Nil Sahin

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Work Experience

May 2023 – present **Data Scientist at Recursion Pharmaceuticals**
Implementing data solutions to industrialize drug discovery

July 2021 – May 2023 **Computational Scientist at Cyclica, Inc.**
Developed scientific software to streamline drug discovery

Education

2015 – 2021 **University of Toronto**, Toronto, Ontario, Canada
Ph.D., Department of Molecular Genetics, Faculty of Medicine
Co-supervisors: Dr. Brenda J. Andrews, Dr. Quaid Morris

2011 – 2015 **Sabanci University**, Istanbul, Turkey
BSc., Molecular Biology, Genetics and Bioengineering
Faculty of Engineering and Natural Sciences

2006 – 2011 **Robert College**, Istanbul, Turkey

Publications

Kenyon-Dean, K., Wang, Z.J., Urbanik, J., Donhauser, K., Hartford, J., Saberian, S., **Sahin, N.**, Bendidi, I., Celik, S., Fay, M., Vera, J.S.R., Haque, I.S., and Kraus, O. (2024). ViTally Consistent: Scaling Biological Representation Learning for Cell Microscopy. *Foundation Models for Science Workshop, 38th Conference on Neural Information Processing Systems (NeurIPS 2024)*. doi: 10.48550/arXiv.2411.02572

Yeung, C.H.L., **Sahin, N.**, and Andrews, B.J. (2022). Phenomics approaches to understand genetic networks and gene function in yeast. *Biochemical Society Transactions,* **50***(2).* doi: 10.1042/BST20210285

Mattiazzi Ušaj, M.*, **Sahin, N.***, Friesen, H., Pons, C., Ušaj, M., Masinas, M., Shkurin, A., Morris, Q., Boone, C., and Andrews, B.J. (2020). Systematic genetics and single cell image analysis reveals widespread pleiotropy and cell-to-cell variability. *Molecular Systems Biology,* **16***(2), e9243.* https://doi.org/10.15252/msb.20199243 *equal contribution

Rubanova, Y., Rujan, S., Harrigan, C.F., Li, R., Wintersinger, J., **Sahin, N.**, Deshwar, A., Morris, Q. (2020). Reconstructing evolutionary trajectories of mutation signature activities in cancer using TrackSig. *Nature Communications,* **11**(*1*):731. doi: 10.1038/s41467-020-14352-7

Sokolov, A., Ashenden, S., **Sahin, N.**, Lewis, R., Erdem, N., Ozaltan, E., Bender, A., Roth, F.P. and Cokol, M. (2019) Characterizing ABC-Transporter Substrate-Likeness Using a Clean-Slate Genetic Background. *Frontiers in Pharmacology,* **10**:448, doi: 10.3389/fphar.2019.00448

Grys, B.T., Lo, D.S., **Sahin, N.**, Kraus, O.Z., Morris, Q., Boone, C., and Andrews, B.J. (2017). Machine learning and computer vision approaches for phenotypic profiling. *Journal of Cell Biology* **216**(*1*), 65–71. https://doi.org/10.1083/jcb.201610026

Chandrasekaran, S., Cokol-Cakmak, M., **Sahin, N.**, Yilancioglu, K., Kazan, H. Collins, J.J. and Cokol, M.

(2016). Chemogenomics and orthology-based design of antibiotic combination therapies. *Molecular Systems Biology* **12**(*5*):872, doi: 10.15252/msb.20156777

Research Experience

2016 – 2021 **Andrews Laboratory, University of Toronto**
Supervisor: Dr. Brenda J. Andrews
An Atlas of Morphological Phenotypes Associated with Gene Perturbations
Developed image analysis pipelines to identify genetic regulators of cellular morphology in the context of genome-wide single gene perturbations in yeast by applying machine learning and computer vision strategies

2015, Oct. – Dec. **Morris Laboratory, University of Toronto**
Supervisor: Dr. Quaid Morris
Mutational Signature Changes during Tumour Evolution
Implemented bioinformatics algorithms to quantify mutational signatures of 600 tumours from whole genome sequencing; identified significant signature differences between tumour types; created an opportunity for a new PhD thesis for a new student after this 5-week rotation project

2013 – 2015 **Cokol Laboratory, Sabanci University**
Supervisor: Dr. Murat Cokol
Large-scale Experimental *E. coli* Drug Interactions Screen
Conducted drug interaction experiments among 25 antibiotics; analyzed results to find significantly synergistic drug pairs and relate them to mechanism of action of each antibiotic

2014, June – Aug. **Roth Laboratory, University of Toronto**
Supervisor: Dr. Frederick P. Roth
Drug Sensitivity Profiles of ABC Transporter deletion strains in *S. cerevisiae*
Conducted screen to identify relationship between ABC transporters and drug sensitivity by using 16 *S. cerevisiae* strains and measured sensitivity of strains to 28 anti-fungal compounds with various mechanisms of action.

Conference Presentations

Machine Learning and Computer Vision Approaches for Phenotypic Profiling in Yeast
Nil Sahin, Mojca Mattiazzi-Usaj, Quaid Morris, Charles Boone, Brenda J. Andrews

Dec. 2019 **Machine Learning in Computational Biology 2019**, Vancouver, BC, Canada
Oct. 2019 **CytoData Symposium and Hackathon 2019**, Heidelberg, Germany
Oct. 2018 **International Symposium on Health Informatics and Bioinformatics 2018**, Antalya, Turkey
Aug. 2018 **Yeast Genetics Conference 2018**, Stanford, CA, USA
Dec. 2017 **Medicine by Design Symposium 2017**, Toronto, ON, Canada
Nov. 2017 **Genome Informatics 2017**, Cold Spring Harbor Laboratory, NY, USA
Sept. 2017 **Society of Biomolecular Imaging and Informatics 2017**, San Diego, CA, USA
May 2016 **Great Lakes Bioinformatics and the Canadian Computational Biology Conference**, Toronto, ON, Canada

Drug sensitivity profiles of ABC transporter deletion strains in *S. cerevisiae*
Nil Sahin, Frederick P. Roth, Murat Cokol

Sept. 2014 **EMBL Conference: Frontiers in Fungal Systems Biology**, Heidelberg, Germany

Awards and Scholarships

Jan. 2020 **2019-2020 Jennifer Dorrington Graduate Research Award**

Sept. 2017 **2017-2018 University of Toronto Open Fellowship**

Sept. 2017 **Poster Award (2nd)**
Society of Biomolecular Imaging and Informatics, High Content 2017 Conference

Sept. 2016 **2016-2017 Cecil Yip Doctoral Research Award**

2011 – 2015 **Sabanci University Full Honor Scholarship**
Awarded with full tuition fee and monthly stipend for 4 years for being in the top thousand of more than a million students in the nationwide university entrance exam in 2011

Teaching Experience

Winter 2019 **University of Toronto – Teaching Assistantship in Computational Biology and Bioinformatics Graduate Course**
Helped students at weekly office hours with their assignments and grading

Fall 2017 **University of Toronto – Teaching Assistantship in Computer Science Course CSC120**
Helped students at weekly lab hours, holding and marking course exams

Fall 2014 **Sabanci University – Teaching Assistantship in Cell Biology Course BIO332**
Evaluated student responses to innovative research papers from literature

2012 – 2015 **Sabanci University – Academic Support Program Education Coordinator & Executive Board Member**
Held weekly meetings with 11 moderators on their teaching abilities

2011 – 2012 **Sabanci University – Academic Support Program Teaching Assistant**
Tutored peers with Mathematics and Natural Sciences courses (Physics, Chemistry, and Biology) in weekly held study sessions after lecture hours for ten hours a week

Extracurricular Activities

2018 – 2019 **University of Toronto – Coders Group Treasurer**
Conducted accounting for the club
Gave tutorials on machine learning and image processing in Python

2017 – 2018 **The Donnelly Centre Graduate Student Association Presidency**
Established two seminar series on new technologies and trainee projects
Organized the annual scientific conference for more than 200 members of the Donnelly Centre Research Institute

Languages

Programming Current: Python (Advanced), Bash (Basic); Past: R , C++, MATLAB, Perl
Spoken English (Proficient), Turkish (Native)

References: Provided upon request, please send an email to nil_sahin@yahoo.com