Muhammad Arif

Postdoctoral Visiting Fellow
National Institute of Health (NIH)
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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 18th 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 Mild-to-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 genome-scale 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)