VIDHI AGARWAL

M.Sc. in Medical Biotechnology and Bioinformatics
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Career Objective

With a firm foundation in microbiological sciences, my current pursuits revolve around medical biotechnology and bioinformatics. I look forward to gain practical exposure in industries by working in an inclusive environment that takes individual strengths and learning into account to provide the right blend of learning, experiences and coaching.

Areas of Interest

ADME Analysis and Toxicology:
In vitro and *in vivo* study design, analysis, clinical implications of drug candidates
Molecular Dynamics aiding in Drug Designing:
MD Simulations (AAMD, CGMD, REMD), Docking

Immunology:

Autoimmunity, Complement pathway, Drug resistance

Next Generation Sequencing:
Gene Annotation, Pangenome Analysis, Multi Locus Sequence Typing, Transcriptomics

Computational Skills

Languages: Python, SQL
Operating Systems: Ubuntu, Microsoft Windows
Application Software: VMD, AutoDock Vina, Biovia Discovery Studio, HADDOCK, MySQL, ClustalX, TreeView X, NCBI BLAST webserver, Microsoft Office (Word, Excel, PowerPoint)

Technical Skills

Equipment:
- UV/Vis Spectrophotometer
- Gel Electrophoresis, PCR

Wet Lab techniques:
- Immunological Assay
- Protein purification
- Protein estimation
- DNA isolation and analysis
- Chromatographic analysis
- Antibiotic Susceptibility testing

Dry Lab Techniques:
- Protein- Ligand docking
- Molecular visualization
- Multiple sequence alignment
- Quality Control checking on raw sequence data
- Phylogenetic analysis

Education

M.Sc., Medical Biotechnology and Bioinformatics *2020 – ongoing*
JIS Institute of Advanced Studies and Research (JISIASR) Kolkata
JIS University
CGPA – 9.35 (till Semester 1)

B.Sc., Microbiology (Honours) *2016– 2019*
St. Xavier's College (Autonomous), Kolkata
University of Calcutta
Percentage – 66.67%

Awards and Achievements

- **Patent** for 'Humectant Hand and Surface Sanitiser and process of preparing the same', accepted and published in Office Journal of the Patent Office, Government of India on 29th March, 2019.
- **Awarded 2nd prize** in Science Working Model Competition at S.N.Bose Fair in January, 2017.

Publications and Presentations

- Poster and oral presentations in 106th Indian Science Congress and at 3rd Regional Science and Technology Congress, 2018, respectively, on paper, titled 'Mobility of Pathogenic Microbes from mobile phones to human body & the efficacy of commercial disinfectant'
- Paper presentation at Modern Trends in Microbiology, 2017, St. Xavier's College, titled 'Magnetic Nanoparticles treatment coupled with Radiofrequency- an antibacterial strategy against drug resistance'.

Research / Project Experiences

[1] Mobility of Pathogenic Microbes from mobile phones to human body & the efficacy of commercial disinfectant

Under the supervision of **Prof. Arup Kumar Mitra**
St. Xavier's College (Autonomous), Kolkata, April 2018 – December 2018
Work accomplished:

- This work focused upon the investigation of microbial contamination through mobile phones used on our day-to-day lives, thus potentially playing a role in several types of infections.
- The experimental design included collecting swab samples from mobile phones demarcated as covered (interior and exterior) and uncovered regions and also from pre- sterilised palm surfaces rubbed against the mobile phone surfaces and then were compared graphically. The samples were separately inoculated in suitable media and incubated as per need.
- The observations were tabularized (Characterisation, Colony Counts, IMViC test and Pathogenicity) and statistically analysed (ANOVA test) to draw graphical results (Tree Map Representation, Bar Diagram and Pie-Charts) which upon examination yielded the conclusion that to avoid several microbial infections like UTIs caused by organisms obtained from the sample like *P.aeruginosa, E.coli and Enterobacter aerogenes,* it is advisable not to use flip covers as general infection causing bacteria can adhere to their rough surfaces better as compared to the smooth surface of mobile phones.
- An analysis was also carried out to understand the need for usage of sanitizers in order to avoid such infections and maintain the basic principles of personal hygiene.

[2] Humectant Hand and Surface Sanitizer and Process of Preparing the Same

Under the supervision of **Prof. Arup Kumar Mitra**
St. Xavier's College (Autonomous) Kolkata, October 2018 – March 2019
Work accomplished:

- This work focused upon the development of an alcohol-based sanitizer that efficiently keeps human hand as well as any solid surface (such as table tops, mobile phone cover, windows, etc.) free from harmful microbes even after one hour of application.
- The invented sanitizer eliminates not only threatening bacteria like *E. coli, Enterobacter sp., Pseudomonas sp*. to a great extent but also reduces some harmful fungi like *Candida sp., Aspergillus sp*., etc.
- The Minimum Inhibitory Concentration testing was carried out along with the efficacy testing in a NABL accredited lab.

[3] Structure based Drug Designing for Hutchinson-Gilford Progeria Syndrome (HGPS) treatment

Under the supervision of **Prof. Debabani Ganguly**
JIS Institute of Advanced Studies and Research (JISIASR) Kolkata, **currently pursuing**
Work accomplished:

- This work focuses upon the development of an optimized drug candidate by using molecular dynamics simulation software (CHARMM-GUI, GROMACS), docking tools (MGL tools- AutoDock Vina, HADDOCK). It would act as an inhibitor against Progerin (mutant Lamin A protein) that plays a predominant role in the pathophysiology of the disease HGPS (also called Progeria).
- ADMET studies to be conducted on the optimized drug candidate computationally using swissADME and CADD tools.

Synergistic Activities	• **Head of Event Management, Entrepreneurship Development Cell**, St. Xavier's College (Autonomous) Kolkata (2018-2019) • Member of Leo Club of Kolkata Youth Range (2021)
Other Interests	• Reading: Fiction, Non-fiction, Newspaper editorials, Scientific articles • Activity: Running, Badminton • Hobbies: Regularly follow European club football and read journal
Personal Details	• **Languages**: Hindi (Native); English (Fluent); Bengali (Fluent); French (A1 level) • **Date of birth**: 01/10/1997 • **Citizenship**: Indian