

## Assoc. Prof. BERAT DOĞAN

### Personal Information

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### International Researcher IDs

ScholarID: DcFtAh4AAAAJ

ORCID: 0000-0003-4810-1970

Publons / Web Of Science ResearcherID: AAJ-7288-2020

ScopusID: 57217207064

Yoksis Researcher ID: 149121

### Education Information

Post Doctorate, McGill University, Tıp Fakültesi, İnsan Genetiği, Canada 2017 - 2018

Doctorate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Elektronik Mühendisliği, Turkey 2009 - 2015

Postgraduate, Istanbul Technical University, Fen Bilimleri Enstitüsü, Biyomedikal Mühendisliği, Turkey 2006 - 2009

Undergraduate, Erciyes University, Mühendislik Fakültesi, Elektronik Mühendisliği, Turkey 2002 - 2006

### Foreign Languages

English, C1 Advanced

### Dissertations

Doctorate, Artificial intelligence based methods for the solution of protein folding problem by using coarse-grained lattice and off-lattice models, Istanbul Technical University, Fen Bilimleri Enstitüsü, Elektronik Mühendisliği, 2015

Postgraduate, Parçacık sürü optimizasyonuna dayalı yeni bir aritmi sınıflama yöntemi, Istanbul Technical University, Fen Bilimleri Enstitüsü, Biyomedikal Mühendisliği, 2009

### Research Areas

Computer Sciences, bioinformatics, Artificial Intelligence, Computer Learning and Pattern Recognition, Biomedical Engineering, Biosignal Processing, Engineering and Technology

### Academic Titles / Tasks

Associate Professor, Inonu University, Mühendislik Fakültesi, Biyomedikal Mühendisliği, 2020 - Continues

Assistant Professor, Inonu University, Mühendislik Fakültesi, Biyomedikal Mühendisliği, 2018 - 2020

Assistant Professor, Inonu University, Mühendislik Fakültesi, Biyomedikal Mühendisliği, 2015 - 2018

Research Assistant, Istanbul Technical University, Elektrik-Elektronik Fakültesi, 2009 - 2015

## Academic and Administrative Experience

Deputy Director of the Center, Inonu University, 2019 - 2022

Vice Dean, Inonu University, Mühendislik Fakültesi, 2018 - 2021

Fakülte Yönetim Kurulu Üyesi, Inonu University, Mühendislik Fakültesi, Biyomedikal Mühendisliği, 2019 - 2020

## Courses

Biyomedikal Enstrümantasyon, Undergraduate, 2023 - 2024

Sinyaller ve Sistemler, Undergraduate, 2019-2020

Bitirme Projesi II, Undergraduate, 2019-2020

Biyoinformatiğe Giriş, Undergraduate, 2019-2020

Bilgisayar Programlamaya Giriş, Undergraduate, 2019-2020

Bitirme Projesi I, Undergraduate, 2018-2019

Sinyaller ve Sistemler, Undergraduate, 2018-2019

Biyoistatistik, Undergraduate, 2018-2019

Biyomedikal Sinyal İşleme, Undergraduate, 2018-2019

Bilgisayar Programlama I, Undergraduate, 2018-2019

Bilgisayar Programlama I, Undergraduate, 2017-2018

Bilgisayar Programlamaya Giriş, Undergraduate, 2016-2017

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **Investigation of metabolite profiles of kidney tissues in rats treated with favipiravir drug: An NMR-based metabolomics study.**  
Çevik Z. R., Erdoğan A., Mumcu A., Doğan B.  
Journal of pharmaceutical and biomedical analysis, vol.255, pp.116640, 2024 (SCI-Expanded)
- II. **scMAGS: Marker gene selection from scRNA-seq data for spatial transcriptomics studies.**  
Baran Y., Doğan B.  
Computers in biology and medicine, vol.155, pp.106634, 2023 (SCI-Expanded)
- III. **Metabolomic analysis of endometrial cancer by high-resolution magic angle spinning NMR spectroscopy.**  
Arda Düz S., Mumcu A., Doğan B., Yılmaz E., İnci Çoşkun E., Sarıdoğan E., Tuncay G., Karaer A.  
Archives of gynecology and obstetrics, 2022 (SCI-Expanded)
- IV. **Metabolomics analysis of placental tissue obtained from patients with fetal growth restriction**  
KARAER A., MUMCU A., ARDA DÜZ S., TUNCAY G., DOĞAN B.  
JOURNAL OF OBSTETRICS AND GYNAECOLOGY RESEARCH, vol.48, no.4, pp.920-929, 2022 (SCI-Expanded)
- V. **The vaginal microbiota composition of women undergoing assisted reproduction: a prospective cohort study**  
Karaer A., Doğan B., Günal S., Tuncay G., Arda Düz S., Ünver T., Tecellioğlu N.  
BJOG-AN INTERNATIONAL JOURNAL OF OBSTETRICS AND GYNAECOLOGY, vol.128, no.13, pp.2101-2109, 2021 (SCI-Expanded)
- VI. **Metabolomics analysis of seminal plasma in patients with idiopathic Oligoasthenoteratozoospermia using high-resolution NMR spectroscopy**  
Mumcu A., Karaer A., Dogan B., Tuncay G.  
Andrology, vol.8, no.2, pp.450-456, 2020 (SCI-Expanded)
- VII. **High-resolution 1H-NMR spectroscopy indicates variations in metabolomics profile of follicular fluid from women with advanced maternal age**  
Dogan B., Karaer A., Tuncay G., Tecellioğlu N., Mumcu A.  
Journal of Assisted Reproduction and Genetics, vol.37, no.2, pp.321-330, 2020 (SCI-Expanded)
- VIII. **Metabolomics analysis of follicular fluid in women with ovarian endometriosis undergoing in vitro**

## **fertilization**

KARAER A., TUNCAI G., MUMCU A., DOĞAN B.

SYSTEMS BIOLOGY IN REPRODUCTIVE MEDICINE, vol.65, no.1, pp.39-47, 2019 (SCI-Expanded)

- IX. **Optimized spatial filters as a new method for mass spectrometry-based cancer diagnosis**  
DOĞAN B.  
APPLIED SOFT COMPUTING, vol.48, pp.59-79, 2016 (SCI-Expanded)
- X. **A new metaheuristic for numerical function optimization: Vortex Search algorithm**  
Dogan B., Ölmez T.  
INFORMATION SCIENCES, vol.293, pp.125-145, 2015 (SCI-Expanded)
- XI. **A novel state space representation for the solution of 2D-HP protein folding problem using reinforcement learning methods**  
Dogan B., Ölmez T.  
APPLIED SOFT COMPUTING, vol.26, pp.213-223, 2015 (SCI-Expanded)
- XII. **Vortex search algorithm for the analog active filter component selection problem**  
Dogan B., Ölmez T.  
AEU-INTERNATIONAL JOURNAL OF ELECTRONICS AND COMMUNICATIONS, vol.69, no.9, pp.1243-1253, 2015 (SCI-Expanded)
- XIII. **A new ECG beat clustering method based on kernelized fuzzy c-means and hybrid ant colony optimization for continuous domains**  
Dogan B., Korurek M.  
APPLIED SOFT COMPUTING, vol.12, no.11, pp.3442-3451, 2012 (SCI-Expanded)
- XIV. **ECG beat classification using particle swarm optimization and radial basis function neural network**  
Koruerek M., Dogan B.  
EXPERT SYSTEMS WITH APPLICATIONS, vol.37, no.12, pp.7563-7569, 2010 (SCI-Expanded)

## **Articles Published in Other Journals**

- I. **Microarray analysis of cumulus cells in women with ovarian endometriosis undergoing intracytoplasmic sperm injection**  
KARAER A., TUNCAI G., DOĞAN B., Tecellioglu N., ÇİĞREMİŞ Y.  
JOURNAL OF ENDOMETRIOSIS AND PELVIC PAIN DISORDERS, vol.12, no.2, pp.86-93, 2020 (ESCI)
- II. **An alignment-free method for bulk comparison of protein sequences from different species**  
DOĞAN B.  
BALKAN JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING, vol.7, no.4, pp.405-416, 2019 (Peer-Reviewed Journal)
- III. **A modified Vortex Search algorithm for numerical function optimization**  
DOĞAN B.  
, International Journal of Artificial Intelligence & Applications, vol.7, no.3, pp.37-54, 2016 (Peer-Reviewed Journal)
- IV. **Modified off-lattice AB Model for protein folding problem using the Vortex Search algorithm**  
DOĞAN B., ÖLMEZ T.  
International Journal of Machine Learning and Computing, vol.5, no.4, pp.329-333, 2015 (Scopus)
- V. **Prostate Cancer Classification from Mass Spectrometry Data by Using Wavelet Analysis and Kernel Partial Least Squares Algorithm**  
TAŞKIN V., DOĞAN B., ÖLMEZ T.  
International Journal of Bioscience, Biochemistry and Bioinformatics, vol.3, no.2, pp.98-102, 2013 (Peer-Reviewed Journal)

## **Books & Book Chapters**

**I. Computational Methods for Analysis of the DNA-Binding Preferences of Cys2His2 Zinc-Finger Proteins**

Doğan B., Najafabadi H. S.

in: Zinc Finger Proteins Methods and Protocols, Jia Liu, Editor, Springer, London/Berlin , New York, pp.15-28, 2018

**Refereed Congress / Symposium Publications in Proceedings**

**I. Multi-Omics Approach Based on the Analysis of Metabolomics and Transcriptomics Data for Understanding Placental Pathophysiology in Preeclampsia Patients**

MUMCU A., SARIDOĞAN E., ARDA DÜZ S., TUNCAY G., ERDOĞAN A., KARAER K., ONAT T., KARAER A., DOĞAN B.  
Geleceğin Sağlık Teknolojileri - Genomiks Kongresi, İstanbul, Turkey, 8 - 09 December 2023

**II. Decreased BMP-15 and BDNF mRNA expression levels in cumulus granulosa cells of women with ovarian endometriosis**

KARAER A., TUNCAY G., DOĞAN B., TECELLİOĞLU N., ÇİĞREMİŞ Y.

Expert Meeting In Personalized Reproductive Medicine, 11 - 14 April 2019

**III. Protein-RNA Interaction Prediction Using Graphical Representation of Biological Sequences**

DOĞAN B.

27th Signal Processing and Communications Applications Conference (SIU), Sivas, Turkey, 24 - 26 April 2019

**IV. Metabolomics analysis of follicular fluid in women with ovarian endometriosis undergoing in vitro fertilization**

Karaer A., Tuncay G., Mumcu A., Dogan B.

33rd Annual Meeting of the European-Society-of-Human-Reproduction-and-Embryology (ESHRE), Geneva, Switzerland, 2 - 05 July 2017, vol.32, pp.255

**V. Segmentation of Brain MRI Images By Using Type-II Fuzzy Clustering Algorithm**

Toker I., Dogan B., Pinar S. K.

23rd Signal Processing and Communications Applications Conference (SIU), Malatya, Turkey, 16 - 19 May 2015, pp.1909-1912

**VI. Analog Filter Group Delay Optimization Using the Vortex Search Algorithm**

Dogan B., Yuksel A.

23rd Signal Processing and Communications Applications Conference (SIU), Malatya, Turkey, 16 - 19 May 2015, pp.288-291

**VII. Fuzzy Clustering of ECG Beats Using a New Metaheuristic Approach**

Dogan B., Ölmez T.

2nd International Work-Conference on Bioinformatics and Biomedical Engineering (IWBBIO), Granada, Nicaragua, 7 - 09 April 2014, pp.54-65

**VIII. ECG beat clustering using fuzzy c-means algorithm and particle swarm optimization EKG vurularinin bulanik c-ortalamalar algoritmasi ve parçacik sürü optimizasyonu yardimiyla öbekleştiriilmesi**

Doğan B., Korürek M.

2012 20th Signal Processing and Communications Applications Conference, SIU 2012, Fethiye, Mugla, Turkey, 18 - 20 April 2012

**IX. ECG beat classification using ant colony optimization for continuous domains EKG vurularinin sürekli zaman karınca koloni optimizasyonu yardimiyla siniflandırılması**

Doğan B., Korürek M.

2010 7th National Conference on Electrical, Electronics and Computer Engineering, ELECO 2010, Bursa, Turkey, 2 - 05 December 2010, pp.497-501

**X. Performance Evaluation of Radial Basis Function Neural Network on ECG Beat Classification**

Dogan B., Korurek M.

14th National Biomedical Engineering Meeting, İzmir, Turkey, 20 - 22 May 2009, pp.147-150

## Supported Projects

- DURMAZ G., SARITEPE Y., BOZANOĞLU F., ERDOĞAN A., HAYALOĞLU A. A., KARABULUT İ., DOĞAN B., Project Supported by Higher Education Institutions, Malatya kayısının ayırt edici özelliklerinin kimyasal bileşim analiz verisi tabanlı makine öğrenmesi yoluyla belirlenmesi, 2020 - Continues
- Özcan Kabasakal S., Karşoğlu Y., Karaer A., Öz M., Doğan B., Arda Düz S., TÜBİTAK - AB COST Project, Biomarker study to determine the risk of rare endometrial cancer in polycystic ovary syndrome phenotype, 2022 - 2024
- Doğan B., TUBİTAK Project, Preterm premature membran rüptürü tanısı koyulmuş gebe kadınlarda üriner metagenomik ve metabolomik verilerin multi-omik analizi, 2021 - 2024
- DOĞAN B., TUNCAY G., ARDA DÜZ S., ERDOĞAN A., MUMCU A., YOLOĞLU S., BAŞTU E., Project Supported by Higher Education Institutions, Preeklampsi hastalarında plasental dokunun hücresel düzeyde multiomik veri analizi ile incelenmesi, 2020 - 2023
- Mumcu A., Karaer A., Doğan B., Arda Düz S., Tuncay G., Research Project of the Presidency of Turkey Health Institutes (TÜSEB), Polikistik Over Sendromunun Alt Gruplarının Belirlenmesi için Deneysel Metabolomik Verilerin Derin Öğrenme Yaklaşımları ile Analizi, 2020 - 2023
- Doğan B., Karaer A., Research Project of the Presidency of Turkey Health Institutes (TÜSEB), İnfertil hastalarda kümülüs hücrelerinin mRNA-miRNA entegre analizi: oosit/embriyo kalitesi ve in vitro fertilizasyon sonuçlarına etkisi, 2020 - 2022
- Doğan B., Karaer A., Tuncay G., Karaer K., Arda Düz S., Mumcu A., Erdoğan A., Research Project of the Presidency of Turkey Health Institutes (TÜSEB), Preeklampsi hastalarında plasental patofizyolojinin anlaşılması için RNA-seq ve 1H-NMR veri setlerinin entegre analizine dayalı multi-omik yaklaşım, 2020 - 2022
- TUNCAY G., TECELLİOĞLU A. N., KARAER A., DOĞAN B., KARAER K., BALOĞLU D., Project Supported by Higher Education Institutions, Embriyo kültür sıvısı serbest mitokondrial DNA miktarının IVF sonuçları üzerine etkisi, 2019 - 2022
- KIZILASLAN O., ZENGİN R., KIRAT G., ŞİMŞEK M., ÖZGÜVEN Ö., DOĞAN B., BİLGİLİ H., AKSAN M. A., ERDOĞAN A., Project Supported by Higher Education Institutions, RF PÜSKÜRTME TEKNİĞİ İLE HİDROKSİAPATİT VE FLORAPATİT KAPLANMIŞ ORTODONTİK ŞEKİL HAFIZALI NİTİ TELLERİN HAZIRLANMASI, 2018 - 2021
- MUMCU A., TUNCAY G., DOĞAN B., KARAER A., Project Supported by Higher Education Institutions, İnfertil Hastalarda Seminal Plazmanın Metabolomik Analizi, 2018 - 2020
- Mumcu A., Doğan B., Tuncay G., Karaer A., Project Supported by Higher Education Institutions, Düşük ovaryan rezervi ve ileri anne yaşının folliküler metabolomik profili üzerine etkisi, 2016 - 2020
- TUBİTAK Project, Transkripsiyon faktörü C2H2-ZF proteinlerinin DNA'ya bağlanma motiflerini bulabilmek için makine öğrenmesi yöntemlerine dayalı yeni bir tanıma kodunun geliştirilmesi, 2017 - 2018
- ŞİMŞEK M., YAKINCI M. E., ERDOĞAN A., KIZILASLAN O., ÖZGÜVEN Ö., BİLGİLİ H., DOĞAN B., Project Supported by Higher Education Institutions, BİYOMEDİKAL MÜHENDİSLİĞİ BÖLÜMÜ ÖĞRENCİ LABORATUVARLARI ALTYAPI TAMAMLAMA PROJESİ, 2015 - 2018

## Activities in Scientific Journals

Neural Processing Letters, Assistant Editor/Section Editor, 2016 - Continues

## Metrics

Publication: 32  
Citation (WoS): 529  
Citation (Scopus): 642  
H-Index (WoS): 8  
H-Index (Scopus): 8

## Scholarships

2219-Yurtdışı Doktora Sonrası Araştırma Burs Programı, TÜBİTAK, 2017 - 2018

2211-A Yurtiçi Doktora Burs Programı, TÜBİTAK, 2009 - 2013

2210-A Yurtiçi Yüksek Lisans Burs Programı, TÜBİTAK, 2006 - 2008

### **Non Academic Experience**

Netaş Telekomünikasyon A.Ş.

Nortel Netaş Telekomünikasyon A.Ş.