

Arif Rahman, PhD

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CAREER SUMMARY

- Postdoctoral Fellow at the National Institute of Environmental Health Sciences
- PhD; trained in metabolism, toxicology, molecular pharmacology, and biomarker discovery
- Author of 8 published articles and 1 book chapter
- Pharmaceutical marketing professional with three years of experience in product management

ACADEMIC CREDENTIALS

- **Ph.D.**, Pharmaceutical Sciences (Major: Pharmacology and Toxicology) 2014-2019
Institution: The University of Tennessee Health Sciences Center, Memphis, TN, USA
- **M. Pharm**, Clinical Pharmacy & Pharmacology 2010-2011
Institution: University of Dhaka, Dhaka, Bangladesh
- **B. Pharm**, Pharmacy 2006-2010
Institution: University of Dhaka, Dhaka, Bangladesh

RESEARCH & PROFESSIONAL EXPERIENCE

ORISE Postdoctoral Fellow, National Institute of Environmental Health Sciences April 2019- Present

- Development of predictive modeling for cardiovascular toxicity using toxicoinformatics approach
- Data and tissue types: Human and rat (in vivo and in vitro) transcriptomics
- Data mining tools/programming language: R, JMP, Partek, Cytoscape, IPA, etc.

ORISE Fellow, FDA's National Center for Toxicological Research May 2018- Aug 2018

- Learnt predictive models from LINC1000 genomics data set for drug induced liver injury (DILI)
- Gained knowledge on DILIRank, the largest reference DILI drug list developed by FDA

Graduate Research Assistant, The University of Tennessee Health Sciences Center Aug 2014- Oct 2018

- Designed *in vitro* and *ex vivo* toxicological/mechanistic study involving CYP enzymes
- Conducted pharmacodynamic and toxicological analysis of novel CYP2E1 inhibitors (lead optimization)
- Studied drug- drug/disease interaction (DDI) involving alcohol-HIV-anti-retroviral drugs
- Conducted *in vitro* pharmacokinetic analysis of anti-retroviral drugs using LC-MS/MS
- Studied exosomes biology; isolation, characterization, and downstream effects on cell systems
- Used exosomes as novel biological carrier for large molecules such CYP and antioxidant enzymes
- Extensive experience in working in biosafety level (BSL)- 2 & 3 facility
- Analyzed data using GraphPad Prism, R, Excel, and SAS
- Gained theoretical knowledge and understanding of Pop PK, PBPK modeling, WinNonlin, NONMEM
- Participated in hands on training and exercises on PKPD of protein therapeutics (Dr. Bernd Meibohm)
- Received training on regulatory guidance documents, submission of IND, NDA, and BLA

Graduate Teaching Assistant, for the PharmD Students, each class of 160-180 students. Aug 2014- Dec 2018

- Courses: PK and dose optimization (P2), Pharmaceutics (P1), Sterile compounding technique (P1)
- Prepared questions for quizzes and exams, performed recitations, conducted TA hours, etc.

Senior Product Manager, Incepta Pharmaceuticals Ltd., Bangladesh Jan 2014- Jul 2014

- Launched two new generic drugs by working closely with cross-functional teams
- Acted as a critical coordinator between R&D, QA/QC, production and regulatory affairs department

Product Manager, Incepta Pharmaceuticals Ltd., Bangladesh Sep 2011- Dec 2013

- Designed and implemented marketing strategies for more than five generic drug products
- Prepared regulatory documents and medical literatures for the new and existing drug products

RESEARCH ARTICLES

1. **Rahman MA**, Sinha N, Haque S, Kodidela S, and Kumar S (2019) Plasma exosomes exacerbate alcohol- and acetaminophen- induced toxicity via CYP2E1 pathway. *Sci Rep.* 2019; 9: 6571. doi: 10.1038/s41598-019-43064-2.
2. **Rahman MA**, Patters BJ, Kodidela S, and Kumar S (2019) Extracellular Vesicles: Intercellular Mediators in Alcohol-Induced Pathologies. *J Neuroimmune Pharmacol.*doi.org/10.1007/s11481-019-09848-z.
3. **Rahman MA**, Gong Y, and Kumar S (2018) In vitro evaluation of structural analogs of diallyl sulfide as novel CYP2E1 inhibitors for their protective effect against xenobiotic-induced toxicity and HIV replication. *Toxicology letters.* doi.org/10.1016/j.toxlet.2018.04.023.
4. **Rahman MA**, Midde NM, Wu X, Li W, and Kumar S (2017) Kinetic characterizations of diallyl sulfide analogs for their novel role as CYP2E1 enzyme inhibitors. *Pharmacol Res Perspect* 5.
5. Midde NM, **Rahman MA**, Rathi C, Li J, Meibohm B, Li W, and Kumar S (2016) Effect of Ethanol on the Metabolic Characteristics of HIV-1 Integrase Inhibitor Elvitegravir and Elvitegravir/Cobicistat with CYP3A: An Analysis Using a Newly Developed LC-MS/MS Method. *PloS one* 11:e0149225.
6. Ranjit S, Midde NM, Sinha N, Patters BJ, **Rahman MA**, Cory TJ, Rao PS, and Kumar S (2016) Effect of Polyaryl Hydrocarbons on Cytotoxicity in Monocytic Cells: Potential Role of Cytochromes P450 and Oxidative Stress Pathways. *PloS one* 11:e0163827.
7. Kumar S, Sinha N, Gerth KA, **Rahman MA**, Yallapu MM, and Midde NM (2017) Specific packaging and circulation of cytochromes P450, especially 2E1 isozyme, in human plasma exosomes and their implications in cellular communications. *Biochemical and biophysical research communications* 491:675-680.
8. Gong Y, Chowdhury P, Midde NM, **Rahman MA**, Yallapu M, and Kumar S (2017) Novel elvitegravir nano-formulation approach to suppress the viral load in HIV-infected macrophages. *Biochemistry and Biophysics Reports.* doi: 10.1016/j.bbrep.2017.10.005
9. Gong Y, Chowdhury P, **Rahman MA**, Yallapu M, and Kumar S Novel elvitegravir nanoformulation for drug delivery across the blood-brain barrier to achieve HIV-1 attenuation in the CNS (*manuscript under revision*).
10. Haque S, Gong Y, Kodidela S, **Rahman MA**, Ranjit S, Kumar S. Cytochrome P450 Enzymes for the Synthesis of Novel and Known Drugs and Drug Metabolites . In: Pharmaceutical Biocatalysis. 1 ed. Grunwald P, editor. USA: Jenny Stanford Publishing; 2019. Chapter 14; p.34. 774p.

SELECTED CONFERENCE AND MEETING ABSTRACTS (selected)

1. **Rahman MA**, Svoboda D, Bushel PR, Berridge BR, Auerbach S. Unsupervised Gene Coregulation Network Analysis to Decipher Temporal Dynamics in Drug-induced Cardiovascular toxicity. ORISE Fellow poster day, OND/CDER/FDA, Silver Spring, MD, November, 2019.
2. **Rahman MA**, Midde NM, Wu X, Li W, and Kumar S. CYP2E1 enzyme kinetics and in vitro toxicological evaluation of diallyl sulfide (DAS) analogs for the prevention of alcohol- and acetaminophen-induced toxicity. AAPS, San Diego, CA, November, 2017.
3. **Rahman MA**, Gerth K, Sinha N, and Kumar S. Specific packaging of CYP2E1 in human plasma exosomes and their critical role in cellular communications. SPNM, Miami, October, FL, 2017.
4. **Rahman MA**, Midde NM, Rao PSS, and Kumar S. Evaluation of diallyl sulfide analogs for cytotoxicity, inhibition of CYP2E1, and metabolite profiling using in vitro cell culture, human liver microsomes and LCMS/MS. AAPS, Denver, CO, November, 2016.
5. **Rahman MA**, Ranjit S, Midde NM, Rao PSS, Patters BJ, and Kumar S. Effect of benzo(a)pyrene and naphthalene, important cigarette constituents, on CYP and oxidative stress pathways in monocytic cells: Implications with HIV pathogenesis. SNIP, Miami, FL, April 2015.

COURSE CERTIFICATES

- PK/PD of Protein Therapeutics: Concept and Hands-on Exercises (Dr. Meibohm & Dr. Gabrielson)
- Machine Learning A-Z: Hands-on Python and R, Udemy
- Drug Development (On Clinical Trials), Coursera/ University of California, San Diego
- ORAQ Regulatory Affairs Training by Duke University

SOFTWARE SKILLS

- R
- Partek
- IPA
- GraphPad Prism
- JMP
- Cytoscape

AWARDS

- **Nominated for Oral presentation** at NIEHS Science Day, Nov 2019.
- **Graduate Research Day Award**, Oral Presenter as one of the top 3 abstracts, UTHSC, 2018
- **Outstanding oral presentation award**, DDDC, Louisville, KY, 2018
- **Travel award**, Mid-South Computational Biology & Bioinformatics Society, Starkville, MS, 2018
- **Travel award**, Society of Personalized Nano Medicine; Miami, FL, 2017
- **Travel award**, Society on Neuroimmune Pharmacology; Krakow, Poland, 2016
- **Travel award**, College of Graduate Health Sciences, UTHSC, Oct 2017
- **Travel award**, College of Graduate Health Sciences, UTHSC, Nov 2017

GRADUATE LEVEL COURSES

- Drug Metabolism
- PK and Dose Optimization
- Advanced PK
- Population PK
- Pre-formulation and Drug Development
- Pharmaceutical Analysis
- Biostatistics for Health Science I & II
- Introduction to R for biostatistics I & II
- Fundamentals of SAS for Epidemiology
- Advanced SAS

LEADERSHIP EXPERIENCE

- **Chair**, AAPS Student Chapter at UTHSC Aug 2016- Jul 2017
- **President**, International Students Association at UTHSC Aug 2016- Jul 2018
- **Secretary**, Graduate Student Executive Committee at UTHSC Aug 2015- Jul 2016
- **Committee member**, Inter-professional Student Council at UTHSC Jan 2015- Jul 2017

TECHNICAL SKILLS

- Enzyme activity/inhibition assay
- Metabolic assay using human liver microsomes
- Molecular docking
- Flow cytometry
- Cell viability/cytotoxicity assay
- ELISA
- LCMS/MS
- Western blot
- qRT-PCR
- DNA/RNA/protein extraction/quantification
- DNA damage assay
- Cytokine assay
- Immunohistochemical assay using fluorescence microscopy
- Antioxidant activity assay
- Glutathione assay
- Lipid peroxidation assay
- Exosomes isolation/characterization assay
- Nanoparticle uptake assay

PROFESSIONAL AFFILIATION

- Society of Toxicology Nov 2019- Present
- American Association of Pharmaceutical Scientists (AAPS) Feb 2015- Mar 2018
- Society of Neuroimmune Pharmacology (SNIP) Dec 2014- Dec 2018