Olabiyi **Obayomi**

Researcher. Bioinformatician. Microbiologist. Programmer

Building 41, Room 238, Bioinformatics Core facility, Ben Gurion University, Beersheba, Israel

Email: obayomi@post.bgu.ac.il | Skype: olabeyei | Phone: +972 50-8125438

Education

Ben Gurion University of the Negev, Jacob Blaustein Institute for Desert Research *Sde Boker, Israel*

Ph.D. Environmental Microbiology 2019

Cumulative GPA: 96.5

Ph.D. thesis: Effect of treated wastewater irrigated soil properties on the survival of pathogens and fecal indicators and their potential to contaminate vegetable crops.

Supervisors: Professor Osnat Gillor and Dr. Nirit Bernstein

Core Modules: Microbial Pathogens, microbial communities, advanced water treatment and reuse, treated wastewater, plastic mulch, irrigation, Agriculture, next-generation sequencing, soil and crop microbial ecology

Skills and Learning:

- Characterized and tracked the source of microbiomes (bacteria and protists) including pathogens in soil, water and crop samples using both culture- dependent and independent approaches including amplicon (16S and 18S) sequencing
- Analyzed and processed data with various bioinformatics tools, including QIIME, SourceTracker, R Bioconductor packages
- Developed a tool for detection, statistical analysis and visualization of pathogens in environmental samples using amplicon sequences https://github.com/olabiyi/16s_pathogen_analysis
- Wrote scripts in Bash, R and Python that used high performance clusters to decrease execution time on tasks
- Wrote and contributed to four manuscripts for publication

Hebrew University of Jerusalem, Robert H. Smith Faculty of Agriculture *Rehovot, Israel*

M.Sc. Agriculture. Field and Vegetable Crops 2015

Cumulative GPA: 94.94 Honors: *summa cum laude*

Master's thesis: The effect of potassium on the agronomic and physiological traits of cherry and table tomatoes.

Supervisor: Dr. Nirit Bernstein

Core Modules: Plant physiology and nutrition, Agriculture, agronomy, post-harvest, statistical analysis.

Skills and Learning: Participated actively in group works, field visits and sampling, laboratory experiments, strong, independent research skills, developed strong written and oral communication skills, excellent presentation skills.

Research Interests

- Bioinformatics
- Environmental microbiology
- Microbial ecology

Professional Development

- **The self-taught programmer** on udemy.com 2020
  6 hours of programming using Python includes topics on algorithms and data structures

- **Master Python for Data Science and Machine learning** on edugrad.com 2020

- **Introduction to GIT** on edugrad.com 2020

- **Linux bootcamp: Command-line, AWK and SED; Vi editor and Grep** on udemy.com 2019
  10 hours of learning to program with Linux and Linux tools

- ***Advanced R*** *on udemy.com* *2019*
  4.5 hours of training on advanced topics in R such as environments, creating packages, parallelization etc.

- **Complete Python Bootcamp: Go from zero to hero in python** on udemy.com 2019
  24 hours of Python training from beginner to advanced

- **MySQL for Data Analytics and Business Intelligence** on udemy.com 2019
  9.5 hours of training on SQL from beginner to advanced: CRUD operations and dashboards creation

- **Useful Excel for Beginners** on udemy.com 2019
  9.5 hours of training on the fundamentals of working with MS Excel

- **Data Analysis with Python and Pandas** on stoneriverelearning.com 2019

- **4th Haifa Winter Workshop in Bioinformatics**: statistics and data visualization for omics studies 2018
  University of Haifa, Israel
  Five-day workshop on statistical analysis and visualization of various omics studies

- **Next Generation Sequencing Workshop** 2018
  Tel Hai college, Israel
  Five-day workshop on analysis of NGS dataset: phylogenetics analysis, variant calling, RNA-seq etc.

- **Data Analysis of Metagenomic Samples using QIIME** 2017
  Ben Gurion University of the Negev, Beersheba, Israel
  One-day workshop on the analysis of metagenomics samples using QIIME

Technical Skills

- Comprehensive knowledge of next-generation sequencing analysis workflow: quality filtering, mapping, read alignment, interpretation and drawing inferences.
- Analysis of large data sets (Illumina and Oxford Nanopore sequencing) for microbiomes and phylogenetic analysis. I preform analyses with bioinformatics tools such as QIIME (1 and 2), PICRUST, Source Tracker, RDP classifier, Bioconductor, MEGA 7, MetaPhlan2, Cytoscape, NanoFilt, NanoPlot, FastQC, samtools, BLAST, DADA2, minimap2, yacrd, bwa, trinity, trinonate and many more.
- Computer programming savvy in MATLAB, R, Python, Perl and Bash.
- Experience with regular expression text searching with R, Python, Perl and sed.
- Biostatistics with software such as R, MATLAB, SPSS and Sigma plot: hypothesis testing, regression, normalization, correlation, canonical correspondence analysis, similarity percentage analysis, correction for multiple hypothesis testing and simple machine learning techniques.
- Ability to effectively work on Linux Unix shell environment and on high performance computer clusters.
- Extensive knowledge of environmental samples handling and field research. I conducted field experiments in a greenhouse and open field during both my M.Sc. and PhD (7 years of experience).
- Microbiome analysis of soil, water and crop samples using culture and molecular techniques: traditional culturing on agar plates, IDEXX kits, PCR, qPCR, Illumina and oxford nanopore amplicon sequencing.
- Extensive knowledge in microbiological principles, coupled with working knowledge of aseptic techniques and microbiological testing environment.

- Working knowledge of the relation database MySQL with the SQL query language

Personal Skills

- Poised communication, presentation, analytical, organizational, and problem-solving skills
- Excellent interpersonal skills, a team player
- Ability to handle multiple tasks concurrently and in a timely fashion
- Hardworking, result oriented, able to work under pressure with minimum or no supervision
- Proactive, dynamic, curious, and a quick learner

Professional Experience

Ben Gurion University of the Negev, Bioinformatics Core facility, Beersheba Nov 2019 – Present
Postdoctoral Researcher in Bioinformatics

- Actively involved in several RNA-seq and microbiome sequencing projects by assisting PI-s for Bioinformatics analysis
- Developed a pipeline for RNA-Seq analysis of non-model organisms to automate database creation, QC, mapping, assembly, annotation, statistical, clustering and enrichment analysis - https://neatseq-flow-modules.readthedocs.io/en/latest/Workflow_docs/RNA_seq_non_model.html
- Working extensively on a microbiome project to characterize the microbial community of a duckweed (*Wolfia globosa*) and to identify the potential vitamin B12 producers
- Performed RNA-Seq analysis for non-model crustaceans (*Hippolyte inermis* and *Cherax quadricarinatus*)
- Drafts custom scripts and improves existing scripts for omics data analysis
- Contributing to one manuscript for publication

Ben Gurion University of the Negev, Zuckerberg Inst. For Water Research, Sde Boker May 2019 – October 2019
Post-doctoral Researcher

- Characterized the microbiomes of soil, water and crop samples that were sequenced with Illumina and Oxford Nanopore platforms
- Analyzed and processed data with various bioinformatics tools, including QIIME, SourceTracker, R, and others
- Assisted and mentored fellow students (Masters and PhD) with analyzing their bioinformatics-related data
- Developed a bioinformatics pipeline for the analysis of amplicon sequences generated by Oxford Nanopore
- Wrote and contributed to manuscripts for publication

Awards & Scholarships

- Short-term postdoctoral fellowship 2019
- Award for publishing in a Q1 magazine 2018
- Prof. John R. Goldsmith award for excellent research 2017
- Ben Gurion University Scholarship for PhD studies at Albert Katz institute for Desert Research 2014
- Pears Foundation UK scholarship for outstanding students to the MSc. thesis stream at the international master's program, Robert H. Smith Faculty of Agriculture HUJI 2013
- Pears foundation scholarship UK for outstanding students from Africa 2012

Presentations

Talks

- Olabiyi Obayomi, Maram Ja'afreh, Menahem Edelstein, Ahuva Vonshak, Lusine Ghazayarna, Meni Ben-Hur, Nirit Bernstein, Osnat Gillor (2018). *Impact of treated wastewater on soil and crop microbial communities*. Microbial ecology "Sandwich club" conference, Agricultural research organization, Volcani center, Beit Degan, Israel.
- Olabiyi Obayomi, Maram Ja'afreh, Menahem Edelstein, Ahuva Vonshak, Lusine Ghazayarna, Meni Ben-Hur, Nirit Bernstein, Osnat Gillor (2017). *Treated wastewater, soil and crop continuum: health, environment and produce quality aspects*. Student conference at the department of soil, water and environment, Agricultural research organization, Volcani center, Beit Degan, Israel.

Posters

- Olabiyi Obayomi, Meni Ben-Hur, Menahem Edelstein, Lusine Ghazayan, Nirit Bernstein, and Osnat Gillor (2019). *Effect of treated wastewater irrigation on soil and crop microbial communities' diversity, abundance and dynamics*. Annual meeting of the Israeli society of microbiology from microbiomes to bacteria genomes – a journey across time scales, Weizmann institute of science, Rehovot, Israel.
- Olabiyi Obayomi, Maram Ja'afreh, Nirit Bernstein, Menahem Edelstein, Meni Ben-Hur, and Osnat Gillor (2018). *Impact of treated wastewater irrigation on soil and crop microbial communities*. 17th international symposium on microbial ecology (ISME17) Leipzig, Germany.
- Olabiyi Obayomi, Maram Ja'afreh, Nirit Bernstein, Menahem Edelstein, Meni Ben-Hur, and Osnat Gillor (2018). *Impact of treated wastewater irrigation on soil and crop microbial communities*. Ecology of soil microorganisms (ESM) symposium 2018. Helsinki, Finland.
- Olabiyi Obayomi, Maram Ja'afreh, Nirit Bernstein, Menahem Edelstein, Meni Ben-Hur, and Osnat Gillor (2016). *Fate of pathogens in wastewater irrigated soil*. The Dhalia Greidinger international symposium 2016. Technion-IIT, Haifa, Israel.

Publications

- Olabiyi Obayomi, Nirit Bernstein, Menahem Edelstein, Ahuva Vonshak, Lusine Ghazayarn, Meni Ben-Hur, Christoph C. Tebbe, Osnat Gillor (2019*).* ***Importance of soil texture to the fate of pathogens introduced by irrigation with treated wastewater*****.** Science of the Total Environment (IF = 5.727)**. 653:886-896. http://doi.org/10.1016/j.scitotenv.2018.10.278**

- Olabiyi Obayomi, Lusine Ghazayan, Meni Ben-Hur, Menahem Edelstein, Ahuva Vonshak, Jamal Safi, Nirit Bernstein, Osnat Gillor (2019*).* ***The fate of pathogens in treated wastewater-soil-crop continuum and the effect of physical barriers*****.** Science of the Total Environment (IF = 5.727)**. 681:339-349. https://doi.org/10.1016/j.scitotenv.2019.04.378**

- Olabiyi Obayomi, Menahem Edelstein, Jamal Safi, Mitiku Mihiret, Lusine Ghazayan, Ahuva Vonshak, Nirit Bernstein, Osnat Gillor (2020)*.* ***The combined effects of plastic mulch and treated wastewater irrigation on the diversity, abundance and dynamics of soil and crop microbial communities.*** Biology and Fertility of Soils (IF = 4.829). **https://doi.org/10.1007/s00374-020-01442-3.**

- Olabiyi Obayomi, Nirit Bernstein, Menahem Edelstein, Ahuva Vonshak, Lusine Ghazayan, Meni Ben-Hur, Christoph C. Tebbe, Osnat Gillor (2020). ***Soil texture rather than treated wastewater irrigation shapes the abundance and diversity of microbial communities.*** Soil & Tillage Research (IF = 4.675). Under review.

- Menachem Sklarz*, Liron Levin, Michal Gordon, Olabiyi Obayomi and Vered Chalifa-Caspi (2020). ***NeatSeq-Flow: A Lightweight High-Throughput Sequencing Workflow Platform for Non-Programmers and Programmers Alike***. In preparation.

Extracurricular Activities

- Reading and researching
- Taking online courses
- Solving programming challenges on sites like hackerrank.com

Referees

Prof. Osnat Gillor (PhD thesis supervisor)
Senior research scientist
Zuckerberg Institute for Water Research,
Blaustein Institutes for Desert Research,
Ben-Gurion University, Israel 84990.
Cell: +972 8 6596986 or +972 542215149
Fax: +972 8 6596909
Email: gilloro@bgu.ac.il

Prof. Zeev Ronen (Tutor and member of PhD committee)
Senior research scientist,
Zuckerberg Institute for Water,
Blaustein Institutes for Desert Research,
Ben-Gurion University, Israel 84990.
Email: zeevrone@bgu.ac.il

Dr. Nirit Bernstein
Senior research scientist (M.Sc. thesis Supervisor)
Institute of soil water and environment sciences
Agricultural research organization
Volcani center, Bet Degan, Israel
Cell: +972506220707
Tel: 03-9683707, 03-9683383
Email: nirit@volcani.agri.gov.il