

BEGÜM D. TOPÇUOĞLU



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OBJECTIVE

Integrate data science and biology to
improve human health

SKILLS

Python, R, Git, Bash, Docker,
Jenkins, Nextflow, sklearn, PyTorch,
multi-omics data analysis

QUALIFICATION SUMMARY

- **PhD level bioinformatician with a background in microbial ecology. Expertise in analyzing wide range of research data and computational pipeline development.**
 - Programming languages: Python, R.
 - Computer platforms and applications: Linux-based HPC, AWS and Galaxy platforms, Jenkins, Docker, Nextflow
 - Bioinformatic tools: mothur, BMap, STAR, DESeq2, Bowtie, Blast, Anvio.
- **Bioinformatics accomplishments:**
 - Developed a machine learning pipeline for microbiome-based classification problems.
 - ML Tools: sklearn, PyTorch, caret.
 - Curated, managed and analyzed metagenomics, 16S rRNA gene sequence and transcriptomic data.
- **Strong communication and collaboration skills.**
 - Science Communication Fellow at University of Michigan Museum of Natural History.
 - Software Carpentry Instructor, teaching coding to beginners.
- Experience with collaborating on Github and Bitbucket for computational projects and R package development.

EDUCATION

DOCTOR OF PHILOSOPHY	2012 - 2018
UNIVERSITY OF MASSACHUSETTS	
Curtis B. Thorne Outstanding Graduate Student Award	
American Geophysical Union Outstanding Student Paper Award	
BACHELOR OF SCIENCE	2007-2011
SABANCI UNIVERSITY	

SELECTED PUBLICATIONS (TOTAL 10)

- **Topcuoglu, BD.**, Lesniak NA, IV Ruffin MT, Wiens, J, Schloss PD. (2019) *A Framework for Effective Application of Machine Learning to Microbiome-Based Classification Problems*. mBio, 11: 1-13.
- **Topcuoglu, BD**, Lapp Z, Sovacool K, Wiens, J, Schloss PD. (in prep). *mikRopML: User-Friendly Machine Learning Package for Binary Classification Problems*. JOSS

REFERENCES

Patrick Schloss

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EXPERIENCE

MERCK & CO., INC

2020 - PRESENT

SENIOR COMPUTATIONAL BIOLOGIST

Research Area: Bioinformatics and Human Microbiome

Skills Acquired: Developed pipelines using Docker, Singularity, Nextflow. Coordinated efforts between the project teams and IT groups.

Projects: Analyzed multi-omics datasets for therapeutic purposes.

Publications: 1 **International Conferences:** 1

UNIVERSITY OF MICHIGAN

2018 - 2020

POST-DOCTORAL RESEARCH FELLOW

Research Area: Bioinformatics and GI Bacterial Microbiome

Skills Acquired: Python, R, Git, Next-gen sequencing, machine learning.

Projects: Analyzed large scale bacterial microbiome data sets for interactions with the human host. Used general statistical concepts and machine learning to early detect colorectal cancer.

Publications: 1 **International Conferences:** 1

UNIVERSITY OF MASSACHUSETTS

2012 - 2018

PhD CANDIDATE

Research Area: Environmental Microbiology and Microbial Physiology

Skills Acquired: Metabolic network modeling, RNAseq, anaerobic culturing, chemostat growth.

Projects: Participated in oceanic expeditions and developed new methods at the bench to study subsurface microbiology, microbial physiology of extremophiles and inter-species interactions.

Publications: 8 **International Conferences:** 6

SELECTED PRESENTATIONS (TOTAL 10)

- **(Invited) Topçuoğlu BD.** How to Machine Learn. *American Society of Microbiology Annual Meeting 2020.*
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LEADERSHIP AND MENTORSHIP

- Chair of Inaugural 2016 Pioneer Valley Microbiology Symposium.
- Member of Diversity, Equity, Inclusion Committee at University of Michigan (2018-present).