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Research Interests

Rare genetic disorders

Cancer Genomics

Interactive genomics web apps

Academic Qualifications

PhD (Molecular Biology)

May 2019

University of Khartoum, Khartoum, Sudan

M. Sc Molecular Medicine

July 2012

University of Khartoum, Khartoum, Sudan

Bachelor of Medicine and Surgery

April 2005

University of Khartoum, Khartoum, Sudan

Licensure

Sudan Medical Council Registration Number: 21533. Division: Full

Current position

Postdoctoral Fellow

February 2019-present

Department of Human genetics university of Cape Town

Duties: Conducting high-quality research including analysis of next-generation sequencing data

Current Projects

African Genetics Variation Database

The Sudanese Genetic Variation Portal

Recent Work and Research Experience

- Bioinformatician

March 2015-May2018

Head of the bioinformatics and NGS data analysis team

Institute of Endemic Diseases, University of Khartoum

Duties: Include analysis of Exome Data for rare genetics disorders including familial cancers as well as teaching and instructing Bioinformatics workshops

- **Lecturer**

April 2017 – present

Faculty of dentistry, university of Khartoum

Department of basic medical sciences

Duties: Teaching molecular genetics to undergraduate students

- **Visiting Researcher**

April-July 2016

Cambridge University, UK

Duties: Joined the OpenCGA team, and developed R and Python clients to OpenCB projects

- **Researcher (Short term Fellowship)**

March-April 2013

International Center of Genetic Engineering and Biotechnology Trieste, Italy

Duties: Include conducting plasmid DNA extraction, cell culture, transfection, and using immunofluorescence techniques to study the role of Epstein Bar Virus in Breast cancer

- **Teaching Assistant**

September 2008 –August 2012 Department of

Microbiology, Faculty of Medicine, International University of Africa, Khartoum, Sudan.

Duties: include Preparing and Instructing Medical microbiology lab

- **Medical Officer**

June 2007 – June 2008

Ministry of Health Khartoum, Sudan.

Duties: include participating in inpatient and outpatient clinic activities, attending clinical rounds, tutorials, and various clinical and training activities.

- **House Officer**

December 2005-May 2007

Duties: include participating in inpatient and outpatient clinic activities, attending clinical rounds, tutorials, and various clinical and training activities

Publications:

- **“EBV Associated Breast Cancer Whole Methylome Analysis Reveals Viral and Developmental Enriched Pathways”**

Mohammad O. E. Abdallah, Ubai K. Algizouli, Maram A. Suliman, Rawya A. Abdulrahman, Mahmoud Koko, Ghimja Fessahaye, Jamal H. Shakir, Ahmed H. Fahal, Ahmed M. Elhassan, Muntaser E. Ibrahim and Hiba S. Mohamed

<https://doi.org/10.3389/fonc.2018.00316>

- **“Challenges imposed by minor reference alleles on the identification and reporting of clinical variants from exome data”** Mahmoud Koko **Mohammed O. E. Abdallah**¹, Mutaz Amin and Muntaser Ibrahim BMC Genomics (2018) 19:46

DOI 10.1186/s12864-018-4433-3

- **“Autosomal recessive Leber Congenital Amaurosis type 4 resulting from AIPL1 truncating variant c.487C>T: support of pathogenicity”** Mohammed O. E. Abdallah, Mahmoud E. Koko1, Shima Faisal, Melanie J. Newport , Muntaser E. Ibrahim (in preparation)
- **“In-silico analysis of MHC genes in hereditary colorectal cancer shows identical by state SNP sharing affecting HLA-DQB1 binding groove”**
Mahmoud Koko, Suleiman Hussein Suleiman, **Mohammed Omar Elsiddieg Abdallah**, Muhallab Saad, Muntaser Ibrahim (preprint)
doi: <https://doi.org/10.1101/040436>
- **“Exome sequencing of a colorectal cancer family reveals shared mutation pattern and predisposition circuitry along tumor pathways”**
Suleiman Suleiman H, Koko Mahmoud E, Nasir Wafaa H, Elfateh Ommnyiah, Elgizouli Ubai K, **Abdallah Mohammed O E**, Alfarouk Khalid O, Hussain Ayman, Faisal Shima, Ibrahim Fathelrahman M A, Romano Maurizio, Sultan Ali, Banks Lawrence, Newport Melanie, Baralle Francesco, Elhassan Ahmed M, Mohamed Hiba S, Ibrahim Muntaser E. *Frontiers in Genetics*. 6, **2015**. DOI. 10.3389/fgene.2015.00288.
- **“CellbaseR, a scalable R package for retrieving biological data and performing variant annotation”**
Mohammed OE Abdallah, Francisco J. Lopez and Ignacio Medina (in preparation)
- **Microbiology manual**. Faculty of medicine international university of Africa **2010**

Additional Courses and Training:

- **edX Honor Code Certificate for Explore Statistics with R (July 2015)**
- **edX Verified Certificate for Case study: DNA methylation data analysis (June 2015)**
- **edX Verified Certificate for Case Study: Variant Discovery and Genotyping (June 2016)**
- **edX Honor Code Certificate for Introduction to Bioconductor ((May 2015)**
- **edX Honor Code Certificate for Statistics and R for the Life Sciences (May 2015)**
- **edX Honor Code Certificate for Data Analysis for Genomics (July 2014)**
- **Khartoum winter School of Bioinformatics and Statistical Genetics,**
Khartoum, Sudan (January 2013)
- **Parallel computing in Biomedical Research**
Khartoum, Sudan (December 2012)
- **Moodle Training Workshop**
Institute Of endemic Diseases Khartoum Sudan (November 2012)
- **International Workshop on Molecular immunology And Drug Discovery**
Khartoum, Sudan (July 2010)

Initiatives and Select Open Source Projects

- **Opencga Open Computational Genomics Analysis platform for big data processing and analysis in genomics**
<https://github.com/melsiddieg/opencga>
- **CellbaseR An R client for CellBase, the OpenCB project**
<https://github.com/melsiddieg/cellbaseR>
- **PanelAppR**
<https://github.com/melsiddieg/panelAppR>
- **Rlollops for mutation visualization**

- <https://github.com/melsiddieg/Rlollopops>
- **Map of Mycetoma distribution in Sudan**
https://github.com/melsiddieg/Mycetoma_Map
- **Mycetoma Data Explorer**
https://melsiddieg.shinyapps.io/mycetoma_app/

Invited talks, Workshops Taught, and Community Work

- **The Sudanese Genetic Variation Portal**, enabling personalized medicine in understudied populations
G2MC conference 27th -30th November 2018 **Cape Town, South Africa**
- **The impact of open source data and NGS revolution on population genetics**
“Health, Society, Biology and the History of East Africans” Regional Meeting in Sudan
February 27-March 2 2017
- **Introduction to Bioinformatics (lecture series)**
Biomedical Informatics Society, Faculty of Medicine, university of Khartoum
July 2016-present
- **Introduction to R and Bioconductor**
Center for Bioinformatics and Systems Biology (CBSB)
Faculty of Science, University of Khartoum
January. 10th - 13th 2016
- **Introduction to R and NGS**
Khartoum Winter School of Bioinformatics and Statistical Genetics
2014-2017

Academic and Computer Skills

- Native fluency in Arabic and advanced fluency in English
- Advanced Computer Skills in Both Windows and Linux Platforms
- Advanced Experience in Bash and Python scripting
- Advanced Experience in R statistical Language (R developer)
- Advanced Experience with scientific Python (jupyter-lab, numpy,pandas,scikitlearn,etc)
- strong experience in interactive web-based analytical dashboards in both R, (Shiny) and Python (Dash)
- Strong experience with Spark and Big Data analytics
- Strong experience with SQL and open-source database systems
- Strong experience with container technology and reproducible research (docker,git,markdown)
- Strong experience with Bioinformatics tools (NCBI, Ensemble, UCSC, Galaxy, etc. Gemini, GnomAD)
- Advanced Skills in Microsoft Office Software (Word, Excel, and Power Point)

Awards Received

- **Research Development Fund** **August 2015**
Wellcome Trust Brighton and Sussex Centre for Global Health Research
- **Arturo Falaschi ICGEB Short-term Fellowship** **March-April 2013**
ICGEB, Italy

- **Miscellanies**

International English Language Testing System (**IELTS**) score: 8.0

References

- **Dr. Ahmed Mudawi Musa Mohammed**
Director of the Institute of Endemic Diseases, University of Khartoum
Address: Institute of Endemic Diseases. Medical Campus, Qassar Street.
Email: amusa@iend.org
Tel: +249183793267
- **Dr. Ignacio Medina**
Head of the Computational Biology lab and OpenCB founder and Project Leader.
Address: University Information Services, Roger Needham Building
Email: im411@cam.ac.uk
Tel: +441223 763577
Web: <http://www.hpc.cam.ac.uk/compbio>
- **Dr. Pablo Marin-Garcia**
Head of Bioinformatics and Data Analyst at Instituto de Medicina Genómica (IMEGEN)
Address: Instituto de Medicina Genómica, Valencia Area, Spain
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