

Nadia Tasnim Ahmed

Contact no: +18134055652

Email ID: ahmedn12@vcu.edu

Website: <https://nadiatasnimahmed.netlify.app/>

EDUCATION

- **PhD in Pharmaceutical Engineering, October 2024**
GPA 3.875
Center for Pharmaceutical Engineering and Science, Department of Pharmaceutics, School of Pharmacy, Virginia Commonwealth University (VCU), Richmond, Virginia
- **Master of Science in Pharmaceutical Nanotechnology, August 2020**
GPA 4
Pharmacy Graduate Program, Taneja College of Pharmacy, University of South Florida (USF), Tampa, Florida
- **Master of Pharmacy (M.Pharm) in Pharmaceutical Chemistry, April 2019**
GPA 3.69
Department of Pharmaceutical Chemistry, University of Dhaka, Bangladesh
- **Bachelor of Pharmacy Professional (B.Pharm 5 years) in Pharmacy, July 2017**
GPA 3.68 (WES 3.8)
Department of Pharmacy, University of Dhaka, Bangladesh

EXPERIENCE

November 2024 - Present, **ORISE Fellow**, Food and Drug Administration (FDA), St. Louis, Missouri

- Developing a Cyclic Ion Mobility-Mass Spectrometry (Cyclic IM-MS) method for diastereomeric analysis of synthetic oligonucleotides, aiming for high precision and regulatory compliance.
- Conducting diastereomer profiling and impurity characterization of oligonucleotide drug products, with emphasis on optimized analytical separation.

August 2020 - November 2024, **Graduate Assistant**, Department of Pharmaceutics, School of Pharmacy, Virginia Commonwealth University

Teaching Assistant Responsibilities:

- Designed the "PESC 709: Pharmaceutical Engineering Lab II" course and established a new teaching lab for a class of 12 graduate students.
- Developed syllabus, graded papers, and delivered 4 lectures.

Research Assistant Responsibilities:

- Conducted projects on radioimmunotherapy for glioblastoma and ADAR gene interference for cancer immunotherapy.
- Contributed to securing an NIH R35 grant to support research on nucleic acid modulators and theranostics for ADAR.
- Led the project "LC-MS-based quantitative proteomic analysis of macrophages."
- Performed literature reviews, designed methodologies, collected and analyzed data, and conducted statistical analysis.
- Collaborated with interdisciplinary research teams.
- Presented findings at conferences and published in peer-reviewed journals.

May 2024 - September 2024, **Summer ORISE Fellow**, Food and Drug Administration (FDA), St. Louis, Missouri

- Established and validated a microchip CE-MS method utilizing ZipChip for quantitative impurity analysis in synthetic oligonucleotides, ensuring robustness, sensitivity, precision, accuracy, and linearity according to regulatory guidance.
- Conducted characterization and impurity profiling of complex drug products using advanced microchip CE-MS technology, studying matrix effects on the analytical process.

- Gained proficiency in chip-based CE separation and high-resolution mass spectrometry, applying new pharmaceutical analysis techniques beyond formal academic programs.
- Prepared Standard Operating Procedures (SOPs) to ensure compliance and consistency in analytical methods.
- Utilized data processing software to analyze complex datasets, contributing to innovative research in synthetic oligonucleotide analysis.
- Prepared periodic work summaries and delivered weekly presentations to the research team.
- Compiled a technical report on the development and validation of the ZipChip CE-MS method for oligonucleotide analysis.
- Delivered a final oral presentation on project findings to the entire office, showcasing research outcomes and methodologies.
- Completed FDA 101 training course.
- Completed a 2-month workshop on Physiologically-Based Pharmacokinetic Modeling, conducted by Dr. Raymond Yang.

December 2019 - May 2020, **Research Assistant**, Department of Internal Medicine, University of South Florida

- Contributed to a project focused on formulating a lipid-based targeted nanocarrier for the intranasal codelivery of lapatinib and ketoconazole.
- Worked on another project titled "Preclinical efficacy of TN-1008."
- Responsibilities included:
 - Conducting literature reviews.
 - Designing research methodologies.
 - Collecting and analyzing data.
 - Performing statistical analysis.
 - Collaborating with team members.
 - Communicating findings through conference presentations and journal publications.

October 2017 - December 2018, **Research Assistant**, Department of Pharmaceutical Chemistry, University of Dhaka, worked on a project funded by the Education Ministry of Bangladesh

Project title: Synthesis of silver nanoparticle and nanosilver conjugated ampicillin to increase sensitivity against clinical bacterial isolates.

- Evaluated different methods of synthesizing nanoparticles.
- Conjugated nanoparticles with antibiotics.
- Characterized particles and complexes.
- Evaluated their antimicrobial properties.
- Analyzed and documented all findings.
- Prepared comprehensive reports based on the research outcomes.

July 2017 - August 2018, **Development Pharmacist**, Product Development Department, Radiant Pharmaceuticals Ltd, Tongi, Bangladesh

Key Responsibilities:

- Compiling recipes and annexures for submission to the Drugs Administration.
- Generating requisitions for raw and packaging materials for new products in accordance with specified criteria.
- Overseeing the production process, including lab batches, pilot batches, stability batches, trial batches, and scale-up batches for new products.
- Collaborating with Production, QA, Engineering, Marketing, TSD, and Commercial departments.
- Reviewing formulations of existing products in response to product or market complaints, stability-related issues, or cost-saving requirements.
- Developing and updating documentation such as specifications, formulations, process sheets, validation protocols, product manuals, dossiers, procedures, and instructions adhering to cGMP & ISO standards.

- Conducting analytical method development in line with USP, BP, and other compendia and formularies.
- Performing stability studies as outlined in the protocol.

May 2016 - October 2016, **Hospital Pharmacy Intern**, Dhaka Medical College Hospital, Dhaka, Bangladesh

- Managed patient care and prescribing patterns across various departments, understanding their interrelations and prescribing guidelines.
- Learned and implemented antibiotic policies to ensure proper usage and minimize resistance.
- Handled poisoning cases, managed toxicity, and addressed adverse drug effects effectively.
- Regulated dosages in accordance with established guidelines to ensure patient safety.
- Operated both indoor and outdoor pharmacies, performing the essential roles of pharmacists in a hospital setting.

March 2015, **Industrial Pharmacy Intern**, Square Pharmaceuticals Ltd, Gazipur, Bangladesh

- Observed and assisted in the formulation process of various pharmaceutical products, including tablets, capsules, parenteral and ophthalmic products.
- Participated in the production line, gaining hands-on experience in operating machinery for blending, granulation, compression, and coating.
- Conducted quality control tests on raw materials, intermediates, and finished products, including weight variation, disintegration, and dissolution tests.
- Learned about the regulatory standards and quality assurance practices implemented in pharmaceutical manufacturing, ensuring compliance with Good Manufacturing Practices (GMP) guidelines.
- Shadowed experienced professionals in departments such as Quality Assurance, Quality Control, and Production, gaining insights into their roles and responsibilities.
- Attended training sessions on safety protocols, cleanroom practices, and workplace hygiene, ensuring adherence to industry standards.

SKILLS AND COMPETENCIES

Laboratory Techniques:

Cell Biology and Molecular Biology:

- Cell culture
- Sphere assay
- Cell viability assay
- Transfection
- Gene silencing
- Tissue dissociation
- qRT-PCR
- Primer design
- Western blotting
- Gel electrophoresis
- SDS-PAGE
- Flow cytometry
- Confocal microscopy
- Immunocytochemistry
- ELISA

Nanotechnology and Material Science:

- Nanoparticle formulation
- Dynamic light scattering
- SEM (Scanning Electron Microscopy)
- TEM (Transmission Electron Microscopy)
- TGA (Thermogravimetric Analysis)

- DSC (Differential Scanning Calorimetry)

Analytical Chemistry and Spectroscopy:

- HPLC (High-Performance Liquid Chromatography)
- LC-MS (Liquid Chromatography-Mass Spectrometry); MS Instruments: Orbitrap Fusion Lumos Tribrid Mass Spectrometer, Q Exactive HF-X Hybrid Quadrupole-Orbitrap MS System
- CE-MS (Capillary Electrophoresis-Mass Spectrometry)
- Ion Mobility MS (Ion Mobility Mass Spectrometry)
- ETD, CID, HCD (Electron Transfer Dissociation, Collision-induced Dissociation, Higher-energy Collisional Dissociation)
- UV-vis spectroscopy
- IR spectroscopy
- NMR (Nuclear Magnetic Resonance)

Pharmaceutical Analysis and Formulation:

- Karl Fischer (KF) Titration
- TOC (Total Organic Carbon)
- Freeze-drying/lyophilization
- Physical and chemical analysis of different pharmaceutical formulations, i.e., dissolution and disintegration test, hardness and friability test, etc.

Proteomics and Bioinformatics:

- Label-free proteomics
- SILAC, TMT (Stable Isotope Labeling with Amino Acids in Cell Culture, Tandem Mass Tag)
- Peptide mapping
- PTM analysis
- Glycan mapping

Microbiology:

- Agar plating
- Streak and pour culture
- Plate spreading

Teaching:

- Able to teach complex subject matter in a comprehensive way.

Computational Skills:

- Proficient in:
 - R, RStudio, R Shiny, R Markdown
 - JMP, Python, PyCharm
 - Proteome Discoverer, Byonic, XCalibur, FreeStyle, Qual Browser, Quan Browser, MassLynx, DriftScope, Chromeleon Chromatography Data System Software (CDS), FlowJo, GraphPad Prism, ImageJ, Maestro, GSEA, gprofiler, Cytoscape, Design of Experiment (DOE), Skyline, BioPharma Finder, INTACT Mass, CONFIRM Sequence
 - MS Office, including MS Excel for complex data analysis
 - PBPK modeling using Berkeley Madonna
 - Electronic Lab Notebooks (ELN) for data management and documentation
- Familiar with:
 - Machine Learning
 - DDD Plus, Gastro Plus
 - Aspen

Language:

- Fluent in English
- Native in Bengali

POSTER PRESENTATION

At NanoFlorida Conference 2019 on “Lapatinib and Ketoconazole Combination Therapy using Lipid Micelle Nanoparticles for Treatment of Lung Cancer”

At IUBMB Seoul 2018 on “Endophytic Fungal Metabolites Fusarubin and Anhydrofusarubin Arrest Cell Cycle of Acute Leukemia Cells” – Travel Grant Awardee

At AFOB Bangladesh 2018 on “Synthesis and Functional Evaluation of Nanoparticle Conjugated Antibiotics”

At ISE SFEC National Conference 2017 on “A review on Cytotoxic and Antimicrobial Compounds Derived from Marine Algicolous and Spongicolous Endophytic Fungi”-2nd prize

THESIS

1. Ahmed, N. T. (2024). Proteomic Analysis of Neutrophil Elastase-Induced Macrophage Extracellular Traps and Their Role in Lung Inflammation.
2. Ahmed, N. T. (2020). Hyaluronic Acid Coated Targeted Lipid Micellar Nanoparticle as a Delivery Vehicle for Lapatinib and Ketoconazole in EGFR mutated Lung Cancer.
3. Ahmed, N. T. (2018). Synthesis of silver nanoparticle and nanosilver conjugated ampicillin to increase sensitivity against clinical bacterial isolates.

PUBLICATIONS

1. **Ahmed, N. T.**, Kummarapurugu, A. B., Zheng, S., Bulut, G., Kang, L., Batheja, A., Hawkrige, A., & Voynow, J. A. (2024). Neutrophil elastase targets select proteins on human blood monocyte-derived macrophage cell surfaces. Manuscript submitted for publication, International Journal of Molecular Sciences.
2. Ayubee, M. S., Akter, F., **Ahmed, N. T.**, Kabir, A. K. L., Alam, L., Hossain, M. M., Kazi, M., & Mazid, Md. A. (2024). Chemical Synthesis of Silver Nanoparticles: A Comparative Study of Antibacterial Properties. <https://doi.org/10.20944/PREPRINTS202407.1289.V1>
3. Su, T., **Ahmed, N. T.**, Zhou, S., Liu, X., & Zhu, G. (2022). Chapter Eleven—STING pathway and modulation for cancer immunotherapy. In M. M. Amiji & L. S. Milane (Eds.), *Cancer Immunology and Immunotherapy* (pp. 353–373). Academic Press. <https://doi.org/10.1016/B978-0-12-823397-9.00011-9>
4. **Ahmed, N. T.**, Noor, S., Rahman, M. M., & Mazid, M. A. (2021). Cytotoxic Compounds Derived from Marine Algicolous and Spongicolous Endophytic Fungi: A Review. *Dhaka University Journal of Pharmaceutical Sciences*, 20(2), 247–265. <https://doi.org/10.3329/dujps.v20i2.57175>
5. Mohapatra, S. S., Frisina, R. D., Mohapatra, S., Sneed, K. B., Markoutsas, E., Wang, T., Dutta, R., Damjanovic, R., Phan, M.-H., Denmark, D. J., Biswal, M. R., McGill, A. R., Green, R., Howell, M., Ghosh, P., Gonzalez, A., **Ahmed, N. T.**, Borresen, B., Farmer, M., ... Martin, D. K. (2020). Advances in Translational Nanotechnology: Challenges and Opportunities. *Applied Sciences*, 10(14), 4881. <https://doi.org/10.3390/app10144881>
6. **Ahmed, N. T.**, & Mazid, M. A. (2018). Synthesis and functional evaluation of nanoparticle conjugated antibiotics. *New Biotechnology*, 44, S95–S96. <https://doi.org/10.1016/J.NBT.2018.05.960>

HONORS

- **Excellence in Pharmaceutical Engineering Award in 2023; Issuer - School of Pharmacy, Virginia Commonwealth University**
- **Excellence in student research on the project titled: “Preclinical efficacy of TN-1008” - Apr 2020; Issuer - The Florida High Tech Corridor Council’s Matching Grants Research Program**
- **National Science and Technology Fellowship for Master’s Research in 2018; Issuer - The Ministry of Science and Technology, Bangladesh**

PROFESSIONAL CERTIFICATION

Registered as an A-grade pharmacist in Bangladesh.

LEADERSHIP EXPERIENCE

- Founding President, Pharmaceutical Engineering Graduate Student Association, Virginia Commonwealth University, 2021-2023
- Treasurer, Pharmaceutics Graduate Student Association, Virginia Commonwealth University, 2020-2021
- Student Advisor, 2021-2022, VCU Health Science Library Student Advisory Committee
- Secretary, New Advancements in Nanotechnology Organization (NANO), USF, 2019-2020
- Member & Sargent at Arms, Toastmaster International, USF, 2019-2020

Nadia Tasnim Ahmed

Contact no: +18134055652

Email ID: ahmedn12@vcu.edu

Website: <https://nadiatasnimahmed.netlify.app/>

REFERENCES

Dr. Adam Hawkrige

Associate Professor

Dept. of Pharmaceutics

College of Pharmacy,

Virginia Commonwealth University

Richmond, Virginia

Relation: PhD Supervisor

Contact:

Tel: (804) 828-1258;

Academic Email: amhawkrige@vcu.edu

Dr. Sandro da Rocha

Professor

Dept. of Pharmaceutics

Director of Pharmaceutical Engineering

School of Pharmacy,

Virginia Commonwealth University

Richmond, Virginia

Relation: Academic Advisor

Phone: (804) 828-0985

Academic Email: srdarocho@vcu.edu