

# Attayeb Mohsen

## Medical Science & Computational Biology

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## Introduction

**Physician and Computational Biologist** with experience in Bioinformatics, AI, and Big data analysis, including NGS data.

- Passionate about Artificial intelligence in medicine and health.
- Committed to collaborate and exchange experiences and ideas with peer researchers.
- Strive for self-development by learning and acquiring new skills and exploring new science and research areas.
- Active in journal articles writing and conference participation.
- Enthusiastic in Health-related problem solving utilizing programming and computational methods.

## Experience

Post-doctoral Researcher

**Artificial Intelligence Center for Health and Biomedical Research (ArCHER)**

📅 Apr 2015    📍 Osaka Japan

- **(Drug discovery, Pharmacogenomics, Machine learning)** In the theme of drug discovery, I created prediction models for adverse drug events. This project utilized data from different sources (ADR (Adverse Drug Reactions) database, Microarray data), it uses machine learning for feature selection and outcome prediction. (Won the poster excellent award in Japanese Chemo-bioinformatics meeting Tokyo, 2016). In this project the target genes of these adverse events were identified, and prediction models are created to be used for new drug development settings.
- **(Machine learning, drug discovery)** Worked on natural language processing (NLP) with collaborators to analyze the similarity of terms used in medical literature using Word2Vec method (Results partially communicated as a poster presentation in CBI 2018).
- **(Deep learning)** Built a deep learning model to remove the noise from MCG (MagnetoCardioGram) traces in collaboration with researchers from multiple international universities.
- **(NGS, Microbiome)** Set up the Microbiome data analysis pipeline in our laboratory for both 16S data (using QIIME 1 and QIIME 2) and Shot-gun data (abundance estimation and functional annotation).
- **(NGS, Microbiome)** Automated and optimized QIIME1 pipe line by developing (Auto-q) script.
- Trained a research group from other university on the automation and optimization of Microbiome data analysis using QIIME 1 pipeline and auto-q script.
- Commenced and organized a technical training sessions in the laboratory under the name of Interactive Workshop. Their aim is to share the experience among team members and invite experts from outside the laboratory.
- **(Simulation)** Studied the spread of COVID-19 infection using stochastic simulation with involvement of network approach.
- Deep learning and conventional machine learning.
- Bayesian inference and network analysis.
- Data analysis pipelines using snakemake.

Post-doctoral Researcher

**Tohoku University Cyclotron and Radio-isotope center**

📅 October 2014 – April 2015    📍 Sendai Japan

- NIRS (Near InfraRed Spectrophotometry)
- PET (Positron emission tomography)
- Participated in a project to study the effect of Antihistamines on the brain blood supply using PET imaging and NIRS, Developed a script to record the response of the experiment subjects and analyze their cognitive abilities.

## Education

Tohoku University

**PhD in Medical Sciences**

📅 September 2014    📍 Sendai, Japan

University Of Pretoria

**Post Graduate Diploma in Occupational Medicine and Health**

📅 September 2009    📍 Pretoria, South Africa

University of Benghazi

**Bachelor of Medicine and Surgery**

📅 May 2007    📍 Benghazi, Libya

## Area of Interest

AI in medicine    Microbiome  
Medical sciences    Neuroscience  
Computational Biology    Big Data

## Technical Skills

Problem Solving    Data Analysis  
Basics of Data Structures  
Applied Machine Learning  
Bayesian Inference    Network analysis  
Pipelines    NGS Data Analysis

## Personal Skills

Self Starter    Flexible&Adaptable  
Leadership    Communication

## Programming Languages

Python    ●●●●●●  
R    ●●●●●●

## Languages

English    ●●●●●●  
Arabic    ●●●●●●  
Japanese    ●●●●●●

# Publications

## Doctorate Dissertation

- The role of histaminergic neurotransmission in locomotor activity and anxiety-like-behaviors in mice.

## Journal Articles

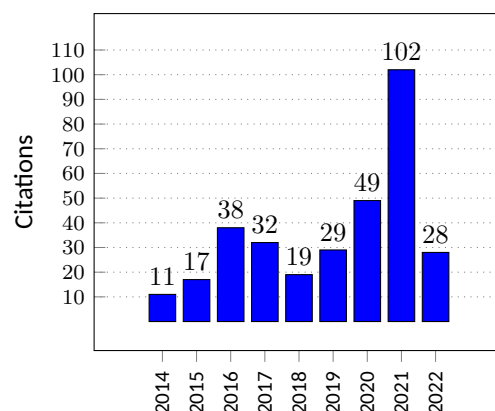
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- Sadman Sakib, Mostafa M Fouda, Muftah Al-Mahdawi, **Attayeb Mohsen**, Miki-hiko Oogane, Yasuo Ando, Zubair Md Fadlullah. "Deep Learning Models for Magnetic Cardiography Edge Sensors Implementing Noise Processing and Diagnostics.", *IEEE Access*, 27 December 2021. <https://doi.org/10.1109/ACCESS.2021.3138976>
- **Attayeb Mohsen**, Lokesh P. Tripathi, and Kenji Mizuguchi. "Deep Learning Prediction of Adverse Drug Reactions in Drug Discovery Using Open TG-GATEs and FAERS Databases.", *Front. Drug. Discov.*, 27 October 2021. <https://doi.org/10.3389/fddsv.2021.768792>
- Jonguk Park, Kumiko Kato, Haruka Murakami, Koji Hosomi, Kumpei Tanisawa, Takashi Nakagata, Harumi Ohno, Kana Konishi, Hitoshi Kawashima, Yi-An Chen, **Attayeb Mohsen**, Jin-zhong Xiao, Toshitaka Odamaki, Jun Kunisawa, Kenji Mizuguchi, Motohiko Miyachi. "Comprehensive analysis of gut microbiota of a healthy population and covariates affecting microbial variation in two large Japanese cohorts", *BMC microbiology*, 21:1 (2021). <https://doi.org/10.1186/s12866-021-02215-0>
- Sadman Sakib, Mostafa M Fouda, Muftah Al-Mahdawi, **Attayeb Mohsen**, Miki-hiko Oogane, Yasuo Ando, Zubair Md Fadlullah. "Noise-Removal from Spectrally-Similar Signals Using Reservoir Computing for MCG Monitoring", *ICC 2021-IEEE International Conference on Communication*. <https://doi.org/10.1109/ICC42927.2021.9500993>
- Juneyoung Lee, **Attayeb Mohsen**, Anik Banerjee, Louise D. McCullough, Kenji Mizuguchi, Motomu Shimaoka, Hiroshi Kiyono, Eun J. Park. "Distinct Age-Specific miRegulome Profiling of Isolated Small and Large Intestinal Epithelial Cells in Mice". *Int. J. Mol. Sci.* 22, no. 7: 3544. (2021). <https://doi.org/10.3390/ijms22073544>
- Yi-An Chen, Jonguk Park, Yayoi Natsume-Kitatani, Hitoshi Kawashima, **Attayeb Mohsen**, Koji Hosomi, Kumpei Tanisawa, Harumi Ohno, Kana Konishi, Haruka Murakami, Motohiko Miyachi, Jun Kunisawa, Kenji Mizuguchi, "MANTA, an integrative database and analysis platform that relates microbiome and phenotypic data", *Plos one* 2020, 15:12:e0243609. <https://doi.org/10.1371/journal.pone.0243609>
- **Attayeb Mohsen** and Ahmed Alarabi A. "The impact of community containment implementation timing on the spread of COVID-19: A simulation study" [version 1; peer review: 2 approved]. *F1000Research* 2020, 9:452. <https://doi.org/10.12688/f1000research.24156.1>
- Rutger A. Vos, Toshiaki Katayama, Hiroyuki Mishima, ..., **Attayeb Mohsen** et al. "BioHackathon 2015: Semantics of data for life sciences and reproducible research" [version 1; peer review: 2 approved]. *F1000Research* 2020, 9:136. <https://doi.org/10.12688/f1000research.18236.1>
- Shuntaro Chiba, Masahito Ohue, Anastasiia Gryniukova, ..., **Attayeb Mohsen** ... . "A prospective compound screening contest identified broader inhibitor for Sirutin 1". *Scientific Reports* 9, 1, 1-12 (2019) <https://doi.org/10.1038/s41598-019-55069-y>
- **Attayeb Mohsen**, Jonguk Park, Yi-An Chen, Hitoshi Kawashima, Kenji Mizuguchi. "Impact of quality trimming on the efficiency of reads joining and diversity analysis of Illumina paired-end reads in the context of QIIME1 and QIIME2 microbiome analysis frameworks". *BMC Bioinformatics* 20, 581 (2019) <https://doi.org/10.1186/s12859-019-3187-5>
- **Attayeb Mohsen**, Muftah Al-Mahdawi, Mostafa M. Fouda, Miki-hiko Oogane, Yasuo Ando, Zubair Md Fadlullah. AI Aided Noise Processing of Spintronic Based IoT Sensor for Magnetocardiography Application, *ICC 2020-2020 IEEE International Conference on Communications (ICC)*, 1-6. <https://doi.org/10.1109/ICC40277.2020.9148617>
- Asuka Kikuchi, Fairuz Binti Mohammadi Nasir, Akie Inami, **Attayeb Mohsen**, Shoichi Watanuki, Masayasu Miyake, Kazuko Takeda, et al. "Effects of Levocetirizine and

# Citations

Citations: 325

h-index: 8

i10-index: 7



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- **Attayeb Mohsen**, Takeo Yoshikawa, Yamato Miura, Tadahiko Nakamura, Fumito Naganuma, Katsuhiko Shibuya, Tomomitsu Iida, et al. "Mechanism of the Histamine H3 Receptor-Mediated Increase in Exploratory Locomotor Activity and Anxiety-like Behaviours in Mice." *Neuropharmacology* 81 (June 2014): 188-94. <https://doi.org/10.1016/j.neuropharm.2014.02.003>.
  - Takeo Yoshikawa, Tadahiko Nakamura, Tetsuro Shibakusa, Mayu Sugita, Fumito Naganuma, Tomomitsu Iida, Yamato Miura, **Attayeb Mohsen**, Ryuichi Harada, and Kazuhiko Yanai. "Insufficient Intake of L-Histidine Reduces Brain Histamine and Causes Anxiety-like Behaviors in Male Mice." *The Journal of Nutrition* 144, no. 10 (October 2014): 1637-41. <https://doi.org/10.3945/jn.114.196105>
  - Fumito Naganuma, Takeo Yoshikawa, Tadahiko Nakamura, Tomomitsu Iida, Ryuichi Harada, **Attayeb Mohsen**, Yamato Miura, and Kazuhiko Yanai. "Predominant Role of Plasma Membrane Monoamine Transporters in Monoamine Transport in 1321N1, a Human Astrocytoma-Derived Cell Line." *Journal of Neurochemistry* 129, no. 4 (May 2014): 591-601. <https://doi.org/10.1111/jnc.12665>
  - Takeo Yoshikawa, Fumito Naganuma, Tomomitsu Iida, Tadahiko Nakamura, Ryuichi Harada, **Attayeb Mohsen**, Atsuko Kasajima, Hironobu Sasano, and Kazuhiko Yanai. "Molecular Mechanism of Histamine Clearance by Primary Human Astrocytes." *Glia* 61, no. 6 (2013): 905-916. <https://doi.org/10.1002/glia.22484>
  - Tadahiko Nakamura, Takeo Yoshikawa, Fumito Naganuma, **Attayeb Mohsen**, Tomomitsu Iida, Yamato Miura, Akira Sugawara, and Kazuhiko Yanai. "Role of Histamine H3 Receptor in Glucagon-Secreting  $\alpha$ TC1.6 Cells." *FEBS Open Bio* 5 (2015): 36-41. <https://doi.org/10.1016/j.fob.2014.12.001>
  - Tomomitsu Iida, Takeo Yoshikawa, Takuro Matsuzawa, Fumito Naganuma, Tadahiko Nakamura, Yamato Miura, **Attayeb Mohsen**, Ryuichi Harada, Ren Iwata, and Kazuhiko Yanai. "Histamine H3 Receptor in Primary Mouse Microglia Inhibits Chemotaxis, Phagocytosis, and Cytokine Secretion." *Glia* 63, no. 7 (July 2015): 1213-25. <https://doi.org/10.1002/glia.22812>.

## Preprints

- **Attayeb Mohsen**, Yi-An Chen, Rodolfo S. Allendes Osorio, Chihiro Higuchi, and Kenji Mizuguchi. "Snaq: A Dynamic Snakemake Pipeline for Microbiome data analysis with QIIME2." *bioRxiv* (2022).
- Hosomi, Koji, Mayu Saito, Jonguk Park, Haruka Murakami, Naoko Shibata, Masahiro Ando, Takahiro Nagatake et al. "Unique metabolic profiles of *Blautia wexlerae* achieve beneficial effects for the control of obesity and type 2 diabetes." (2022).