Batur Gültekin

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Research Interests

Computational biology, Bioinformatics, Neurogenetics, Neuroscience, Genetics, Molecular Biology, Machine Learning

Education

Sabancı University Istanbul, TR

B.Sc. Molecular Biology, Genetics and Bioengineering, with Honors *Sept. 2016 – June 2021*

B.Sc. Computer Science and Engineering, with Honors *Sept. 2018 – June 2021*

- **Specialization:** *Computational Biology & Bioinformatics*
- **Graduation Advisor:** Ogün Adebali, PhD

Relevant Coursework: Computational Biology, Bioinformatics, Genetics, Machine Learning, Artificial Intelligence, Statistical Modelling, Molecular Biology and Cell Biology

Research and Professional Experience

Yale University, School of Medicine, Department of Neurosurgery

Postgraduate Associate, at Gunel Lab *July 2022 – Present*

- I am conducting research on the contribution of population-rare germline mutations in cerebrovascular disorders including intracranial aneurysms and Moyamoya disease as well as structural brain malformations including microcephaly. I am taking part in both computational and wet lab aspects of the research projects at Neurogenetics laboratory of Professor Murat Gunel, MD.

Sabancı University, Faculty of Engineering and Natural Sciences

Undergraduate Research Assistant at Adebali Lab *Sept. 2020 – June. 2021*

- I designed and implemented a computational tool which explores novel transcription events in the Arabidopsis Thaliana genome by processing XR-seq data. The tool predicts previously annotated gene regions with 99% accuracy and identifies 351 candidate regions for novel genes. I am continuing the development and optimization of the tool in collaboration with Adebali Lab.

University Hospital of Zurich, Department of Pathology & Molecular Pathology

Research Intern, Clinical Bioinformatics at Kahraman Lab *June 2020 – Sept. 2020*

- I developed a software tool to visualize all mutated pathways in patients' tumors. For the implementation, I identified genes from the FoundationOneCDx Assay in cancer pathways. The tool will be used in the Molecular Tumor Board software MTPpilot to give pathologists and oncologists an overview of all mutated pathways and build upon possible treatment modalities for cancer patients.

Harvard Medical School, Brigham and Women's Hospital

Research Intern, Cardiovascular Division at Thomas Michel Lab *Jan. 2020 – Feb. 2020*

- I contributed to ongoing studies on receptor modulated H_2O_2 and NO metabolism using live cell imaging approaches in cardiac myocytes and endothelial cells. With the valuable experience I gained during my time at Harvard, I refined skills such as genome editing with CRISPR-Cas9, cell culturing, and live cell imaging.

Yale University, School of Medicine, Department of Neurosurgery

Visiting Undergraduate Research Assistant, at Gunel Lab *June 2019 – Sept. 2019*

- I participated the studies that uncovered the driving role of PPIL4 mutations in intracranial aneurysms. In an effort to understand the impact of PPIL4 loss on hemodynamics in zebrafish brain vasculature, I designed the novel integration pipeline of the model of zebrafish cerebrovascular structure to a CFD application that, at the time, was the first of its kind. Our study was later published in *Nature Medicine* (PMID: 34887573).

Publications

[1] Barak, T., Ristori, E., Ercan-Sencicek, A. G., Miyagishima, D. F., Nelson-Williams, C., Dong, W., Jin, S. C., Prendergast, A., Armero, W., Henegariu, O., Erson-Omay, E. Z., Harmancı, A. S., Guy, M., **Gültekin, B.**, Kilic, D., Rai, D. K., Goc, N., Aguilera, S. M., Gülez, B., ... Lifton R. P., Mishra-Gorur K., Nicoli S., Günel, M. (2021). PPIL4 is essential for brain angiogenesis and implicated in intracranial aneurysms in humans. *Nature Medicine*. https://doi.org/10.1038/s41591-021- 01572-7

[2] Duy, P. Q., Sreekrishnan, A., David, W., Paranjpe, M. D., Paranjpe, I., Sheth, A., **Gültekin B.**, Sheth, K. N. (2019). Clinical Trial Publication Trends Within Neurology. *Translational Neuroscience*, 10, 233–234. doi:10.1515/tnsci-2019-0037x

Teaching Experience

Sabancı University
Teaching Assistant, Faculty of Engineering and Natural Sciences *Sept. 2019 – Jan. 2020*

- PROJ 201 - Undergraduate Project Course: Helped and led students during the construction of a website dedicated to genome editing and deepen their understanding on concepts of genome editing and genetically modified organisms.

Poster Presentations

[1] **Batur Gültekin**, Yasemin Utkueri and Serap Hayat Soytaş, Nanofiber/Natural Clay Nanocomposites via Green Electrospinning. Poster Presentation at Program for Undergraduate Research (PURE) Fair, Sabanci University, 2018.

Outstanding Project Certification Awarded by Sabancı University Program for Undergraduate Research (PURE) Committee

Honors and Scholarships

- Recipient of Türkan Sabancı Merit Academic Scholarship from Sabancı University *2018–19 & 2019–20*
- High Honor Awarded by Sabancı University *2017–18 Fall, 2019–20 & 2020–21 Spring Semesters*
- Honor Awarded by Sabancı University *2017–18 Spring and 2019–20 Fall Semesters*
- Recipient of Mercator Student Scholarship from Die Stiftung Mercator and American Field Service (AFS) Interkulturelle Begegnungen e.V. *September 2014*

Skills and Abilities

Laboratory Skills

CRISPR, PCR , cell culture, gene cloning, confocal microscopy, microinjections in zebrafish embryos, scanning electron microscopy (SEM), western blot, transformation, DNA-RNA isolation, electrospinning, fourier-transform infrared spectroscopy (FTIR), differential scanning calorimetry (DSC), thermal gravimetric analysis (TGA), simultaneous thermal analyzer (STA), probe sonicator (ultrasonic homogenizer)

Coding and Computational Biology Skills

Singel cell sequencing analysis, whole-exome sequencing analysis, genome analysis toolkit (GATK), ANSYS (computational fluid dynamics), C++, python, R, java, LaTeX, GitHub, PHP, blast

Animal Models Previously Worked On

Mouse (C57BL/6), mouse embryos and pups, zebrafish (Danio rerio), zebrafish embryos, drosophila

Training and Certification

- *Pain Management in Laboratory Animals (AALAS) Training* *07/21/2022*
- *Rodent Basic & Advance Principles Training)* *07/15/2022*
- *Regulatory Training for Animal Care & Use* *06/04/2019*
- *Certificate of Completion for Working with the IACUC Course* *06/04/2019*
- *Biosafety (BSL I-II-III) Certificate* *06/04/2019*
- *Human Subject Protection Training - Yale* *06/04/2019*
- *Bloodborne Pathogen for Laboratory Personnel Training* *06/04/2019*
- *Laboratory Chemical Safety Training* *06/04/2019*

Languages

Turkish – *Native Language*
English – *Full Professional Proficiency*
German – *Limited Working Proficiency*

Extracurricular Activities & Awards

Yale University Men's Club Basketball Team *Sept. 2022 – Present*

- *Athlete as Shooting Guard(SG)/Small Forward(SF)*

Sabancı University Men's Basketball Team *Sept. 2016 – March 2020*

- *Student-Athlete as Shooting Guard(SG)/Small Forward(SF)*
- *Extracurricular Activities Award as the player of Sabancı University Men's Basketball Team. Final 8 Qualifier of Turkish College Basketball League. (2016-17 UNILIG season)*

American Field Service (AFS) Volunteers Association Istanbul *Sept. 2016 – Jan. 2020*

- *Member of Board, In Charge of Sending Branch Organizational Activities*

American Field Service (AFS) Exchange Programs *Sept. 2014 – July 2015*

- *Exchange Student in Germany with Mercator Student Scholarship*

References

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Nixdorff-German Professor of Neurosurgery, Neurobiology and Genetics murat.gunel@yale.edu
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Director, Residency Program and Co-Director, Yale Program on Neurogenetics
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