Md Yousuf Ali

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SUMMARY

Pharmaceutical Scientist by training with a strong aptitude for learning new skills to solve data science problems in the biomedical/life science fields. Bringing exceptional Pharmacology Research, CDISC SEND Data Standards, Programming, Statistical Analysis, Machine Learning, and Deep Learning skills.

SKILLS

- R, R Shiny App, R Package Development, Python, SQL, AWS, Git/GitHub, GitHub CI/CD, Docker, Linux/Unix shell scripting, HTML, CSS, JavaScript
- Data Wrangling and Visualization (dplyr, data.table, ggplot2, D3)
- Software - SEND explorer, Janus Nonclinical, GraphPad Prism, ImageJ, SPSS, ChemDraw, Endnote, Microsoft office, PowerPoint
- Molecular Biology - Cell Culture, Western Blot, ELISA, Gene Knockdown, RNA Extraction

PROFESSIONAL EXPERIENCE

Staff Fellow (Pharmacologist) Supervisor: Karen Davis-Bruno, Ph.D. CDER/OND/IO/Pharmacology Toxicology Team Food and Drug Administration (FDA) Silver Spring, MD Hours: 40 hours per week • Contributed to SENDsanitizer development and synthetic data generation for FDA's Predictive Modeling of Hepatotoxicity in Animals App-a-thon, enabling broader participation in toxicology model development by creating privacy-preserving synthetic datasets from proprietary SEND-formatted animal study data. • Built an R Shiny web application that enables FDA to systematically track and visualize animal usage patterns in regulatory studies through interactive charts and data tables. The tool provides FDA with baseline data to measure progress toward 3Rs principles and evaluate New Approach Methodologies (NAM) implementation. • Developed comprehensive automation for the Pharm/Tox Study Report Finder app by creating data pipeline scripts that automatically collect DARRTS and review data from Databricks, eliminating the need for manual data updates. This automation ensures FDA employees always have access to the most recent study reports and associated metadata without any manual intervention. • Developed a TD50 Shiny application that automates carcinogenic potency calculations for FDA reviewers through direct file upload and one-hit model.	11/2024 - Present

ORISE Postdoctoral Fellow Advisor: Kevin Snyder, Ph.D. CDER/OND/IO/Pharmacology Toxicology Team Food and Drug Administration (FDA) Silver Spring, MD Hours: 40 hours per week • Developed an R package (sendigR) in collaboration with BioCelerate, which will help data scientists to analyze and visualize CDISC SEND/nonclinical historical control data. An R Shiny app also included in the package to demonstrate how package works and would be useful for non-programmers. Package CRAN link- https://cran.r-project.org/web/packages/sendigR. Project on GitHub: https://github.com/phuse-org/sendigR. R Shiny app on: https://phuse-org.shinyapps.io/sendigR/. A presentation can be found on YouTube at https://www.youtube.com/watch?v=OHsxdDY0xrQ. • Developed an R Shiny web app, toxSummary, for summarization and visualization of nonclinical/toxicological studies. App is designed to facilitate the holistic evaluation of the drug safety by integrating the results of multiple toxicology studies in the context of a clinical dosing regimen. Internally Deployed on FDA server. Also, deployed on a public server at https://phuse-org.shinyapps.io/toxSummary/. App demonstration can be found at https://www.youtube.com/watch?v=56V2yxPTWtk. • Developed a Bayesian Model to incorporate historical control data for assessing treatment effect in nonclinical study. Project includes an R shiny app for non-programmer toxicologists.	03/2020 - 09/2024
Research Assistant Advisor: Margaret Weis, Ph.D. Department of Pharmaceutical Sciences Texas Tech University Health Sciences Center, Amarillo, TX Hours: 40 hours/week • Designed and conducted a project that showed cytokine-stimulated iNOS expression requires long chain fatty acyl-CoA synthetase (ACSL) in brain ischemic model. • Designed and conducted a project that showed HNF-4α does not play any role in iNOS expression in bEnd.3 and C6 astrocytoma cells.	01/2015 - 02/2020
Product Development Officer ACI Limited (Pharmaceuticals) Narayangonj, Dhaka, Bangladesh Hours: 40 hours per week • Performed physical and chemical tests relevant to product development, analytical method development, and validation • Performed physical and chemical tests required for stability analysis such as accelerated stability, real-time or ongoing study of new products	12/2013 - 07/2014
Quality Assurance Officer Renata Limited, Dhaka, Bangladesh. Hours: 40 hours per week • Actively participated with the experts during Installation Qualification (IQ) and Operational Qualification (OQ) of different pharmaceutical machines like Rapid Mixing Granulator and Capsule Filling Machine	07/2013 - 10/2013

OTHER PROJECTS

SEND Coding Bootcamp: R Programming Training for SEND Dataset Analysis

- A hands-on workshop teaching R programming fundamental designed for professionals working with SEND (Standard for Exchange of Nonclinical Data) data.

Finding Donors for CharityML – Machine Learning [SVM, Gradient Boosting, Scikit-learn]

- Implemented supervised algorithms to identify people most likely to donate with accuracy 0.87

Sentiment Analysis Web App Deep Learning [RNN, PyTorch, AWS, SageMaker]

- Trained a recurrent neural network and deployed the model using Amazon Sagemaker. The model was used to predict the sentiment of the entered movie review

Communicate Data Finding – Data Analysis [Matplotlib, Seaborn, Pandas, Numpy]

- Created more than 60 plots in univariate, bivariate, and multivariate categories for exploratory data analysis (EDA)

Startups using AI for drug discovery - Towards Data Science [Web scraping, Blog]

- Gathered the data and created a map of startups using Artificial Intelligence (AI) for drug discovery

Setup Bioconductor and learn Bioinformatics - posted on YouTube [Docker, R, Bioinformatics]

- Showed how to setup Bioconductor with Docker for learning bioinformatics

EDUCATION

	GPA	Year
Ph.D. in Pharmaceutical Sciences Texas Tech University Health Sciences Center, Amarillo, TX	3.97	2020
Masters in Pharmaceutical Chemistry University of Dhaka, Dhaka, Bangladesh	3.69	2010
Bachelor of Pharmacy University of Dhaka, Dhaka, Bangladesh	3.85	2008

WORKSHOP

• Mark Carfagna, Kevin Snyder, William House, **Md Yousuf Ali**, Philip Drew "Collaboratively Cracking the SEND Code: Unlocking the Potential Value of Standardized Toxicology Study Data". Presented as workshop at American College of Toxicology (ACT)	11/2021

CONFERENCE PRESENTATIONS

• **Md Yousuf Ali**, Kevin Snyder "toxSummary: An R Shiny App for Visualization and Summarization of Repeat-dose Toxicology Study Results Throughout a Drug Development Program" PHUSE/FDA Computational Science Symposium (CSS)	09/2023
• M. Carfagna, Cm Sabbir Ahmed, **Md Yousuf Ali**, B.Dharmaraj, S. Butler, T. Fukushima, H. Hanafusa, W. Houser, N. Jensen, S. Leuenroth-Quinn, B. Paisley, K.Snyder, S. Vispute, W. Wang "Cross-Study Analyses of SEND Data: Toxicity Profile Classification"	09/2023

PHUSE/FDA Computational Science Symposium (CSS)	
• Cm Sabbir Ahmed**, Md Yousuf Ali**, S. Butler, M. DeNieu, W. Houser, B. Paisley, M. Rosentreter, K. Snyder, W. Wang "SENDing Toxicology Study Data Analysis into the 21st Century with a New R Package: sendigR" Society of Toxicology (SOT)	03/2023
• M. Carfagna, Cm Sabbir Ahmed, **Md Yousuf Ali**, J. Anderson, S. Butler, T. Fukushima, H. Hanafusa, W. Houser, N. Jensen, S. Leuenroth-Quinn, B. Paisley, K.Snyder, R. Thompson, S. Vispute, W. Wang "Cross-Study Analyses of SEND Data: Toxicity Profile Classification". Society of Toxicology (SOT)	03/2023
• M. Carfagna, Cm Sabbir Ahmed, **Md Yousuf Ali**, J. Anderson, S. Butler, T. Fukushima, H. Hanafusa, W. Houser, N. Jensen, S. Leuenroth-Quinn, B. Paisley, K.Snyder, R. Thompson, S. Vispute, W. Wang "Cross-Study Analyses of SEND Data: Toxicity Profile Classification". American College of Toxicology (ACT)	11/2022
• Katie Paul-Friedman, Svetoslav Slavov, Tong Weida, **Md Yousuf Ali** "AI and Its Use in the 3Rs" 10th Annual Scientific Computing Days	09/2022
• M. Carfagna, Cm Sabbir Ahmed, **Md Yousuf Ali**, J. Anderson, S. Butler, T. Fukushima, H. Hanafusa, W. Houser, N. Jensen, S. Leuenroth-Quinn, B. Paisley, K. Snyder, R. Thompson, S. Vispute, W. Wang "Cross-Study Analyses of SEND Data: Toxicity Profile Classification". PHUSE Computational Science Symposium (PHUSE-CSS)	09/2022
• Cm Sabbir Ahmed, **Md Yousuf Ali**, S. Butler, M. DeNieu, W. Houser, B. Paisley, M. Rosentreter, K. Snyder, W. Wang "SENDing Toxicology Study Data Analysis into the 21st Century with a New R Package: sendigR". PHUSE Computational Science Symposium (PHUSE-CSS)	09/2022
• M. Carfagna, Cm Sabbir Ahmed, **Md Yousuf Ali,** J. Anderson, S. Butler, C. Eley, T. Fukushima, H. Hanafusa, W. Houser, N. Jensen, S. Leuenroth-Quinn, B. Paisley, K. Snyder, R. Thompson, S. Vispute, W. Wang "Cross-Study Analyses of SEND Data: Analytical and Visual Approaches". Society of Toxicology (SOT).	03/2022
• Kevin Snyder, **Md Yousuf Ali**, Jesse Anderson, William Houser, Daniel Russo, Bo Larsen, Mark Carfagna "Cross-Study Analysis of SEND Datasets Using an R Package: sendigR". American College of Toxicology (ACT)	11/2021
• **Md Yousuf Ali**, Kevin Snyder, James Travis "Incorporation of Historical Control Data in the Detection of Treatment-Related Effects in Toxicology Studies via Bayesian Inference". American Society for Cellular and Computational Toxicology (ASCCT)	10/2021
• Kevin Snyder, **Md Yousuf Ali**, Jesse Anderson, William Houser, Daniel Russo, Bo Larsen, Mark Carfagna "Cross-Study Analysis of SEND Datasets Using an R Package: sendigR". PHUSE Computational Science Symposium (PHUSE-CSS)	09/2021
• **Md Yousuf Ali**, Kevin Snyder "Bayesian approach to detection of treatment-related effects in toxicology studies by borrowing information from historical control	06/2021

animals". PHUSE US-Connect: The Clinical Data Science Conference	
• **Md Yousuf Ali**, Kevin Snyder "Interactive visualization and summarization of toxicology study results across species, routes and durations throughout a drug development program using R Shiny". PHUSE US-Connect: The Clinical Data Science Conference	06/2021
• Kevin Snyder, William Houser, Bo Larsen, **Md Yousuf Ali**, Dan Russo "Cross-study Analysis of SEND Datasets Using an R package: sendigR". PHUSE US-Connect: The Clinical Data Science Conference	06/2021
• **Md Yousuf Ali**, Kevin Snyder "An interactive, open source software tool for summarization and visualization of an API's toxicological profile across species, route of administration, and study duration". Society of Toxicology (SOT)	03/2021
• Joseph Horvath, Mark Carfagna, Christopher Eley, Tamio Fukushima, William Houser, Cheryl Sloan, Todd Page, Jesse Anderson, Kevin Snyder, Rick Thompson, Bo Larsen, Gitte Ullmann, **Md Yousuf Ali** "Utilizing CDISC SEND Data to Generate Historical Control Incidence from a Large Database of Toxicology Studies". Society of Toxicology (SOT)	03/2021
• Presented toxSummary, an R Shiny app, to Expo of R/Pharma conference	10/2020
• **Md Yousuf Ali**, Kevin Snyder "Interactive Summarization and Comparison of Repeat-dose Toxicology Study Results Throughout a Drug Development Program Using an R Shiny App". PHUSE Computational Science Symposium (PHUSE-CSS)	09/2020
• **Md Yousuf Ali**, Margaret Teresa Weis. "Inhibition of Long Chain Fatty Acyl CoA Synthetase Modulates Inducible Nitric Oxide Synthase Expression". Society for Neuroscience, Chicago, IL.	10/2019
• **Md Yousuf Ali**, Margaret Teresa Weis. "Cytokine-stimulated iNOS Expression Requires Long Chain Fatty Acyl CoA Synthetase (ACSL)". Experimental Biology, Orlando, FL	04/2019

PUBLICATIONS

• Snyder, K., C. M. Sabbir Ahmed, **Md Yousuf Ali**, S. Butler, Michael DeNieu, W. Houser, B. Paisley, M. Rosentreter, W. Wang, and B. Larsen. 2024. "sendigR: An R Package to Leverage the Value of CDISC SEND Datasets for Cross-Study Analysis." Frontiers in Toxicology 6:1392686. doi: 10.3389/ftox.2024.1392686
• Carfagna, Mark A., Cm Sabbir Ahmed, Susan Butler, Tamio Fukushima, William Houser, Nikolai Jensen, Brianna Paisley, Stephanie Leuenroth-Quinn, Kevin Snyder, Saurabh Vispute, Wenxian Wang, and **Md Yousuf Ali**. 2024. "Cross Study Analyses of SEND Data: Toxicity Profile Classification." Toxicological Sciences 200(2):277–86. doi: 10.1093/toxsci/kfae072
• Syeda Sadia Ameen, S.R.J., **Md Yousuf Ali.** Evaluation of The Anti-Inflammatory and Antipyretic Activities of The Plant Alpinia Nigra (Family: Zingiberaceae). World Journal of Pharmaceutical Research 3, 164-170 (2014).

GRADUATE COURSES

- Pharmacokinetics
- Drug Delivery System
- Pharmacology
- Regulatory Affairs
- Intermediate Biostatistics
- Biomedical Informatics
- Advanced Neuroscience
- Cerebrovascular Biology
- Principle of Disease
- Principle of Drug Action
- Biochemistry
- Immunology

CERTIFICATIONS

Toxicology for Pharmaceutical and Regulatory Scientists	03/2022
CDISC Data Standards	04/2020
Bioconductor for Genomic Data Science - Coursera	08/2019
Deep Learning Nanodegree - Udacity	06/2019
Data Scientist Nanodegree - Udacity	03/2019
Data Analyst Nanodegree - Udacity	12/2018
Statistics with R Specialization (four courses) - Duke University - Coursera	10/2018
Inferential Statistics - University of Amsterdam - Coursera	01/2018

AWARDS AND HONORS

- GSBS President's Travel Scholarship for Society for Neuroscience conference 2019
- TTUHSC- AAPS Student Chapter travel award for American Association of Pharmaceutical Scientists (AAPS PharmSci 360) conference 2019
- Cayman Chemical Travel Grant 2019
- American Association of Bangladeshi Pharmaceutical Scientists (AABPS) travel award 2019
- Travel Grant from "Bangladesh-Sweden Trust Fund" for higher studies in abroad 2015