Ahmet Sinan Yavuz

Personal Data

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Education

2012 - 2017 Ph.D. in Molecular Biology, Genetics and Bioengineering (BIO)
Faculty of Engineering and Natural Sciences (FENS), **Sabanci University** (SU), Istanbul, Turkey
Dissertation: "Predictive Analysis of Conditional Epigenetic Variability"
Advisor: Prof. Ugur Sezerman

2011 - 2012 M.Sc. in Bioinformatics and Theoretical Systems Biology
Division of Molecular Biosciences, **Imperial College London** (ICL), London, UK
Graduated with Merit

2007 - 2011 B.Sc. in Biological Sciences and Bioengineering (BIO)
Faculty of Engineering and Natural Sciences (FENS), **Sabanci University** (SU), Istanbul, Turkey
GPA: 3.65/4.00, ranked 2nd in BIO and placed in top 10% in FENS
Thesis: "Protein Family Classification using Structural and Sequence Motifs"
Advisor: Prof. Ugur Sezerman

2010 - 2011 Minor Honors in Chemistry
Faculty of Engineering and Natural Sciences (FENS), **Sabanci University**, Istanbul, Turkey
GPA: 3.54/4.00

Work Experience

Oct 2015 - Mar 2017 Research Associate at Acibadem University, Istanbul, Turkey
Support Role
Main Duties: Providing support in research and teaching activities of Sezerman Lab, Department of Biostatistics and Medical Informatics, School of Medicine, Acibadem University, Istanbul, Turkey.

Mar 2014 - Mar 2017 Co-founder and Chairperson at Epigenetiks Genetik Biyoinformatik Yazilim A.S., Istanbul, Turkey
Management
Main Duties: Maintaining all day-to-day operations of the company, including business development and customer acquisition; occasionally performing customer analyses; co-managing a team of 3 software developers and bioinformaticians.
Project: Advanced bioinformatics for genome and metagenome analyses and discovery of novel biocatalists from extremophiles: implications for improving industrial bioprocesses (MeTaBLE).
Participant contact for Horizon 2020 Marie Sklodowska-Curie Research and Innovation Staff Exchange (RISE) grant. Company budget: €90.000. Timeframe: 2014-2018.

Sep 2012 - Mar 2017 Graduate Research Assistant at Sabanci University, Istanbul, Turkey
Sezerman Lab
Project: Investigation of factors driving differential methylation in human cancers via vertical data integration and machine learning.
Identification of common characteristics in differentially methylated regions for understanding their possible role in cancer aetiology with machine learning and integration of multiple types of -omics data. Research in progress. Supervised by Prof. Ugur Sezerman.
Project: Investigation of multi-level transcriptional regulation in disrupted co-expression networks.

Identification of DNA methylation, RNA, and miRNA-level regulation commonly seen in disrupted co-expression networks in human cancers. Research in progress. Supervised by Prof. Ugur Sezerman.

Project: Developing a novel neddylation prediction tool

Collected dataset; deduced new features for neddylation prediction; made statistical analysis and developed the prediction tool for neddylation site prediction. NeddyPreddy is available at http://neddypreddy.sabanciuniv.edu. Supervised by Prof. Ugur Sezerman.

Project: Developing a sumoylation prediction method

Improved the existing dataset; deduced new features for sumoylation prediction; made statistical analysis and developed a method for sumoylation site prediction. Supervised by Prof. Ugur Sezerman.

Project: Deep learning architectures in computational biology

Developed a Theano-based convolutional neural network tool and tested on various biological datasets. Supervised by Prof. Ugur Sezerman and Cem Meydan.

Jan - Sep 2012 | Graduate Research Assistant at Imperial College London, London, UK

June - Sep 2012 | *Christophides Lab, Laboratory of Immunogenomics, ICL*

Project: Genome-wide exploration of transcriptional regulatory sequences in A. gambiae using genetic algorithm

Developed a genetic programming-based motif mining methodology to identify the regulatory sequences in malarial mosquito *Anopheles gambiae* genome. Supervised by Dr. Bob MacCallum (ICL) and Prof. George K. Christophides (ICL).

Mar - June 2012 | *Braga Lab, National Lung & Heart Institute, ICL*

Project: Defining protein networks regulating cell-cell adhesion using data mining techniques

Compared various clustering methods and perspectives to create an efficient workflow for phenotype screens. Supervised by Dr. Luis Pizarro (ICL), Dr. Vania M M Braga (ICL), and Dr. Alessandro Russo (ICL).

Jan - Mar 2012 | *Centre for Bioinformatics, Division of Molecular Biosciences, ICL*

Project: CNA Express: an internet based application for the integrative analysis of copy number aberration and gene expression data sets

Developed Amazon Web Services EC2 cloud computing back-end of the application. Supervised by Geraint Barton (ICL), Dr. Chris Barnes (ICL), Dr. Mark Woodbridge (ICL), and Prof. Gerry Thomas (ICL).

June 2009 - Sep 2011 | Research Assistant at Sabanci University, Istanbul, Turkey

Sezerman Lab

Project: Developing a novel sumoylation prediction algorithm

Developed a 3D structure-based novel sumoylation site prediction algorithm; tested and optimized developed sumoylation site prediction algorithm. Supervised by Prof. Ugur Sezerman.

Project: Protein Family Classification using Structural and Sequence Motifs

Applied a general weight set model to distinguishing power evaluation selected motifs to GPCR datasets, in order to create a set of motifs that can be used in 3rd level GPCR classification. Supervised by Prof. Ugur Sezerman.

June - Sep 2010 | Research Assistant at Brigham and Women's Hospital/Harvard Medical School/Harvard-MIT Health Sciences and Technology, Boston, MA, USA

BAMM Labs, Tissue Engineering Team

Performed project related tasks as well as maintained the cell cultures of the Tissue Engineering Team.

Project: Living Sacrificial Micropores for Fabricating Microfluidic Porous Hydrogel Scaffolds

Developed a novel living porogens-based approach to fabricate hydrogel scaffold embedded with micropores and microchannels; optimized the cell printing technique in the lab to print bacteria. Supervised by Dr. Feng Xu (BWH, HMS) and Prof. Utkan Demirci (BWH, HMS, HST).

Project: Biofabrication of Multiphase Anisotropic Tissue Structures by Microdroplet Based Hydrogel Printing

Optimized the cell printing technique in the lab to print anisotropic tissue constructs, designed AutoCAD patterns for printing tissue constructs. Supervised by Dr. Umut Atakan Gurkan (BWH, HMS), Dr. Feng Xu, and Prof. Utkan Demirci.

Project: Acoustic Assembly of Microgels

Developed a novel treatment method for acoustic directed microgel assembly. Designed various AutoCAD patterns for photomasks used to crosslink building block hydrogels. Supervised by Dr. Feng Xu and Prof. Utkan Demirci.

Publications

In Progress

• Yavuz A.S., and Sezerman O.U., "Investigating personal drivers of DNA methylation aberrations in human liver hepatocellular carcinoma", *in progress*.
• Yavuz A.S., Sozer N.B., and Sezerman O.U., "NeddyPreddy: prediction of neddylation sites from protein sequences", *Nucleic Acids Research, under review*.

Refereed Journal Publications

• Yavuz A.S., Sozer N.B., and Sezerman O.U., "Prediction of neddylation sites from protein sequences and sequence-derived properties", *BMC Bioinformatics*, 2015, 16(S18), S9.
• Oktem-Okullu S., Tiftikci A., Saruc M., Cicek B., Vardareli E., Tozun N., Kocagoz T., Sezerman U., Yavuz A.S., and Sayi-Yazgan A. "Multiplex-PCR-Based Screening and Computational Modeling of Virulence Factors and T-Cell Mediated Immunity in *Helicobacter pylori* Infections for Accurate Clinical Diagnosis", *PLOS ONE*, 2015, 10(8), e0136212.
• Yavuz A.S., and Sezerman O.U., "Predicting sumoylation sites using support vector machines based on various sequence features, conformational flexibility and disorder", *BMC Genomics*, 2014, 15(S9), S18.
• Xu F., Finley T.D., Turkaydin M., Sung Y., Gurkan U.A., Yavuz A.S., Guldiken R.O., and Demirci U., "The assembly of cell-encapsulating microscale hydrogels using acoustic waves", *Biomaterials*, 2011, 32(31), p.7847-7855.
• Xu F., Sridharan B., Wang S., Durmus N.G., Yavuz A.S., Gurkan U.A., and Demirci U., "Living Bacterial Sacrificial Porogens to Engineer Decellularized Porous Scaffolds", *PLOS ONE*, 2011, 6(4), e19344.

Refereed Conference Proceedings

• Yavuz A.S., Sozer N.B., and Sezerman O.U., "Prediction of neddylation sites from protein sequences and sequence-derived properties", Joint 26th Genome Informatics Workshop and 14th International Conference on Bioinformatics (GIW/InCoB) 2015, September 9-11, 2015, Tokyo, Japan.
• Yavuz A.S., Sözer N.B., and Sezerman U., "Amino acid preferences at neddylation sites", International Conference on Applied Informatics for Health and Life Sciences (AIHLS-2014), October 19-22, 2014, Kusadası, Aydın, Turkey. **3rd Place in Student Oral Presentation Competition.**
• Baykal S., Yavuz A.S., Ates H., Sezerman U., Ozsan H.G., Sercan H.O., and Sercan Z., "Prolonged exposure to tyrosine kinase inhibitors cause phenotypic plasticity in K652 cells, resulting in morphology transition, drug resistance and escape from cellular aging", 9th International Conference on Cell and Stem Cell Engineering, September 11-13, 2014, Aachen, Germany.
• Yavuz A.S., and Sezerman O.U., "Predicting sumoylation sites using support vector machines based on various sequence features, conformational flexibility and disorder", International Conference on Bioinformatics (InCoB) 2014, July 31-August 2, 2014, Sydney, NSW, Australia.
• Yavuz A.S., Ozer B., and Sezerman U., "Pattern Recognition for Subfamily Level Classification of GPCRs Using Motif Distillation and Distinguishing Power Evaluation", The 7th IAPR lnternational Conference on Pattern Recognition ln Bioinformatics (PRIB), November 8-10, 2012, Tokyo, Japan. Also published in *Lecture Notes in Computer Science*, 7632, 2012, pp. 267-276.
• Xu F., Gurkan U.A., Finley T.D., Turkaydin M., Sung Y., Yavuz A.S., and Demirci U., "Acoustics Directed Microparticle Assembly for Biomedical Applications", TERMIS-EU Meeting 2011, June 7-10, 2011, Granada, Spain.

• Gurkan U.A., Xu F., Sung Y., Sridharan B., Yavuz A.S., and Demirci U., "Multiphase Anistropic Tissue Structures by Microdroplet Based Hydrogel Printing", 2011 MRS Spring Meeting, April 26-29, 2011, San Francisco, CA, USA.
•Xu F., Gurkan U.A., Finley T.D., Turkaydin M., Yavuz A.S., Keles H.O., and Demirci U., "Directed Assembly of Microscale Particles by Acoustic Waves for Biomedical Applications", The Society For Biomaterials' 2011 Annual Meeting, "Animating Materials", April 13-16, 2011, Orlando, FL, USA.
• Xu F., Yavuz A.S., Sridharan B., Wang S., and Demirci U., "Bacterial printing for fabricating microfluidic hydrogels", 2010 International Conference of Biofabrication, October 4-6, 2010, Philadelphia, PA, USA.
• Yavuz A.S., and Sezerman U., "SUMOtr: SUMOylation Site Prediction Based on 3D Structure and Hydrophobicity", 5th International Symposium on Health Informatics and Bioinformatics (HIBIT), April 20-22, 2010, Antalya, Turkey.

Posters

• Baykal S., Ates H., Yavuz A.S., Sezerman O.U., Acikgoz E., Öktem G., and Yüce Z., "Leukemic cell plasticity as a resistance mechanism towards tyrosine kinase inhibitors", the 41st FEBS Congress, Molecular and Systems Biology for a Better Life, Ephesus, Kusadasi, Turkey, September 3-8, 2016.
• Yavuz A.S., and Sezerman O.U., "Investigating DNA methylation susceptibility with a multi-omics strategy", STATegra Summer School in -Omics Data Integration, September 7-11, 2015, Benicassim, Spain.

Invited Talks

• "Tools for Analysing Epigenetic Data", Training School/Workshop: Bioinformatics approaches to adaptations, genome evolution and biological associations, University of Cambridge, March 23-27, 2015, Cambridgeshire, UK.

Grants

• Co-authored TUBITAK 1001 Project grant titled "Identification of epigenetic and other factors and their target pathways in colon cancer aetiology". Duration: 3 years. Budget: 304.360 TL (≈ £79.000).

Honors and Awards

2012 - 2017	TUBITAK (The Scientific and Technological Research Council of Turkey) BIDEB PhD Scholarship. Covering monthly stipend (Award Total: 110.200 TL, ≈ £30.000).
2012 - 2017	SU PhD Scholarship. Covering tuition fees and monthly transportation support (Award Total: 88.500 TL, ≈ £23.000).
Feb 2013	SU University Courses Teaching Assistant Incentive Award, for "exceptional performance in teaching assistantship in Science of Nature courses in Fall 2012".
2007 - 2011	SU Merit Scholarship, for ranking in the top 0.2% among 1.776 million applicants in the 2007 nationwide university entrance exam (ÖSS)
2007 - 2011	SU Certificate of High Honor (for 6 semesters), Certificate of Honor (for 1 semester)
June 2007	Istanbul Bilgi University, Computer Science Days in Bilgi (Nationwide), 4th place
May 2007	BITEK-O (IT Olympiad) Project Contest (Nationwide), 3rd place in R&D Category
June 2006	Istanbul Bilgi University, Computer Science Days in Bilgi (Nationwide), 3rd place

Teaching Experience

Spring 2014 | Teaching Assistant, Undergraduate Course, Science of Nature I (NS101)
Faculty of Engineering and Natural Sciences, SU
Held weekly recitation sessions and facilitated student-centered active learning; graded weekly student worksheets and exams; held office hours to help students understand the course material.

13-15 Nov 2013 | Teaching Assistant, Graduate Course, Intensive Bioinformatics (TBG6040)

Institute of Health Sciences, Dokuz Eylul University
Instructed bioinformatics solutions to various biological problems and practical aspects of common bioinformatics applications/algorithms; prepared and conducted case studies.

FALL 2013 | Teaching Assistant, Undergraduate Course, Introduction to Bioinformatics (BIO310)
Faculty of Engineering and Natural Sciences, SU
Held weekly recitation sessions to review the course material and do problem solving; held practicals; prepared tutorials and slides for various parts of the course; prepared course project material; graded the submitted genetic algorithm based course projects.

SPRING 2013 | Teaching Assistant, Undergraduate Course, Computational Biology (ENS210)
Faculty of Engineering and Natural Sciences, SU
Held weekly recitation sessions and instructed Perl programming language; prepared quizzes, homeworks, homework solutions, and course projects; graded homeworks and course projects; held office hours to help students understand course material and Perl programming.

FALL 2012 | Teaching Assistant, Undergraduate Course, Introduction to Bioinformatics (BIO310)
Faculty of Engineering and Natural Sciences, SU
Held practicals; prepared tutorials and slides for various parts of the course; prepared course project material and scoring algorithm; graded the submitted genetic algorithm-based course projects.

FALL 2012 | Teaching Assistant, Undergraduate Course, Science of Nature II (NS102)
Faculty of Engineering and Natural Sciences, SU
Held weekly recitation sessions and solved assigned problem sets; held laboratory sessions; prepared quizzes, graded quizzes and exams, kept record of grades and attendance; held office hours to help students understand and solve problem set questions.

PROFESSIONAL AFFILIATIONS

2015 - *present* The Global Alliance for Genomics and Health (GA4GH)
2011 - *present* International Society for Computational Biology (ISCB)
2010 - *present* IEEE

SKILLS

LANGUAGES | TURKISH: Native, ENGLISH: Advanced

COMPUTER SKILLS | **Basic Knowledge:** JAVA, MATLAB, C/C++, MONGODB, SQLITE
Intermediate Knowledge: PERL, MYSQL, Amazon EC2, Amazon S3, Bash Shell Scripting, LaTeX, Version Control Systems (Git & SVN)
Advanced Knowledge: PYTHON, R

BIOINFORMATICS RELATED SKILLS | RNA-seq, ChIP-seq, Exome Sequencing, Sanger Sequencing, DNA Methylation, Microarray, and Sequence Analyses, Phylogenetic Analysis, Machine Learning, Motif Mining, Cloud-based Workflow Development.

REFERENCES

Available upon request.