# Ozan Kiratli, PhD | BIOINFORMATICIAN

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## PROFESSIONAL SUMMARY

Resourceful bioinformatician with 7+ years of experience in genomic data analysis, including NGS technologies. Passionate about integrating evolutionary processes with real-world applications via machine learning. Accomplished in complex data analyses, custom scripting, and pipeline development in Linux. Demonstrated ability to collaborate with multidisciplinary teams, supervise junior researchers, prepare reports, and present research at scientific conferences. Currently advancing skills in PyTorch, NLP, and LLMs. Holds U.S. permanent residency and Tier 1 security clearance.

## EXPERIENCE

**Bioinformatician - Postdoctoral Fellow**, Walter Reed Army Institute of Research, *Silver Spring, MD* — Oct 2022–present
- Conducted research project to identify genetic targets related to antigenic changes in genomes of dengue viruses.
- Applied advanced data analysis methods to genomic datasets, including clustering, phylogenetic analysis, supervised and unsupervised machine learning techniques, and deep learning models using Keras and TensorFlow architectures.
- Developed and applied novel algorithms to calculate differences between viral genomes.
- Curated, cleaned, prepared, and analyzed large genomic datasets with bioinformatics software *(such as MEGA and Geneious)*, command line tools *(such as PLINK and BLAST)*, and programming/scripting languages *(including bash, R, Python, and C++)*.
- Prepared and delivered presentations, posters, and regular/ad-hoc progress reports on research projects.

**Research and Teaching Assistant**, University of Pennsylvania, *Philadelphia, PA* — Aug 2016–Aug 2022
- Designed and executed medium- and large-scale projects, including maintenance, data collection, and analysis stages.
- Devised custom pipelines and tools for analysis of poolseq samples sequenced with Next-Generation Sequencing.
- Conducted experiments with *Drosophila melanogaster*, including designing custom phenotypic assays.
- Presented research results at conferences; received honorable mention award for best student talk.
- Supervised and mentored 7 undergraduate students; wrote reference letters for 5 of these students.
- Taught 3 undergraduate biology courses, both in-person and online, throughout 9 semesters, applied evidence-based teaching methods, and managed course websites.

**Research and Teaching Assistant**, Middle East Technical University, *Ankara, Turkey* — Feb 2014–Jul 2015
- Coded and modified simulations in Python; analyzed their efficiency and accuracy.
- Taught 4 classes (including genetics and statistics) throughout 3 semesters.

## EDUCATION

**PhD in Biology**, University of Pennsylvania, *Philadelphia, PA* — 2022
  **Concentration:** Evolutionary Biology; **Certification:** College and University Teaching

**MS in Biology**, Middle East Technical University, *Ankara, Turkey* — 2016
  **Concentration:** Evolutionary Biology

**BS in Biology**, Middle East Technical University, *Ankara, Turkey* — 2013
  **Minor:** Physics

## SKILLS

**Programming and Scripting:** R (with Bioconductor), Python (with Biopython, Pandas, NumPy), Bash, C++, AWK, MySQL, RegEx

**Command Line Tools:** BWA, Bowtie2, FreeBayes, FastQC, Trimmomatic, Cutadapt, Trim Galore, Samtools, Bcftools, Seqtk, IQ-TREE, VCFtools, BEDtools, MAFFT, PLINK, BLAST, BEAST

**Bioinformatics Software:** Geneious, MEGA, IGV

**Computing Environments:** Linux/UNIX Shell (Bash or Zsh preferred), Conda, Docker, Python venv, SLURM

**Computing Infrastructure:** Cloud Computing, High-Performance Computing (HPC)

**Productivity Tools:** RStudio, Vim, Git, LaTeX, Quarto, ggplot2, Plotly, Zotero, EndNote, MS Office

## PUBLICATIONS

Kiratli, O., Rudman, S. M., Torija, E., Babore, Y., Goldfischer, A., & Schmidt, P. (n.d.). Migration-associated epistasis can facilitate adaptive response in *Drosophila melanogaster*. *(In prep)*.

Rudman, S. M., Greenblum, S., Hughes, R. C., Rajpurohit, S., Kiratli, O., Lowder, D. B., Lemmon, S. G., Petrov, D. A., Chaston, J. M., & Schmidt, P. (2019). Microbiome composition shapes rapid genomic adaptation of *Drosophila melanogaster*. *Proceedings of the National Academy of Sciences of the United States of America*, *116*(40), 20025–20032. https://doi.org/10.1073/pnas.1907787116

## HONORS AND AWARDS

**Postdoctoral Fellowship Recipient** — 2022–2024
Army Educational Outreach Program, *Silver Spring, MD*

**Honorable Mention for Best Student Talk** — 2020
American Naturalist 2020, *Pacific Grove, CA*

**Peachey Grant for Field Research** — 2017, 2019
University of Pennsylvania, Department of Biology, *Philadelphia, PA*

**Graduate Scholarship of Scientist Education Support Program** — 2013–2016
The Scientific and Technological Research Council of Turkey (TÜBİTAK), *Ankara, Turkey*

**Undergraduate Scholarship of Scientist Education Support Program** — 2007–2012
The Scientific and Technological Research Council of Turkey (TÜBİTAK), *Ankara, Turkey*

## PROFESSIONAL MEMBERSHIPS

American Society of Tropical Medicine and Hygiene (ASTMH) — 2023–present
American Society of Naturalists (ASN) — 2018–present
Genetics Society of America (GSA) — 2018–present

## SELECTED PRESENTATIONS

"Uncovering relationships between antigenic and genetic evolution in DENV with machine learning" — Oct 2023
American Society of Tropical Medicine and Hygiene (ASTMH) Annual Meeting 2023. *Chicago, IL*. (Poster)

"Effects of migration on rapid adaptation in natural populations of *D. melanogaster*" — Jun 2021
Virtual Evolution 2021. *Online*. (Talk)

"Effects of migration on rapid adaptation and genetics of dispersal in natural *D. melanogaster* populations" — Jan 2020
American Naturalist 2020. *Pacific Grove, CA*. (Talk)

## OUTREACH AND LEADERSHIP ACTIVITIES

**Educational Content Creator**, *Online* — 2021–present
- Producing content about using Linux and open-source software in scientific research and at home, environmental crises, and philosophy of science.
- Holding live Q&A sessions explaining scientific papers and processes to public.

**Organizer, Virtual Graduate Research in Ecology, Behavior, and Evolution (GREBE) 2021**, *Online* — 2019–2021
- Led group of organizers for annual conference (with history of over 30 years) for graduate students from Penn, Princeton, Rutgers, Columbia, and Yale.
- Prepared, hosted, and broadcasted prerecorded talks; moderated live Q&A sessions on Zoom.

**Founder and Mentor, Undergraduate Evolutionary Biology Research Group**, *Middle East Technical University* — 2014
- Established discussion group for undergraduates to enhance their understanding of evolutionary biology, engage with relevant literature, and develop research ideas.
- Guided students in reading classical and modern evolutionary biology literature.
- Held office hours to discuss research interests and ideas.

## HOBBIES

**Small Electronics and Computing Projects with Raspberry Pi and Arduino** — 2017–present
- Created various tools, such as dual water thermometer for experiments and microscope webcam.
- Deployed home servers and routers, including cloud server, VPN servers, DNS, and chatbots.

**Bass Guitar Player** — 2003–present
- Played in 7 bands with over 50 group performances, including nationally televised event.

**Poetry Author** — 1996–present
- Authored and published over 150 poems in Turkish and English online. (www.antoloji.com/ozan-kiratli)