

Moom R. Roosan (Mumtahena Rahman), PharmD, PhD

Assistant Professor of Pharmacogenomics, Department of Pharmacy Practice
Chapman University School of Pharmacy
Harry and Diane Rinker Health Science Campus
9401 Jeronimo Rd, Irvine, CA 92618-1908
roosan@chapman.edu

EDUCATION

Department of Pharmacology and Toxicology
College of Pharmacy, *University of Utah*, Salt Lake City, UT
Post-Doctoral Research Associate. August 2015- January 2016

Department of Biomedical Informatics
School of Medicine, *University of Utah*, Salt Lake City, UT
Doctor of Philosophy. Graduation: December 2015
Focus- Translational and clinical informatics

School of Pharmacy and Pharmaceutical Sciences
Purdue University, West Lafayette, IN
Doctor of Pharmacy (PharmD). Graduation: May 2010

College of Engineering, Technology, and Computer Science.
Indiana University Purdue University Fort Wayne (IPFW), IN
Associate of Science in Computer Science (A.Sc). Graduation: May 2006
with Highest Distinction

CURRENT APPOINTMENT

Chapman University School of Pharmacy (CUSP), Irvine, CA
06/04/18 - present

Currently, I am appointed as an Assistant Professor of Pharmacogenomics in the Pharmacy Practice Department. In addition to research responsibilities, my teaching responsibilities include teaching graduate level pharmacogenomics, informatics and computational biology classes. Other responsibilities include establishing collaborative research and practice sites for multi-omics research and pharmacogenomics training and implementation in Southern California hospitals. My service-oriented responsibilities include serving in various committees, facilitating PharmD and graduate admission processes at Chapman University School of Pharmacy.

CREDENTIALS

California Registered Pharmacist # 76654
Expiration: November 30, 2020
Utah Pharmacist License # 8280116-1701
Expiration: September 30, 2019
Texas Registered Pharmacist. License # 49401
Expiration: November 30, 2020
National Intravenous Training Program for Pharmacists.
ACPE #0156-9999-11-115-H04-P
Issue Date: February 15, 2012
Basic Life Support Certified. Issue date: July 31, 2017
National Provider Identifier (NPI) 1235657792

PROGRAMMING LANGUAGE AND SOFTWARE SKILLS

R, Python, Shell Scripting, Stata, XML, XML Schema, RX2000, RX CONNECT, Horizon Meds Manager™, MEDITECH, BD Pyxis™, Medication Order Management Systems (MOMS), Cerner

DEVELOPED PRODUCTS AND SOFTWARE TOOLS

ASSIGN (developed in R)
MyMedAdmin
ItRunsInMyFamily.com

DATASETS AND REPOSITORIES

Gene Expression Omnibus (GEO) datasets: GSE83083, GSE73628, GSE76877, GSE62820 and GSE62944.
GitHub repositories: https://github.com/mumtahena/GFRN_signatures and https://github.com/srp33/TCGA_RNASeq_Clinical

RESEARCH INTERESTS

Biomedical Informatics- Clinical and Consumer Informatics
Cancer
Gene Expression
Omics Data Analysis
Pharmacogenomics

Growth Factor Receptor Network
Bioinformatics
Health Application Development
Survey Data Analysis

RESEARCH EXPERIENCE

**Post-Doctoral Research Associate, Department of Pharmacology and
Toxicology, College of Pharmacy, University of Utah,
Salt Lake City, UT**

08/15- 01/16

Translational bioinformatics and computational biology (Supervisor: Andrea H. Bild, PhD): The goal of my research was to understand the key growth factor receptor network deregulations using genomic approaches in cancer and to leverage that knowledge to predict individualized drug response in breast cancer patients. This approach to understanding drug response depends on identifying the key aberrant signaling pathway for therapeutic targeting. If an aberrant signaling genomic pattern or a signature were identified with high sensitivity and specificity, it would be possible to apply that signature to patients' tumors to measure the level of activity independent of the activation method. Because of the inherent interconnectedness or the "cross-talk" among oncologic pathways, it is fundamentally challenging to identify a particular genomic signature for a targeted therapy. We studied HER2/IGF1R/AKT/mTOR and EGFR/RAF/MEK pathway deregulations in breast cancer and their pharmacologic effects in predicting response to available targeted and chemotherapeutics treatments. Using these pathways, we were able to identify two distinct phenotypes that can be translated to a specific drug response pattern and mitochondrial apoptosis mechanism. Our manuscript describing these phenotypes has recently been published in *Genome Medicine*.

**National Library of Medicine Fellow, Department of Biomedical Informatics,
School of Medicine, University of Utah,
Salt Lake City, UT**

08/12-07/15

Translational informatics (Chair: Andrea H. Bild, PhD): My research goal was to identify the genomic signatures of the key nodes of the HER2/IGF1R/AKT/mTOR and EGFR/RAF/MEK oncogenic pathways accounting for "cross-talks" and to build predictive biomarkers for drug response in breast cancer patients. In collaboration with Dr. William Evan Johnson's lab, I developed "ASSIGN", a pathway profiling toolkit written in R, to generate the genomic biomarkers for oncogenic pathways. Our

manuscript describing ASSIGN was published in *Bioinformatics*. In addition, I have reprocessed 10,000+ patients' tumor and normal RNA samples from The Cancer Genome Atlas (TCGA) with a better RNA-Seq pipeline and showed that this reprocessed dataset is likely to improve analysis results compared to TCGA's own pipeline. Our manuscript describing this reprocessed dataset is published in *Bioinformatics*.

Clinical informatics (Supervisor: Guilherme Del Fiol, MD, PhD): I worked in a project aimed at identifying the gap in health information technology in terms of integrating high throughput sequencing data, specifically, gene expression and mutation data with patients' electronic health records with available data models and standards. Currently, no EHR can support computable genomics data that is sharable and provide discrete and computable data necessary for Clinical Decision Support Systems (CDSS). I proposed a simple data model to represent gene expression data composed of currently available models and a novel gene expression data element model. We then applied the model using an openEHR archetype and represented a breast cancer patient's processed RNA-Seq data.

Dean's Summer Undergraduate Research Fellowship, Purdue University,
West Lafayette, IN **05/07-08/07**

I worked on a project to study the effect of a loss-of-function mutation in the DJ-1 gene on early onset of Parkinson's disease (PD). I learned how to introduce a mutation in a gene and how to transfer the mutated gene into a cell that can produce the mutated protein. Additionally, I worked on creating a specific mutation in the DJ-1 protein and transferred the mutated protein into MES 23.5 cells to study its effect on aggresome formation, which may show the effects on early onset of PD.

Undergraduate Research Assistant Indiana University Purdue University,
Fort Wayne, IN **05/05-12/05**

I assisted in research related to the development of reporter genes that could monitor the change in the concentration plant hormone. I made the experiment solution and conducted some parts of the experiments based on the designed experiment protocol.

INFORMATICS EXPERIENCE

Implementation Informatics Pharmacist at Cardinal Health Pharmacy
Services

Various locations **08/17- 05/18**

Worked as an informatics pharmacist from Cardinal Health Pharmacy Services for Steward Healthcare. As part of the EDGE pharmacy initiative, I

worked with all acute and emergency care teams to upgrade electronic healthcare systems to Cerner. My responsibilities included developing and customizing site-specific electronic medication order protocols, building IV products, building dose range checking rules, testing various components of the system and helping implement the cutover plan successfully at each site.

Director of Clinical Informatics at ItRunsInMyFamily.com, Inc.

Charleston, SD

08/16- 05/17

As a start-up company, *ItRunsInMyFamily.com(ItRuns)*, we developed a new FHx web tool that utilizes artificial intelligence and social networking to improve the collection of FHx directly from patients.

Health Application Development “MyMedAdmin”, University of Utah,

Salt Lake City, UT

02/13-04/13

As part of a University of Utah team, I participated in the 2013 IOM-NAE Health Data Collegiate Challenge initiated by the Institutes of Medicine. We developed “MyMedAdmin”, a web tool using publicly available government data resources such as RxTerms, NDF-RT and research-based resources such as the Consumer Health Vocabulary Initiative to empower consumers to keep track of their medications, to check for drug interactions and adverse-events and to provide a layman’s symptom checker functionality linked to the provided medication list. Our team of five was multidisciplinary, with computer scientists, database specialists, pharmacists and informaticists. Our project placed 7th in the national 2013 challenge.

CLINICAL EXPERIENCE

Pharmacist at St. Joseph Medical Center, Houston, TX	10/15- 08/17
Clinical Pharmacist at Davis Hospital, Layton, UT	10/12-08/15
Clinical Pharmacist at Christus Santa Rosa Hospital, San Antonio, TX	01/11-08/12
Clinical Pharmacist at Southwest General Hospital, San Antonio, TX	06/11-08/12
Clinical Pharmacist at Methodist Stone Oak Hospital, San Antonio, TX	08/11-07/12
Retail Pharmacist at CVS Pharmacy, San Antonio, TX	10/10-12/10

PEER REVIEWED PUBLICATIONS

Rahman M, MacNeil SM, Jenkins DF, Shrestha G, Wyatt SR, McQuerry JA, Piccolo SR, Heiser LM, Gray JW, Johnson WE, Bild AH. Activity of distinct growth factor

receptor network components in breast tumors uncovers two biologically relevant subtypes. *Genome Medicine*. 2017 Apr 26;9(1):40.

Roosan D, Weir C, Samore M, Jones M, **Rahman M**, Stoddard GJ, Del Fiol G. Identifying complexity in infectious diseases inpatient settings: An observation study. *Journal of Biomedical Informatics*. 2016 Nov 3;71:S13-S21.

Rahman M, Jackson LK, Johnson WE, Li DY, Bild AH, Piccolo SR. Alternative preprocessing of RNA-sequencing data in The Cancer Genome Atlas leads to improved analysis results. *Bioinformatics*. 2015 Nov 15;31(22):3666-72.

Shen Y, **Rahman M** (co-first), Piccolo SR, Gusenleitner D, El-Chaar NN, Cheng L, Monti S, Bild AH, Johnson WE. ASSIGN: Context-specific genomic profiling of multiple heterogeneous biological pathways. *Bioinformatics*. 2015 Jun 1;31(11):1745-53.

PUBLICATIONS UNDER REVIEW or IN PRESS

Roosan D, Truong H, Li Y, Roosan M, Chok J. Visualizing medication information using hierarchical task analysis and infographics. IEEE International Conference on Healthcare Informatics, 2019

OTHER PUBLICATIONS

Rahman M, Roosan D. Do pharmacists want to miss the boat again in informatics? Bangladesh-American Pharmacists Association Annual Convention, 2016. Ellenville, NY.

Rahman M. Development of pathway-based biomarker in breast cancer and assessment of feasibility of integrating transcriptomics data in electronic health record. The University of Utah; 2015.

ABSTRACTS

Roosan MR, Jamjoom M, Seone-Vasquez E. Analysis of Pharmacogenomics Actionable Drugs in the United States from 1980 to 2017. American Pharmacists Association (APhA) 2019 Annual Meeting, Seattle, WA Mar, 2019

Wyatt SR, Macneil S, **Rahman M**, Shrestha G, Brady S, Rethmeyer J, Bild A. Predicting Drug Response in Breast Cancer Using Multi-pathway Gene

Expression Signatures and BH3 Profiling. UCUR 2016, University of Utah, Salt Lake City, UT
Dec, 2015

TEACHING EXPERIENCE

Course Coordinator and Lecturer, PHRM 651: Pharmacogenomics and Personalized Medicine- Chapman University, School of Pharmacy 08/18-Present

Lecturer, PHRM 571: Introduction to Health Care Lectures and Recitations-
Chapman University, School of Pharmacy 08/18-Present

Lecturer, PHRM 681: Pharmacy Practice Management- Chapman University
School of Pharmacy 03/19-Present

Lecturer, PAS 504: Pharmacology- Chapman University School of Pharmacy
02/19

CURRENT TRAINEES

2018- Present	Romina Nabiee, PhD candidate
2019- Present	Maha Jamal, PhD candidate
2019- Present	Trang Jenny Tran Nguyen, PharmD candidate
2019- Present	Michelle Le, Freshman Early Assurance Program student
2019- Present	Kunj Patel, Freshman Early Assurance Program student
2019- Present	Jacqueline Vu, Freshman Early Assurance Program student

CURRENT RESEARCH FUNDING

Chapman University School of Pharmacy Dean's Research Fund.
Corticosteroid Induced Non-genomic cAMP Signaling (R Ostrom: PI; M
Roosan: Co-PI) 09/07/18- Present

Chapman University School of Pharmacy Startup Fund (M Roosan: PI)
06/04/18-present

PAST RESEARCH FUNDING

2T15LM007124-16 (J Hurdle: PI; M Rahman: Trainee). 08/01/12-07/31/15
National Library of Medicine. University of Utah Biomedical Informatics
Training Grant

Dean's Summer Undergraduate Research Fellowship (C Rochet: PI; M
Rahman: Awardee) 05/27/07-08//05/07
Dean's Summer Research Fellowship, Purdue University School of Pharmacy

PROFESSIONAL AND INSTITUTIONAL SERVICE

Chapman University School of Pharmacy Assessment Committee 2018-2019
Chapman University School of Pharmacy Celebration Committee 2018-2019
Chapman University School of Pharmacy, Pharmacy Practice Department Retreat
Committee 2018-2019

PRESENTATIONS

Roosan MR. Pharmacogenomics: An Approach to Personalized Medicine. City
of Hope, Duarte CA. Nov, 2018

Roosan MR. Pharmacogenomics: Promises and Challenges. 2018 Population
Health Conference: Medical Innovations. Industry Hills, CA. Nov, 2018

Rahman M. Personalized Medicine: Past, Present and Future. Bangladesh-
American Pharmacist Association Annual Convention, 2017. West Palm Beach,
FL Apr, 2017

Rahman, M. ASSIGN: Adaptive Signature Selection/Identification in GeNome-
wide Profiling. Presented in National Library of Medicine Informatics Training
Conference, University of Pittsburgh, Pittsburg, PA Jun, 2014

HONORS AND AWARDS

NLM Post-doctoral Fellowship, University of Utah 08/12-07/15
Kathy McCaffrey Memorial Endowed Scholarship, American Health Information
Management Association (AHIMA) 12/14
IOM Healthcare App Competition, University of Utah BMI Team 08/13
Rho Chi Honor Society, Purdue University 01/08-05/10
Dean's and Semester's Honor's List, Purdue University 12/06-05/09

Flemming Scholarship, Purdue University	08/09
Carnaghi Scholarship, Purdue University	04/08
Robert C. Anderson Family Scholarship, Purdue University	05/07
Summer Undergraduate Research Fellowship, Purdue University	05/07
Dean's and Semester's Honor List, Purdue University	
-Multiple semesters	08/06- 05/07
Chancellor's Merit Award, IPFW – Multiple semesters	08/04-05/06
Dean's and Semester's Honor's List, IPFW – Multiple semesters	08/04-05/06
Who's Who among Students in American Universities & Colleges, IPFW	05/06
Phi Kappa Phi, IPFW	05/06
Resident Assistant of the Month, IPFW Student Housing	01/06
Merit Scholarship, Bangladesh University of Engineering and Technology (BUET), Bangladesh	04/02-07/04

PROFESSIONAL AFFILIATIONS

2018- present	Member of Clinical Pharmacogenetics Implementation Consortium (CPIC)
2018- present	Member of American Association of Colleges of Pharmacy (AACP)
2016- present	Member of Bangladesh-American Pharmacist Association (BAPA)
2014- present	Member of American Pharmacists Association (APhA)
2014-15	Member of American Health Information Management Association (AHIMA)
2012- 15	Member of American Medical Informatics Association (AMIA)