Syeda Maryam Azeem

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PERSONAL SUMMARY: Experienced and proactive researcher with 9+ years in academic drug discovery and oncology-focused research, bringing strong expertise in cell-based assay development, high-throughput small molecule screening, and lead candidate characterization. Adept in molecular and cellular biology techniques, gene perturbation (shRNA, siRNA), protein expression analysis and cell-based phenotypic assays. Skilled in working with cancer cell lines and patient-derived xenografts to investigate target biology and drug mechanism of action. Demonstrated ability to independently design, execute, and interpret multi-disciplinary experiments with high attention to detail and scientific rigor. Known for collaborative team engagement, strong problem-solving abilities, and operational efficiency in fast-paced lab environments

POSITIONS:

Research Assistant, Ph.D. Candidate, *CUNY*, *August 2020-present*

- Designed, executed, and interpreted experiments independently using molecular and cellular biology techniques such as qPCR, western blotting, ChIP assays, cytotoxicity assays, and fluorescence microscopy.
- Developed and optimized *high-throughput cell-based assays*, including ELISA, luminescence, and fluorescence platforms to evaluate drug efficacy and mechanisms of action. Conducted *drug synergy experiments for KRAS inhibitors* improving drug efficacy, analyzing data for therapeutic implications.
- Managed multiple cell lines, including patient-derived xenograft models, and conducted flow cytometry, migration assays, fluorescence and luminescence based cellular assays and TUNEL assays.
- Collaborated on experimental design, data visualization, and presenting findings in team settings. Read and interpreted scientific literature to propose innovative solutions addressing complex biological questions. Maintained detailed scientific documentation in laboratory notebooks and internal study reports.
- Worked collaboratively with cross-functional teams and external teams to ensure project milestones were met on time.

Research Assistant - *Daniel Keedy Lab, CUNY ASRC (Jun 2018 – Aug 2020)*

- Conducted large-scale bacterial culture, protein expression, purification using AKTA Pure systems, and implemented multi-dimensional purification strategies. Developed crystallization screens, techniques, including *in-situ* and co-crystallization and *in-situ* data collection, seeding, and soaking, and optimized over 200 protein crystals for X-ray crystallography.
- Extensive experience in *high-throughput fragment screening of 240 compounds using biophysical techniques*, including Microscale Thermophoresis (MST), NMR, ITC, and enzymatic assays. Acquired training in *cutting-edge robotics for crystallization and enzymatic assay workflows, such as OpenTrons-2, Labcyte Echo650, Alchemist, Gryphon and Mosquito,* to enhance efficiency and reproducibility.

RESEARCH SKILL SET:

Molecular Biology Techniques:

- DNA, RNA extraction and purification
- Protein purification using AKTA Pure FPLC
- SDS PAGE & DNA Gel and Western Blot
- Primer design and PCR
- Quantitative, real time and RT qPCR
- Site-directed mutagenesis
- Spectrophotometric (absorbance, luminescent and fluorescent), Enzyme kinetic and end-point assays
- Chromatin Immunoprecipitation (ChIP)

Cell Culture Techniques:

- Mammalian cell culture, Patient Derived Xenografts
- Cell Migration Assay
- Firefly and Renilla Luciferase Assays
- Transfection /lipofection
- Lentiviral packaging and delivery shRNA
- Fluorescence staining and imaging
- Cell treatments and MTT assay
- TUNEL cell death detection assay

Structural Biology Techniques:

- Multi-temperature X-ray Crystallography
- Crystal optimization, compound soaking, harvesting
- Crystallization and imaging robots (ARI Gryphon, Formulatrix Imager, Mosquito, DragonFly)
- Microscale Thermophoresis, NMR, ITC
- OpenTrons-2 and Labcyte Echo650

Computer Skills:

- Synergy Finder
- Schrodinger Suite, PyMol, CCP4 and Coot
- GraphPad Prism and IBM SPSS software
- ImageJ, QuPath, Chem-Draw Ultra and GIMP
- BioRender and Benchling

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PEER-REVIEWED PUBLICATIONS:

- **Azeem SM,** et al. Frontiers in Oncology (2025)
- **AIMS Program**. Nature Sci Rep, 14:7526 (2024).
- Mehlman TS, Biel JT, **Azeem SM**, et al. eLife (2023).
- Raghubir M**, Azeem SM**, et al. Nature Sci Rep (2021).
- Tabassum T, **Azeem SM**, et al. Current HIV Research (2020).
- **Azeem SM**, et al. Journal of Molecular Graphics (2018)

EDUCATION:

Ph.D. in Biology (*Mahjan Lab*) City University of New York, NY, USA	*Aug 2020-June 2025*
M.Phil. in Biology City University of New York, NY, USA	*Aug 2020-June 2023*
M.S in Pharmacology *(Frey Lab***)** Long Island University, NY, USA	*Sept 2015-May 2018*
Bachelor of Pharmacy Osmania University, Hyderabad, India	*Oct 2010-Apr 201*

AWARDS AND ACHIEVEMENTS:

Pre-pilot TUFCCC/HC U54 grant Award# U54 CA221704(5) from NCI and NIH	*June 2024*
CUNY Doctoral Student Research Grant (DSRG)	*March 2024*
Early Research Initiative Pre-Dissertation Science Research Award	*March 2022*
CUNY Doctoral Student Research Grant (DSRG)	*March 2022*
Performed multi-temp X-ray crystallography at Diamond Light Source, UK.	*July 2019*
Performed X-ray Crystallography at BNL (NSLS-II), Shirley, New York, USA.	*March2018*
Graduate Scholar Award from Long Island University.	*2015-2018*
Graduate Assistant Scholarship from Long Island University	*2016-2018*
Overseas Scholarship Award from Telangana Government, India.	*2015-2017*
Awarded 2nd Place Poster Presentation at National Level Technical Fest, India.	*August 2012*
Awarded Science Secretary position in St. Marks Boys Town High School, India	*2006-2008*

POSTERS AND TALK:

Panel Talk:

- Investigating the role of EGR1 in Riluzole- induced apoptosis of osteosarcoma, MIB Agents FACTOR Conference (2023) YouTube Video

Poster:

- Protein Science 32 (12)(2023) "Perturbing Protein And Ligand Conformational Landscapes To Link Dynamics And Function In Protein Tyrosine Phosphatases" T. Mehlman, L Margent, A Ebrahim, V Woods, N Singh, B Riley, **SM Azeem**
- Protein Science 32 (12) (2023) "Hydrogen-Deuterium Exchange (HDX) And X-Ray Crystallography Reveal Novel Mechanisms Of Allosteric Modulation In PTP1B". V. Woods, T Mehlman, **S. Azeem**, S Hossain, N Singh, D. Keedy
- "Molecular basis for response to Riluzole" MCD-CNC Retreat Poster/Talk 2022 at ASRC CUNY.
- Abstracts Of Papers Of The American Chemical Society 257 (2019) "Remote control of a dynamic enzyme by leveraging small-molecule fragments" T. Skaist**, S. Azeem**, D. Keedy

Symposium:

- Investigating strategies to develop potential treatment for metastatic osteosarcoma. Cold Spring Harbor Symposium 2021
- "Allosteric modulation of the multi-conformer enzyme Protein Tyrosine Phosphatase 1B" CUNY Biophysics Symposium

Annual Meetings:

- "Exploiting the Components Leading to Mutational and Flexible Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)". The FASEB J Published April 2018
- "Predicting Resistance To Investigational Microbicide MIV-150 Using Structure-based methods and Fluorescence Enzyme Inhibition". The FASEB J Published April 2018
- "Prospective Evaluation of Preclinical-HIV Agents for Mutational Resistance" AACP Annual Meeting, Boston (2018)
- "Predicting Resistance Mutations in HIV Reverse Transcriptase" Drug Discovery & Therapy World Congress. Boston (2016)