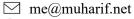
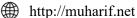
## **Muhammad Arif**

Postdoctoral Visiting Fellow National Institute of Health (NIH)









## **Expertise**

Machine Learning, Network Analysis, Multi-Omics, Transcriptomics, Proteomics, Metabolomics

## **Programming**

Python, R, MATLAB, C, PHP, Shell Script

## **Teaching Experiences**

Bioinformatics, Applied Bioinformatics, Systems Biology, Statistics, High Performance Computing, Thesis Supervision

## Languages

English ★★★★
Swedish ★★☆☆
Indonesian ★★★★

## **Work Experiences**

Postdoctoral Visiting Fellow | National Institute of Health (NIH) 2021 - Present | Rockville, MD, United States of America

Jointly appointed by Laboratory of Cardiovascular Physiology and Tissue Injury (LCPTI), and Section on Fibrotic Disorders (SFD) at National Institute of Alcohol Abuse and Alcoholism (NIAAA)

# Research Assistant | Science for Life Laboratory 2016 – 2017 | Stockholm, Sweden

Genomics and transcriptomics data analysis. Carried on as part of doctoral education in the same research group.

## Systems Engineer | Cisco Systems 2010 – 2014 | Singapore, Singapore

Specializing in Enterprise Networking Technology.

## **Key Publications**

Zeybel M, **Arif M**, Li X, et al (2021). Multi-omics analysis reveals the impact of microbiota on host metabolism in hepatic steatosis. Advanced Science

**Arif M**, et al. (2021). Integrative transcriptomic analysis of tissue-specific metabolic crosstalk after myocardial infarction. eLife.

**Arif M,** et al. (2021). iNetModels 2.0: an interactive visualization and database of multi-omics data. Nucleic Acids Research.

Total Publication: 42 (Google Scholar, 22 March 2022)

H-index: 13 (Google Scholar, 22 March 2022)

#### **Education**

#### PhD | KTH Royal Institute of Technology | 2017 - 2021

Systems Biology of Human Diseases.

Thesis Title: Systems and Network-based Approaches to Complex Metabolic Diseases.

Supervisors: Prof. Adil Mardinoglu and Prof. Mathias Uhlén

#### Master of Science | KTH Royal Institute of Technology | 2014 – 2016

European Master of Research on Information and Communication Technologies (MERIT). Double degree program with Universitat Politècnica de Catalunya (UPC), Barcelona.

Supervisors: Dr. Viktoria Fodor (KTH) and Dr. Albert Cabellos (UPC)

#### Bachelor of Engineering | Institut Teknologi Bandung | 2006 – 2011

Electrical Engineering with concentration track in Control Engineering.

## **Teaching and Mentoring Experience**

#### **National Institute of Health:**

NIH Summer Mentor Award | 2022

#### **KTH Royal Institute of Technology:**

Applied Bioinformatics (DD2040) | Teaching Assistant | 2017-2018 Bachelor Degree Project in Biotechnology (BB200X) | Supervisor | 2018 Systems Biology of Human Metabolism and Gut Microbiome | Organizer and Lecturer | 2018, 2020 Bioinformatics (BB24410) | Teaching Assistant | 2019, 2020 Systems Biology (CB2030) | Teaching Assistant | 2019, 2020

#### **King's College London:**

Introduction to Programming and Coding (7NNNMHD2) | Lecturer | 2020, 2021 Introduction to Linux (7NNNMHD2) | Lecturer | 2020, 2021 Statistical Analysis and Probability (7NNNMHD2) | Lecturer | 2020, 2021

#### **Sover Academy:**

Basic Programming (in Indonesian) | Organizer and Lecturer | 2020

#### **Courses**

#### **Technical:**

Introduction to Biomedicine | Stockholm, SE | KTH | 2019
Tools for Reproducible Research | Stockholm, SE | NBIS | 2018
Analysis of Data from High-Throughput Molecular Biology Experiments | Stockholm, SE | KTH | 2017
Single Cell RNA Analysis | Uppsala, SE | NBIS | 2017

#### **Teaching and Communications:**

Scientists Teaching Science | Bethesda, MD | NIH | 2022 Communicating Research beyond the Academy | Stockholm, SE | KTH | 2020 Visualize Your Science | Stockholm, SE | KTH | 2019 Writing Scientific Articles | Stockholm, SE | KTH | 2019 Supervision Methodology for Diploma Projects | Stockholm, SE | KTH | 2017 Basic Communication and Teaching | Stockholm, SE | KTH | 2017

#### Others:

Ethics in Research Training | Bethesda, MD | NIH | 2022 Engineering for a Sustainable Society | Stockholm, SE | KTH | 2019

#### **Conferences and Meetings**

Integrating Systems Biology: From Networks to Mechanisms to Model | EMBL Heidelberg | 2018 Systems Biology of Mammalian Cells (Poster) | Bremen, DE | 2018 Chan-Zuckerberg Science Retreat (Poster) | Stockholm, SE | 2018

#### **Other Activities**

Judge in 18<sup>th</sup> NIH Annual Graduate Student Research Symposium | Bethesda, MD | 2021

### **Publications**

#### **Published (Peer-Reviewed)**

- 32. Karlsson M, et al (2022). Genome-wide annotation of protein-coding genes in pig. BMC biology.
- 31. Zeybel M, **Arif M\***, Li X., et al (2021). Multi-omics analysis reveals the impact of microbiota on host metabolism in hepatic steatosis. Advanced Science. \***Co-first author**
- 30. Bayraktar A, et al (2021). Revealing the Molecular Mechanisms of Alzheimer's Disease Based on Network Analysis. International journal of molecular sciences.
- 29. Zeybel M, Altay O, **Arif M\***, et al (2021). Combined Metabolic Cofactor Supplementation Reduces Liver Fat in Nonalcoholic Fatty Liver Disease. Molecular Systems Biology. \*Co-first author
- 28. Zhong W, et al (2021). Next generation plasma proteome profiling of COVID-19 patients with mild to moderate symptoms. EBioMedicine.
- 27. Lam S, et al (2021). Systems analysis reveals ageing-related perturbations in retinoids and sex hormones in Alzheimer's and Parkinson's diseases. Biomedicines.
- 26. Yang H, et al (2021). A network-based approach reveals the dysregulated transcriptional regulation in non-alcohol fatty liver disease. iScience.
- 25. Andersson L, et al (2021). Glucosylceramide synthase deficiency in the heart compromises β1-adrenergic receptor trafficking. European Heart Journal.
- 24. Karlsson M, et al (2021). A single-cell type transcriptomics map of human tissues. Science Advances.
- 23. Altay O, **Arif M\***, Li X, et al (2021). Combined Metabolic Activators Accelerates Recovery in Mildto-Moderate COVID-19. Advanced Science. \*Co-first author
- 22. Li X, et al (2021). Stratification of clear cell renal cell carcinoma patients to facilitate drug repositioning. iScience.
- 21. **Arif M**, et al (2021). Integrative transcriptomic analysis of tissue-specific metabolic crosstalk after myocardial infarction. eLife. **First Author**
- 20. **Arif M**, et al (2021). iNetModels 2.0: an interactive visualization and database of multi-omics data. Nucleic Acids Research. **First Author**
- 19. Smati, et al (2021). Arif M, et al (2021). Integrative study of diet-induced mouse models of NAFLD identifies PPARα as a sexually dimorphic drug target. Gut.
- 18. Kolk, BW, et al (2021) Molecular pathways behind acquired obesity: adipose tissue and skeletal muscle multiomics in monozygotic twin pairs discordant for BMI. Cell Reports Medicine.
- 17. Doran S., et al. (2021) Multi-omics approaches for revealing the complexity of cardiovascular disease. Briefings in Bioinformatics.
- 16. Mahdessian, D, et al. (2021) Spatiotemporal dissection of the cell cycle with single-cell proteogenomics. Nature.
- 15. Li, X, et al. (2021). Discovery of functional alternatively spliced PKM transcripts in human cancers. Cancers.
- 14. Tebani, A, et al. (2020). Integration of molecular profiles in a longitudinal wellness profiling cohort. Nature Communications.
- 13. Chapman M, et al. (2020) Skeletal muscle transcriptomic comparison between long-term trained and untrained men and women. Cell Reports.
- 12. Zhang C, Bjornson E, **Arif M\***, et al. (2020) The acute effect of metabolic cofactor supplementation: a potential therapeutic strategy against non-alcoholic fatty liver disease. Molecular Systems Biology. \*Co-first author
- 11. Li X, et al. (2020) Classification of clear cell renal cell carcinoma based on PKM alternative splicing. Heliyon.
- 10. Sayitoglu EC, et al. (2020). Boosting Natural Killer Cell-Mediated Targeting of Sarcoma Through DNAM-1 and NKG2D. Frontiers in Immunology.
- 9. Klevstig M, et al. (2019) Cardiac expression of the microsomal triglyceride transport protein protects the heart function during ischemia. Journal of molecular and cellular cardiology.

- 8. Liu Z, et al. (2019) Pyruvate kinase L/R is a regulator of lipid metabolism and mitochondrial function. Metabolic Engineering.
- 7. Benfeitas R, et al. (2019) Characterization of heterogeneous redox responses in hepatocellular carcinoma patients using network analysis. eBiomedicine.
- 6. Zhang, C, et al. (2019) Elucidating the reprograming of colorectal cancer metabolism using genomescale metabolic modeling. Frontiers in oncology.
- 5. Lovric A, et al. (2018) Characterization of different fat depots in NAFLD using inflammation-associated proteome, lipidome and metabolome. Scientific Reports.
- 4. Zhang C, et al. (2018) ESS: a tool for genome-scale quantification of essentiality score for reaction/genes in constraint-based modeling. Frontiers in Physiology.
- 3. Bidkhori G, et al. (2018) Metabolic network-based identification and prioritization of anti-cancer targets based on expression data in hepatocellular carcinoma. Frontiers in Physiology.
- 2. Lee S, Zhang C, **Arif M**, et al. (2017) TCSBN: a database of tissue and cancer specific biological networks. Nucleic Acids Research. **Co-first author**
- 1. Uhlen M, et al. (2017) A pathology atlas of the human cancer transcriptome. Science.

#### **Theses**

- 1. Arif M. (2021). Systems and Network-based Approaches to Complex Metabolic Diseases. PhD Thesis.
- 2. **Arif M.** (2016). Scalable 5-Tuple Packet Classification in Overlay Network-Based SDN. M.Sc. Master Thesis.

#### **Submitted/In-Preparation**

- 1. Arif M., Portlock T., et al. GutMicroNet: an interactive platform for gut microbiome interaction exploration (Under Review/Available at bioRxiv).
- 2. Laudette M, et al. Cardiomyocyte-specific PCSK9 deficiency compromises mitochondrial bioenergetics and heart function (Under Review)
- 3. Yulug B, et al. Combined Metabolic Activators Improves Cognitive Functions in Alzheimer's Disease (Submitted/Available at medRxiv)
- 4. Yulug B, et al. Combined Metabolic Activators Improve Cognitive Functions without Altering Motor Scores in Parkinson's Disease (Submitted/Available at medRxiv)
- 5. Doran S, et al. Network Analyses Links Epicardial Fat Metabolism to Human Coronary Heart Disease (Submitted/Available at SneakPeek CellPress)