Nil Sahin

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Work Experience:

July 2021 – present **Computational Scientist at Cyclica, Inc.**
Optimizing scientific platforms for designing new drugs

Education:

2015 – 2021 **University of Toronto**, Toronto, Ontario, Canada
PhD, 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 (**GPA:** 3.90 / 4.00)

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

Publications:

Mattiazzi Ušaj, M*., Sahin, N*., Friesen, H., Pons, C., Ušaj, M., Masinas, M., Shkurin, A., Morris, Q., Boone, C., and Andrews, B.J. Systematic genetics and single cell image analysis reveals widespread pleiotropy and cell-to-cell variability. *Molecular Systems Biology* (2020). *equal contribution

Rubanova, Y., Rujan, S., Harrigan, C.F., Li, R., Wintersinger, J., Sahin, N., Deshwar, A., Morris, Q. Reconstructing evolutionary trajectories of mutation signature activities in cancer using TrackSig. *Nature Communications* (2020).

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

Grys, B.T., Lo, D.S., Sahin, N., Kraus, O.Z., Morris, Q., Boone, C., and Andrews, B.J. Machine learning and computer vision approaches for phenotypic profiling. *Journal of Cell Biology* **216**(*1*) (2017).

Chandrasekaran, S., Cokol-Cakmak, M., Sahin, N., Yilancioglu, K., Kazan, H. Collins, J.J. and Cokol, M. Chemogenomics and orthology-based design of antibiotic combination therapies. *Molecular Systems Biology* **12**(*5*):872 (2016).

Research Experience:

Jan. 2016 – present **PhD Thesis, University of Toronto**
Co-supervisors: Dr. Brenda J. Andrews, Dr. Quaid Morris
Developed image analysis pipelines to identify genetic regulators of cellular morphology in the context of genome-wide perturbations by applying machine learning and computer vision strategies

Oct. – Dec. 2015	**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
Mar. 2013 – May. 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
Jun. – Aug. 2014	**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:

Talk	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
Poster	Machine Learning and Computer Vision Approaches for Phenotypic Profiling in Yeast *Nil Sahin, Mojca Mattiazzi-Usaj, Quaid Morris, Charles Boone, Brenda J. Andrews*
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
Poster	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** (one-time $2,000.00)
Sept. 2017	**2017-2018 University of Toronto Open Fellowship** (one-time $12,000)

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

Sept. 2016 **2016-2017 PPEF - Cecil Yip Doctoral Research Award** (one-time $1,999.00)

March 2016 **University of Toronto School of Graduate Studies Conference Grant**
Provided with financial support for students actively presenting their research at an academic conference from March 1, 2016 to September 30, 2016

2011 – 2015 **Sabanci University Full Honor Scholarship**
Awarded with full tuition fee and monthly stipend for 4 years for being in the first 0.07% in nationwide university entrance exam

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

Skills:

Programming Skills: Python (current, advanced), Bash (basic), past: R , C++, MATLAB, Perl
Languages: English (Native), Turkish (Native)

Extracurricular Activities:

2018 – 2019 **University of Toronto – Coders Group Treasurer**
Conducted accounting for the club and held tutorials on Machine Learning and Image processing in Python

2017 – 2018 **University of Toronto – Donnelly Centre Graduate Student Association Presidency**
Established seminar series on developed technologies and trainee talks by Donnelly Centre laboratories.
Organized a scientific conference for Donnelly Centre Research Institute.

References: provided upon request