Bana Alamad

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# EDUCATION

**University of Cambridge,** Cambridge, UK Graduating September 2021

**MPhil in Genomic Medicine,** Department of Medical Genetics

**New York University Abu Dhabi**, Abu Dhabi, UAE Graduated with Honors May 2020

**Bachelor of Science** in Biology **Minor** in Visual Arts

# RESEARCH EXPERIENCE

**The Farhat Lab Harvard Medical School,** Department of Biomedical Informatics**,** USA June 2020 – Present

# *Research Assistant (Analytical)*

# Single-cell and bulk RNA-seq analysis to identify immune signatures in response to the vaccination of rhesus macaques with bacille Calmette–Guérin (BCG) vaccine against *Mycobacterium tuberculosis* (Mtb).

# Data trimming, annotation, quality control, and alignment. HPC computing, Python, Snakemake.

# Presented at journal clubs, lab meetings, and attended Harvard Medical School departmental events.

**The Clinical AI Research Lab,** Engineering Division NYUAD, UAE July 2020 – November 2020

# *Research Assistant (Analytical)*

* **Co-authored publication (submitted, under review)** in The Lancet Digital Health journal titled: “Clinical prediction system of complications among COVID-19 patients: a development and validation retrospective multicentre study”.
* **Co-authored publication (to be submitted in December 2020)** in AAAI symposium 2021 titled: “Prediction of acute respiratory distress syndrome ARDS using free-text chest radiology reports for COVID-19 patients”.
* Presented an automated machine learning system that achieves strong performance to predict 7 COVID-19 complications.
* Clinical interpretation of model outcomes for patient deterioration, in collaboration with 4 physicians.
* Created high quality figures, wrote and edited publications.

**Idaghdour Environmental Genetics Lab,** Science Division NYUAD, UAE September 2018 - May 2020

*Undergraduate Thesis Project*

* ATAC-Seq Profiling of Peripheral Blood Mononuclear Cells in response to *P. falciparum* infection in Burkina Faso.
* Wrote an NIH-format research proposal, presented it, defended it to a scientific committee, and received funding.
* Generated the first ATAC-seq dataset in malaria, uncovered cell-type specific temporal chromatin accessibility changes in response to infection, integrated findings with single-cell RNA-seq data to analyze patient’s immune response.
* **First author publication (to be submitted in December 2020)** in PLOS Genetics journal (impact factor 5.0).
* **Accepted Abstract and poster presentation** in “Single-cell Biology 2020” Welcome Genome Campus, UK.
* **Accepted Abstract and poster presentation** in “Genome Systems X” Center for Genomics and Systems Biology Symposium, UAE.

*Research Assistant (Experimental)*

* Handled peripheral blood mononuclear cells (PBMCs), FACS, MACS, T cell, B cell, and Monocyte isolation.
* Performed gel electrophoresis, DNA/RNA extraction, bioanalyzer analysis, **NGS single-cell transcriptional profiling**.
* Performed bulk and single-cell chromatin accessibility mapping **NGS epigenetic profiling** (10X Genomics Chromium **ATAC-seq**)

*Research Assistant (Analytical)*

* **GWAS** analysis, whole exome data from 95 individuals to map disease-causing variants using JMP Genomics.
* **Differential gene expression** analysis on bulk RNA-seq data, **cross-correlation analysis** (gene expression and methylation data) using R package DESeq2 and JMP Genomics.
* **ATAC-seq** data analysis using esATAC and Homer.
* T-cell receptor **(TCR) profiling** analysis and plotting using JMP, R, and ImmunoSEQ Analyzer.
* R Bioconductor, R DESeq2, JMP genomics, IGV (data visualization), statistical analysis, ImmunoSEQ Analyzer, BLAST, Panther.

**Toseland Laboratory University of Kent,** Kent UK June 2018- December 2018

*Research Assistant: Regulation of Myosin VI Cellular Function*

* **Co-authored publication (published)** in the Journal of Biological Chemistry (impact factor 4.1) titled: “Competition between two high- and low-affinity protein-binding sites in myosin VI controls its cellular function”.
* HELA and MCF7 cell culture, cell line maintenance, and transfection.
* In vitro Immunofluorescence staining, Immunoblot Analysis, and Fluorescence Imaging.
* Binding partner (Dab2 and CALCOCO2/NDP52) truncation, protein recombination.
* Uncovered Myosin VI’s mechanism for regulating its transcriptional activity, concluded that the loss of DAB2 enhances myosin VI– mediated during cancer onset.

**Columbia University’s Department of Genetics and Development,** USA April 2019

*Genetic Counselling Shadow*

* Shadowed a genetic counsellor, attended departmental meetings, and engaged in discussions analyzing patient’s genomic data with physicians.
* Attended the Human Genetics NYC conference and participated in a workshop discussing the legal and bioethical implications of the return of genetic results to patients.

**Ecological Trip Participant,** Nairobi, Kenya January 2018

* Taxonomic classification of plants and animals in national parks and reserves in 4 Kenyan cities.
* Observed, recorded, and classified animal behavior and living patterns for behavioral ecology study.

**King Hussein Cancer Center,** Amman, Jordan. July 2017- August 2017

*Clinical research intern at Biomolecular and Genetics Laboratory*

* Qualitative and quantitative data collection from patients undertaking an experimental drug treatment.
* Rotational training in: Molecular Biology, Biochemistry, Stem-cell Biology, Molecular Genetics Pathology, Transplant Immunology, and Histocompatibility departments.
* Collaborated with geneticists and physicians to determine effectiveness of clinical trial, utilizing genetic information into healthcare treatments.

# LEADERSHIP & COMMUNITY INVOLVEMENT

**The Center for Genomics and Systems Biology,** Abu Dhabi, UAE August 2019 - May 2020

*Science Communicator*

* + Created creative content for the center’s outreach communications, social media, and annual newsletter.
  + Presented scientific advances and recent healthcare findings to the public in engaging campaigns and talks.
  + Facilitated community dialogue around public health issues using art as a tool for science communications

**Girls Education Network,** Abu Dhabi, UAE August 2019 - May 2020

*Facilitator*

* + Facilitated 6 leadership and self-development workshops for middle-school girls in Abu Dhabi.
  + Worked closely with 20+ facilitators to deliver activities that encourage girls to collaborate while tackling topics like mental health and emotional wellbeing.
  + Designed activities that encourage critical thinking, empathetic listening, and design thinking.

**Art Therapy Program,** New York, USA February 2019-June 2019

*Founder and facilitator*

* + Founded an arts therapy program tailored for Disabled and/or Dementia patients to increase their inclusion in arts practice, encourage self-expression, and improve emotional wellbeing.
  + Created visual exercises and hands-on activities tailored to limited movement ranges, and special physical needs.
  + Attended workshops and trainings by licensed art, music, drama, and dance therapists practicing in New York.

**Network of Students in Medicine and Health (NeSMAH),** UAE November 2018- January 2019

*Content Creator and Member*

* + Organized and created content for the NeSMAH’s interuniversity inaugural conference for 100+ medical and health students across 10+ universities in the UAE.
  + Assisted in facilitating The Future of Healthcare in the UAE conference for 120+ students, 10+ speakers, and 50+ distinguished guests.

**Operation Smile UAE,** Abu Dhabi, UAE October 2018- May 2019

*Medical Mission Coordinator*

* + Identified and contacted sponsors to fund free cleft lip and cleft palate surgeries for disadvantaged children.
  + Developed sponsorship grant proposal, pitched it to sponsors, and received funding for medical mission.
  + Trained student volunteers to be health care educators on medical missions in: burn care, oral rehydration therapy, dental hygiene, nutrition, and hands-only CPR.

**UNICEF's Change Agency Network (UCAN),** Amman, Jordan. October 2014-July 2017

*Agent*

* + Planned and coordinated events in refugee camps aimed at training youth in self-expression through art.
  + Facilitated “Basic Lives Skills" training to help refugee teenagers with goal setting.
  + Created marketing content to encourage the public’s participation in community service.

# SKILLS

* + **Computer:** Endnote, Adobe InDesign, Adobe photoshop.
  + **Language:** Arabic, Native Fluency; English, Fluent.