoparticles Collected from Maize Leaves.

- **MICROBIAL GENETICS AND BIOINFORMATICS LABORATORY (MGBL), UNIVERSITY OF DHAKA**

Graduate researcher | **Jun, 2015-Aug, 2017**

- Collected clinical samples presumptively containing Carbapenem resistant bacteria from two reputed hospitals of Dhaka city (Bangladesh Institute of Health and Science and Dhaka Medical College Hospital)
- Researched Carbapenem resistance on clinical pseudomonads of Bangladesh
- Performed relevant cultural and molecular laboratory work, gene sequencing and analyzed the data usingbioinformatics software as well as statistical analysis
- Participated in weekly lab meetings and submitted regular reports in forms of presentations on progress of the research work
- Submitted a thesis paper entitled "Investigation of Gene Diversity on Clinical Pseudomonads of Bangladesh" and performed a 10-minute oral presentation on the findings of the same project for partial completion of MS program

CONFERENCE PROCEEDINGS

1. Sultana, K. F.; Sultana, M.; Al-Amin, Md; **Sharmin, S**; Hasan, Md. S.; Alam, S.M.S.; Hossain, M. A. "Genotypic diversity of antibiotic resistant poultry *Salmonella* spp. in Bangladesh" **AFSA Conference** on "Food Safety and Food Security", 15-17 September, **2016**, Bhubaneswar, India. (**Poster presentation**).
2. Bashar, S.; Sanyal, S. K.; **Sharmin, S**; Hossain, M. A.; Sultana, M. "Mechanism of Carbapenem Resistance in *Pseudomonas* spp." **BSM International Conference**, 26-28 December, **2015**, Dhaka, Bangladesh (Oral presentation; **abstract submitted in BSM International journal**, **2015**).

AWARDS

2021| Research and Development Grant from Ministry of Science and Technology (MoST), Bangladesh.
2015| Research fellowship from National Institute of Science and Technology (NST) for conducting research relevant tosocio-economic concerns of Bangladesh
2015| Government scholarship for overall excellent performance (academic and non-academic) during the 4 years of BS(Honor's) curriculum
2015| Dean's Award from Biological Faculty, University of Dhaka for excellent results in BS (Honor's) examinations
2014| Best poster presentation in Microbiology Fair, 2014
2014| 2nd Runner up in Project presentation in Microbiology Fair, 2014

REFERENCES

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