Berk Turhan (he/him)

New York, NY

DUCATION	
Weill Cornell Graduate School of Medical Sciences	New York, NY
Tri-Institutional PhD Program Computational Biology & Medicine	Aug 2023 - Present
Advisor: Dr. Kushal K. Dey, Memorial Sloan Kettering Cancer Center	
Sabancı University	Istanbul, Turkey
Bachelor of Science Molecular Biology, Genetics and Bioengineering	Sep 2019 - Feb 2023
cGPA: 3.97/4.0 Ranked 1st	

Sabancı University

Bachelor of Science | Computer Science and Engineering cGPA: 3.97/4.0 | Ranked 8th

RESEARCH EXPERIENCE

Memorial Sloan Kettering Cancer Center PhD Student @Dey Lab in Computational & System Biology Program

- Developing ContraPC, a contrastive global embedding framework that identifies principal components by maximizing the ratio of variation in the target (disease/perturbed) context relative to the background (healthy/control) context.
- Investigating the impact of natural and experimentally induced changes on the regulatory dynamics underlying human pancreatic development. Applying demultiplexing and eQTL mapping to single-cell multiome datasets from human pluripotent stem cells (hPSCs), in collaboration with **Danwei Huangfu Lab** and **IGVF consortium**.
- Conducting QTL analysis of gene expression and cell differentiation in Diversity Outbred mice using r/qtl2, in collaboration with Thomas Vierbuchen Lab.

Icahn School of Medicine at Mount Sinai

Research Associate @Gumus Lab in Department of Genetics and Genomics

- Led the development of **PhosNetVis**, a web-based tool for kinase enrichment analysis and interactive 2D/3D network visualizations of phosphoproteomics data. Built a network visualization canvas using THREE.js and implemented a kinase enrichment analysis pipeline with RShiny. Collaborated with the NIH Clinical Proteomic Tumor Analysis Consortium (**CPTAC**) to optimize the tool for visualizing pancreatic cancer immune subtype associations.
- Developed **PREDICTNet**, a multi-omics network visualization platform to identify key drivers of disease initiation and progression in the preclinical phase of inflammatory bowel disease.

Sabanci University

Undergraduate Researcher @Adebali Lab

- Characterized the genome of SARS-CoV-2 isolates from Turkey and globally. Developed custom Python and R scripts for mutational and evolutionary analysis. Awarded the 2247-C STAR Student Grant by the Scientific and Technological Research Council of Turkey.
- Conducted comprehensive genomic characterization of Influenza virus isolates from Turkey and worldwide, analyzing correlations with patient-specific data. Collaborated with GenEra Diagnostics and Hacettepe University.
- Analyzed genome-wide repair and damage datasets generated with NGS-based techniques to identify differences between intronic and exonic repair mechanisms. Developed an interpretable XGBoost machine learning model using Shapley Additive Explanations (SHAP) to uncover biological marker effects in repair processes.

PUBLICATIONS

- Rodrigues, F.M., Terekhanova, N. V., Imbach, K. J., ..., Turhan, B., Krug, K., ... Zhang, Z. (2025). Precision proteogenomics reveals pan-cancer impact of germline variants. Cell, Elsevier BV. 188, 2312-2335.e26. doi.org/10.1016/j.cell.2025.03.026
- Rawal, O.*, Turhan, B.,* Peradejordi, I.F., Chandrasekar, S., Kalayci, S., Johnson J., Gnjatic, S., Bouhaddou M., Gümüş, Z.H. (2025). Phosnetvis: A web-based tool for FAST kinase-substrate enrichment analysis and interactive 2D/3D network visualizations of Phosphoproteomics data. Patterns, 6(1), 101148.. doi.org/10.1016/j.patter.2024.101148 — *co-first authors
- Petralia, F., Ma, W., Yaron, T. M., ..., Turhan, B., Christianson, K. E., ... Zhang, Z. (2024). Pan-cancer proteogenomics characterization of tumor immunity. Cell, Elsevier BV. 187, 1-23. doi.org/10.1016/j.cell.2024.01.027
- Gaifem, J., Rodrigues, C. S., Petralia, F., ..., Turhan, B., Gümüş, Z.H., ..., Pinho, S. S. (2024). A unique serum IgG glycosylation signature predicts development of Crohn's disease and is associated with pathogenic antibodies to mannose glycan. Nature Immunology 25(9), 1692-1703. doi.org/10.1038/s41590-024-01916-8

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New York, NY Mar 2024 - Present

Istanbul, Turkey

Sep 2017 - Jul 2022

New York, NY

Mar 2021 - Jun 2023

Istanbul, Turkey

Mar 2019 - Feb 2023

- Mak, L., Tierney, B., Ronkowski, C., ..., Turhan, B., Toomey, M., ..., Hajirasouliha, I. (2024). CAMP: A modular metagenomics analysis system for integrated multi-step data exploration. arXiv[preprint]. doi.org/10.1101/2023.04.09.536171
- Turhan, B., Gümüş, Z.H. (2022). A Brave New World: Virtual Reality and Augmented Reality in Systems Biology. *Frontiers in Bioinformatics*, 2. doi.org/10.3389/fbinf.2022.873478
- Azgari, C., Kılınç, Z., Turhan, B., Çirci, D., & Adebali, O. (2021). The mutation profile of SARS-CoV-2 is primarily shaped by the host antiviral defense. *Viruses*, 13(3), 394. doi.org/10.3390/v13030394
- Adebali, O., Bircan, A., Çirci, D., İşlek, B., Kılınç, Z., Selçuk, B., Turhan, B. (2020). Phylogenetic analysis of SARS-CoV-2 genomes in Turkey. *Turkish Journal of Biology*, 44(3), 146-156. doi.org/10.3906/biy-2005-35

TEACHING EXPERIENCE

I EACHING EXPERIENCE	
Sabancı University	Istanbul, Turkey
Learning Assistant in ENS210 - Computational Biology Course	Oct 2020 - Feb 2023
 Supervised undergraduate students in weekly recitations for computational biology tasks. C and teaching assistants to refine and improve recitation materials. 	ollaborated with the instructor
Sabancı University	Istanbul, Turkey
Learning Assistant in BIO310 - Introduction to Bioinformatics Course	Feb 2022 - Jun 2022
 Facilitated weekly recitations to guide undergraduate students through bioinformatics lab m instructor and teaching assistants to review and enhance recitation content. 	aterials. Collaborated with the
Sabancı University	Istanbul, Turkey
Learning Assistant in IF100 - Computational Approaches to Problem Solving Course	Jan 2019 - Jun 2019
• Tutored undergraduate students in weekly recitations and held office hours to support Pytho	n coding questions.
PRESENTATIONS AND TALKS	
 Poster Presentation American Society of Human Genetics 2024 (Nov 8, 2024) Characterizing disease-critical contrastive gene programs in multi-context omics assays 	
 Poster Presentation MSKCC Basic Science Retreat Conference Poster Session (Oct 17, 20) Towards Characterizing Disease-Critical Contrastive Gene Programs in Multi-Context Omics Assertation 	24) ays
 Poster Presentation MSKCC Computational and Systems Biology Program Poster Session Towards Characterizing Disease-Critical Contrastive Gene Programs in Multi-Context Omics Ass. 	n (May 30, 2024) ays
 Poster Presentation BioVis@ISMB/ECCB 2023 (Jul 25, 2023) PhosNetVis: A Web-Based Platform for Kinase Enrichment Analysis and Visualizing Phosphopro 	teomics Networks
 Poster Presentation EMBO Workshop on Visualizing Biological Data (VIZBI 2023) (Mar PhosNetVis: A Web Tool to Infer and Visualize Kinase-Substrate Phosphoproteomics Networks 	29, 2023)
• Invited Talk \Leftrightarrow Mount Sinai Precision Immunology Institute - Work in Progress (WIP) (Sep PhosNetVis: A Web-based Platform to Generate, Explore, and Share Interactive Phosphoproteomic	6, 2022) ics Networks in 3D
 Poster Presentation IEEE VIS: Visualization & Visual Analytics (Oct 27, 2021) PhosProViz: A Web-based Platform for Interactive Visual Exploration of Phosphoproteomics Net 	work Data
 Poster Presentation Clinical Proteomic Tumor Analysis Consortium (CPTAC) (Oct 14, 20) PhosProViz: A Web-based Application to Interactively Explore Phosphoproteomics Network Data 	21) asets
• Lab Presentation \Rightarrow Adebali Lab Meeting with Nobel Laureate Prof. Aziz Sancar (Sep 24, 20 The Mutational and Phylogenetic Analysis of SARS-CoV-2 and Influenza Viral Genomes	021)

- Poster Presentation \diamond International Symposium on Health Informatics & Bioinformatics (Sep 11, 2021) PhosProViz: A Web-based Tool to Generate and Interactively Explore Phosphoproteomics Networks
- Poster Presentation \diamond International Symposium on Health Informatics & Bioinformatics (Sep 10, 2021) The Mutation Profile of SARS- CoV-2 Is Primarily Shaped by the Host Antiviral Defense
- Poster Presentation BioVis@ISMB/ECCB 2021 (Jul 27, 2021) PhosProViz: A Web-based Tool to Generate, Explore, and Share Interactive Phosphoproteomics Networks
- Selected Talk \diamond RSG Turkey Student Symposium 2019 (Oct 18, 2019) Preferential Nucleotide Excision Repair in Exons
- Poster Presentation \diamond International Symposium on Health Informatics & Bioinformatics (Oct 17, 2019) Preferential Nucleotide Excision Repair in Exons

HONORS AND AWARDS

- 2024 ♦ American Society of Human Genetics 2024 ♦ Top 10% Reviewers' Choice Abstract
- 2023 ♦ Short Term Researcher Scholarship at Icahn School of Medicine at Mount Sinai ♦ 6×4,000\$
- 2022 ♦ The Scientific and Technological Research Council of Turkey ARDEB-1001 Grant
- 2021 \$ Sakip Sabanci 100% Tuition Fee Encouragement Scholarship for Overachievement \$ 12,600\$
- 2021

 Honorable Mention Poster Award on 14th International Symposium on Health Informatics & Bioinformatics
- 2020 ♦ The Scientific and Technological Research Council of Turkey 2247-C STAR Research Funding ◊ 800\$
- 2019 ♦ Sakıp Sabancı 50% Tuition Fee Encouragement Scholarship for Overachievement ◊ 7,600\$
- 2018

 Sabancı University School of Languages, Certificate of Achievement

Turkish (Native) English (TOEFL: 108/120)

• 2018 Sabancı University 2018 Extracurricular Student Activity and Events Award

SKILLS

 Languages: 	Turkish (Native), English (TOEFL: 108/120)	
• Programming:	Python, R, UNIX, C++, JavaScript, HTML, CSS, LATEX, Snakemake	
• Tools:	Scanpy, LIMIX QTL, r/qtl2, GIT, Illustrator, BioRender	
• Technical: Web Developme	QTL Mapping, Demultiplexing, Contrastive Learning, Network Visualization a ent, Pipeline Development, High Performance Computing	nd Analysis, Data Visualization,
VOLUNTEER E	CXPERIENCE	
International	Society for Computational Biology Student Council RSG Turkey	Virtual
Joined scientif	ic gatherings as a member of ISCB student community.	Oct 2019 - Jan 2023

	Joined scientific gatherings as a member of ISCB student community.	Oct 2019 - Jan 2025
•	Sabanci University Science Club Acting as a founding member to create an inclusive scientific community.	Istanbul, Turkey Oct 2021 – Jan 2023
•	Software Carpentry & Sabanci University - Genomics Workshop Assisted weekly organization and scheduling of virtual workshops.	Virtual Jan 2022 – Feb 2022
•	Student Organization Committee HIBIT 2020 Acted as a member of student organization committee for HIBIT 2020.	Istanbul, Turkey Oct 2020 – Nov 2020
•	Civil Involvement Projects & School and Children Facilitated weekly educational activities with elementary school students.	Istanbul, Turkey Jan 2018 – Jun 2018
•	Sabancı University SuCallership Volunteer Member Contacted with alumni to raise funds for successful undergraduate students.	Istanbul, Turkey Sep 2017 – Jan 2018