

## Assoc. Prof. YEŞİM AYDIN SON

### Personal Information

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### Biography

Dr. Yeşim Aydın Son is a medical scientist holding an M.D. and a Ph.D. in Genome Sciences and Technologies. She is a full-time faculty of METU Graduate School of Informatics since 2010 and promoted to the Assoc. Prof. position in the Bioinformatics Program in 2017. The main focus of her research is the modeling of chronic and complex diseases based on integrated genomic and clinical data. Her group has released a java based integrated software called METU-SNP, for genome-wide association and prioritization of SNP biomarkers through a novel AHP based algorithm. Her group continues to investigate the application of different data mining approaches to better associate genotyping data with diseases. They have proposed the SVM-ID3 hybrid method in 2014, which has been shown to outperform only the SVM method for the modeling of prostate cancer. Genomic Data-based modeling of Schizophrenia, Bipolar Disorder, Alzheimer's and Parkinson's disease, are among her ongoing projects.

### Education Information

Post Doctorate, City of Hope National Cancer Center, Beckman Research Institute, Molecular Medicine, United States Of America 2007 - 2009

Doctorate, University Of Tennessee, Knoxville, Life Sciences, Graduate School of Genome Sciences And Technology, United States Of America 2000 - 2006

Under Graduate, Hacettepe Üniversitesi, Turkey 1993 - 1999

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, DIFFERENTIAL EXPRESSION OF SKINCANCER AND HAIR-FOLLICLE CYCLEREGULATED GENES IN TUMORSUSCEPTIBLE K14-AGOUTI MICE, University Of Tennessee, Knoxville, Genome Science And Technology, 2006

### Research Areas

Technical Sciences, Computer Sciences, bioinformatics, Basic Sciences, Life Sciences, Bioinformatics, Molecular Biology and Genetics, Genetic Disorders, Genomics

## Academic Titles / Tasks

Associate Professor, Middle East Technical University, Graduate School of Informatics, Medical Informatics, 2017 - Continues

Associate Professor, Middle East Technical University, Graduate School of Informatics, Medical Informatics, 2015 - 2017

Assistant Professor, Middle East Technical University, Graduate School of Informatics, Medical Informatics, 2010 - 2017

Lecturer PhD, Middle East Technical University, Graduate School of Informatics, Medical Informatics, 2009 - 2010

## Professional Experience

Head of Department, Middle East Technical University, Graduate School of Informatics, Medical Informatics, 2012 - Continues

## Advising Theses

AYDIN SON Y., Optimization of weights and features in use of ahp for SNP prioritization, Doctorate, A.YILMAZ(Student), 2018

AYDIN SON Y., Essential design components of genetic data enabled mobile personal health record systems, Doctorate, Ö.ÖZKAN(Student), 2018

GÜRAY N. T. , AYDIN SON Y., Investigation of the in vitro cytotoxic effects of boron on human hepatocellular carcinoma cell line, HepG2, Post Graduate, H.ÇÖPOĞLU(Student), 2017

AYDIN SON Y., Genomic modelling of bipolar disorders: Comparison of multifactor dimension reduction and classification-based data mining methods, Doctorate, C.AÇIKEL(Student), 2017

AYDIN SON Y., Investigating the role of RNA-binding proteins (RBPs) in explaining differential gene expression in cancer, Post Graduate, A.LAFZI(Student), 2016

AYDIN SON Y., TUNÇBAĞ N., Reconstruction of the temporal signaling network in salmonella-infected human cells, Post Graduate, G.BUDAK(Student), 2016

AYDIN SON Y., Modeling the combined effect of RNA-binding proteins and micrnas in post-transcriptional regulation, Post Graduate, S.HAFEZQORANI(Student), 2015

CAN T., AYDIN SON Y., A multi-layered graphical model of the relation among SNPs, genes, and pathways based on subgraph search, Post Graduate, G.ERSOY(Student), 2015

AYDIN SON Y., Investigation of structural properties of methylated human promoter regions in terms of DNA helical rise, Post Graduate, B.YALDIZ(Student), 2014

AYDIN SON Y., Single nucleotide polymorphism (SNP) data integrated electronic health record (EHR) for personalized medicine, Doctorate, T.BEYAN(Student), 2014

AYDIN SON Y., Integration of metu-snp databases via rdf for pi-snp web service, Post Graduate, C.GEDİKOĞLU(Student), 2014

AYDIN SON Y., ACAR A. C. , Cytokine polymorphism catalog (CytoCAT) for the analysis of phenotype associations, Post Graduate, G.OĞUZ(Student), 2014

AYDIN SON Y., A predictive model for type 2 diabetes mellitus based on genomic and phenotypic risk factors, Doctorate, H.GÜL(Student), 2014

AYDIN SON Y., Investigation of schizophrenia related genes and pathways through genome wide association studies, Post Graduate, H.ALPER(Student), 2013

BAYKAL N., AYDIN SON Y., A hybrid feature selection model for genome wide association studies, Doctorate, S.CAN(Student), 2013

CAN T., AYDIN SON Y., A framework for gene co-expression network analysis of lung cancer, Post Graduate, E.AKDEMİR(Student), 2013

AYDIN SON Y., Investigation of human promoter CpG content and methylation profiles at different conservation levels, Post Graduate, B.DEMİRALAY(Student), 2012

AYDIN SON Y., Predicting the disease of alzheimer (AD) with SNP biomarkers and clinical data based decision support system using data mining classification approaches, Post Graduate, O.ERDOĞAN(Student), 2012

AYDIN SON Y., An integrative approach to structured SNP prioritization and representative snp selection for genome-wide association studies, Doctorate, G.ÜSTÜNKAR(Student), 2011

AYDIN SON Y., Determination of performance parameters for AHP based single nucleotide polymorphism (SNP) prioritization approach on alzheimers's disease data, Post Graduate, O.KADIOĞLU(Student), 2011

## Articles Published in Journals That Entered SCI, SSCI and AHCI Indexes

- **Evaluation of potential novel variations and their interactions related to bipolar disorders: Analysis of genome-wide association study data**  
AÇIKEL C., Son Y., ÇELİK C., GÜL H.  
Neuropsychiatric Disease and Treatment, vol.12, pp.2997-3004, 2016 (Journal Indexed in SCI Expanded)
- **Modeling the combined effect of RNA-binding proteins and microRNAs in post-transcriptional regulation**  
HAFEZQORANI S., LAFZİ A., de Bruin R. G. , VAN ZONNEVELD A. J. , van der Veer E. P. , Son Y., Kazan H.  
NUCLEIC ACIDS RESEARCH, vol.44, 2016 (Journal Indexed in SCI)
- **Reconstruction of the temporal signaling network in Salmonella-infected human cells**  
Budak G., Ozsoy O. E. , Son Y., Can T., Tunçbağ N.  
FRONTIERS IN MICROBIOLOGY, vol.6, 2015 (Journal Indexed in SCI)
- **Evaluation of Whole Genome Association Study Data in Bipolar Disorders: Potential Novel SNPs and Genes**  
CENGİZ HAN A., AYDIN SON Y., ÇELİK C., RECEP T.  
KLINIK PSIKOFARMAKOLOJİ BULTENİ-BULLETIN OF CLINICAL PSYCHOPHARMACOLOGY, vol.25, pp.12-18, 2015 (Journal Indexed in SCI)
- **Systems-level analysis of genome wide association study results for a pilot juvenile idiopathic arthritis family study**  
AYDIN SON Y., Batu E. D. , Demirkaya E., BİLGİNER Y., KASAPÇOPUR Ö., Unsal E., ALİKAŞİFOĞLU M., ÖZEN S.  
TURKISH JOURNAL OF PEDIATRICS, vol.57, pp.324-333, 2015 (Journal Indexed in SCI)
- **Discovering missing heritability and early risk prediction for type 2 diabetes: a new perspective for genome-wide association study analysis with the Nurses' Health Study and the Health Professionals' Follow-Up Study**  
Gul H., AYDIN SON Y., Acikel C.  
TURKISH JOURNAL OF MEDICAL SCIENCES, vol.44, pp.946-982, 2014 (Journal Indexed in SCI)
- **A Prostate Cancer Model Build by a Novel SVM-ID3 Hybrid Feature Selection Method Using Both Genotyping and Phenotype Data from dbGaP**  
Yucebas S. C. , AYDIN SON Y.  
PLOS ONE, vol.9, 2014 (Journal Indexed in SCI)
- **Selection of representative SNP sets for genome-wide association studies: a metaheuristic approach**  
Ustunkar G., AKYÜZ S., Weber G. W. , Friedrich C. M. , AYDIN SON Y.  
OPTIMIZATION LETTERS, vol.6, pp.1207-1218, 2012 (Journal Indexed in SCI)
- **The Oak Ridge Polycystic Kidney mouse: Modeling ciliopathies of mice and men**  
JONATHAN M L., EDWARD J M., TRENTON R S., AYDIN SON Y., MICHAEL M., BRADLEY K Y.  
DEVELOPMENTAL DYNAMICS, vol.237, pp.1960-1971, 2008 (Journal Indexed in SCI)
- **Gli2 and Gli3 localize to cilia and require the intra-flagellar transport protein polaris for processing and function**  
Haycraft C., Banizs B., Aydin-Son Y., Zhang Q., Michaud E., Yoder B.  
PLOS GENETICS, vol.1, pp.480-488, 2005 (Journal Indexed in SCI)

## Refereed Congress / Symposium Publications in Proceedings

● **Meme Kanserinde Terapötik Hedef Olarak Kullanılabilecek Özgül Metastaz Baskılayıcı MikroRNA'ların Tespiti**

EKENEL E., ERGENE E., AYDIN SON Y.

19. Ulusal, Uluslararası Katılımlı Biyoteknoloji Kongresi, Eskişehir, Turkey, 1 - 03 December 2017

● **Genome-wide Analysis of Splice Acceptor Site Motifs**

BAHÇE KARADUMAN G., AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **A Feature Selection Model for Genome Wide Association Studies of Schizophrenia**

DÖM H. A. , AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **Structural Properties of Methylated Human Promoter Regions in Terms of DNA Helical Rise**

YALDIZ B., AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **A Data Mining Approach for Directing the Patient to Appropriate Treatment Method in Pain Clinic**

MİMAROĞLU ALTINAY B., AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **Participatory Design Meetings: Genetic Information Included Personal Health Record Application**

ÖZKAN Ö., AYDIN SON Y., AYDINOĞLU A. U. , YALÇIN A., DÖM H. A. , YALDIZ B., NARCI K., BALOĞLU O.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **A Conceptual Design for Genetic Information Exchange Coding Standards in Turkey**

ŞIK A. S. , AYDIN SON Y., SOYSAL E., AYDINOĞLU A. U.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **Changes in gene profile of human hepatocellular carcinoma cell line (HepG2) induced by boric acid at half maximal inhibitory concentration (IC50).**

TOMBULOĞLU A., ÇÖPOĞLU H., GÜRAY N. T. , AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **Lossless Pruning of AHP SNP Prioritization Tree Using Random Forest Variable Importances**

YILMAZ A., AYDIN SON Y.

HIBIT 2017, Güzelyurt, Cyprus (Kktc), 28 - 30 June 2017

● **Genomic Disease Modelling**

AYDIN SON Y.

9th International Symposium on Health Informatics and Bioinformatics HIBIT 2015, Muğla, Turkey, 16 - 17 October 2015

● **A Survey to Determine Security and Privacy Measures Needed for Genetic Information Exchange in Personal Health Records**

ÖZKAN Ö., ARSEV UMUR A., AYDIN SON Y.

5th International Workshop on Infrastructures on Healthcare, 18 - 19 June 2015

● **rs10739592 is a New Candidate Loci for Type 2 Diabetes Risk in Men**

Gul H., AYDIN SON Y., Acikel C.

25th European Medical Informatics Conference (MIE), İstanbul, Turkey, 31 August - 03 September 2014, vol.205, pp.1268

● **A novel SVM-ID3 Hybrid Feature Selection Method to Build a Disease Model for Melanoma using Integrated Genotyping and Phenotype Data from dbGaP**

AYDIN SON Y., YÜCEBAŞ S. C.

25th European Medical Informatics Conference (MIE), İstanbul, Turkey, 31 August - 03 September 2014, vol.205, pp.501-505

● **Predicting the Disease of Alzheimer With SNP Biomarkers and Clinical Data Using Data Mining Classification Approach: Decision Tree**

Erdogan O., AYDIN SON Y.

25th European Medical Informatics Conference (MIE), İstanbul, Turkey, 31 August - 03 September 2014, vol.205, pp.511-515

## ● Analysis of SNP-Complex Disease Association by a Novel Feature Selection Method

Ustunkar G., AKYÜZ S., Weber G. -, AYDIN SON Y.

Annual International Conference of the German-Operations-Research-Society (GOR), Neubiberg, Germany, 1 - 03 September 2010, pp.21-26

## Supported Projects

YANIK T., ULUM B., UÇKAN ÇETİNKAYA P. D. D. , AERTS KAYA Y. D. D. F. , AYDIN SON Y., Project Supported by Higher Education Institutions, Hematopoetik Kök Hücre Hibernasyonunda Nöropeptid Y (NPY)´nin Rolünün İncelenmesi, 2017 - Continues

AYDIN SON Y., Gedikoğlu C., Yılmaz A., ERDOĞAN O., Project Supported by Higher Education Institutions, Metu-Snp: Snp Biyobelirteçlerinin Analizi Ve Hastalıklarla İlişkilendirilmesi Yazılımının Geliştirilmesi, 2011 - 2019

AYDIN SON Y., CAN T., TUBITAK Project, Farklı Nitelikteki Biyolojik Ağların Entegrasyonu ve Yerel Topolojik Özellik Vektörleri Tabanlı Karşılaştırılması, 2014 - 2017

PURUTÇUOĞLU GAZİ V., Tuncer G., SÜRÜN B., Yazıcı M., AYDIN SON Y., UĞUR Ö., Project Supported by Higher Education Institutions, Biyokimyasal sistemlerin stokastik simülasyon algoritmalarıyla yaratılması ve impuls içerecek şekilde genişletilmesi, 2014 - 2016

## Memberships / Tasks in Scientific Organizations

Tıp Bilişimi Derneği, Board Member, 2012 - Continues

Tıp Bilişimi Derneği, Secretary General, 2012 - 2014

## Citations

Total Citations (WOS):715

h-index (WOS):6