

## Assoc. Prof. SEZER OKAY

### Personal Information

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### International Researcher IDs

ScholarID: MmXcypYAAAAJ

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Publons / Web Of Science ResearcherID: AAF-4394-2019

ScopusID: 23091381100

Yoksis Researcher ID: 9391

### Education Information

Doctorate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Biology, Turkey 2005 - 2011

Postgraduate, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Biology, Turkey 2002 - 2005

Undergraduate, Anadolu University, Faculty Of Science, Department Of Biology, Turkey 1998 - 2002

### Foreign Languages

English, C1 Advanced

Spanish, B1 Intermediate

### Certificates, Courses and Trainings

Health&Medicine, Deneý Hayvanı Kullanım Sertifikası, Kırıkkale University and GATA, 2011

### Dissertations

Doctorate, Development of recombinant vaccines composed of PlpE and OmpH from *Pasteurella multocida* A:3, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Biology, 2011

Postgraduate, Cloning of chitinase A (chiA) gene of *Serratia marcescens* Bn10 and its expression in *Coleoptera*-specific *Bacillus thuringiensis*, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Biology, 2005

### Research Areas

Health Sciences, Life Sciences, Biochemistry, Bioinformatics, Biotechnology, Microbiology, Molecular Biology and Genetics, Natural Sciences

### Academic Titles / Tasks

Associate Professor, Hacettepe University, Vaccine Institute, 2019 - Continues

Associate Professor, Cankiri Karatekin University, Faculty Of Science, Department Of Biology, 2016 - 2019

Assistant Professor, Cankiri Karatekin University, Faculty Of Science, Department Of Biology, 2012 - 2016

Research Assistant, Middle East Technical University, Faculty Of Arts And Sciences, Department Of Biology, 2002 - 2012

## Academic and Administrative Experience

Head of Department, Cankiri Karatekin University, Faculty Of Science, Department Of Biology, 2016 - 2019

Fakülte Yönetim Kurulu Üyesi, Cankiri Karatekin University, Faculty Of Science, 2016 - 2019

Member of the Senate, Cankiri Karatekin University, 2016 - 2019

Fakülte Yönetim Kurulu Üyesi, Cankiri Karatekin University, Faculty Of Health Sciences, 2016 - 2019

Director of the Center, Cankiri Karatekin University, Bartın University Central Research Laboratory Application And Research Center, 2016 - 2019

## Courses

### Postgraduate

Molecular Microbiology, Postgraduate, 2017 - 2018, 2016 - 2017

Secondary Metabolites, Postgraduate, 2017 - 2018, 2015 - 2016

Development of Recombinant Vaccines, Postgraduate, 2017 - 2018, 2015 - 2016, 2014 - 2015

Metabolic Engineering, Postgraduate, 2015 - 2016

## Supervised Theses

Öner A. F., Okay S., Mycobacterium bovis Antijenlerinin Escherichia coli'de Rekombinant DNA Teknolojisi ile Üretimi ve Alt Birim Aşısı Geliştirilmesi, Doctorate, Ö.FIRAT(Student), 2021

Okay S., Production of MmaA4 protein from Mycobacterium tuberculosis in tobacco plant, Postgraduate, Y.MOUMINE(Student), 2020

Okay S., Transfer of hspR gene from Mycobacterium tuberculosis into tobacco plant, Postgraduate, K.ELMI(Student), 2020

Ursavaş S., Okay S., Molecular systematics of some Weissia sp. (Pottiaceae) taxons in Turkey, Postgraduate, S.ÇİZGEN(Student), 2020

Okay S., Utilization of LppX protein from Mycobacterium tuberculosis for development of recombinant tuberculosis vaccine, Postgraduate, C.DOĞAN(Student), 2019

Okay S., Comparative genome analysis of the multidrug resistant Mycobacterium tuberculosis isolates from different geographic regions, Postgraduate, S.ULAŞ(Student), 2019

Özcengiz G., Okay S., Expression and activity analyses of industrially important extracellular enzymes produced by a bacilysin knock-out mutant of Bacillus subtilis , Postgraduate, S.AYTEKİN(Student), 2018

Okay S., Investigation of antigenic properties of recombinant OmpA protein from Mycobacterium tuberculosis, Postgraduate, F.KARABULUT(Student), 2017

Okay S., Purification of recombinant Erp protein from Mycobacterium tuberculosis and preclinical evaluation of immune response , Postgraduate, R.ÇETİN(Student), 2017

Kurt Kızıldoğan A., Okay S., Determination of molecular mechanisms providing salt resistance and production of industrial enzymes in halophilic bacteria , Postgraduate, B.ABANOZ(Student), 2016

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

- I. **COVID-19 Vaccine Hesitancy Among Various Segments of the Population in Turkey: A Literature Review**  
OKAY S.  
VACCINES, no.1, 2025 (SCI-Expanded)
- II. **Comprehensive characterization and resistome analysis of Antarctic *Pseudomonas migulae* strain CAS19**  
Otur Ç., OKAY S., Konuksever O., Duyar O., Kaya Y., Kurt Kızıdoğan A.  
WORLD JOURNAL OF MICROBIOLOGY & BIOTECHNOLOGY, vol.40, no.11, 2024 (SCI-Expanded)
- III. **Functional characterization of haloarchaeal UDP-glucose 4-epimerase and 3-hydroxybutyryl-CoA dehydrogenase genes in *Nicotiana tabacum***  
Otur Ç., OKAY S., Kurt Kızıdoğan A.  
TURKISH JOURNAL OF BOTANY, vol.48, no.7, pp.490-501, 2024 (SCI-Expanded)
- IV. **The regulatory role of Fur-encoding SCLAV\_3199 in iron homeostasis in *Streptomyces clavuligerus***  
Abanoz-Seçgin B., Otur Ç., OKAY S., Kurt-Kızıdoğan A.  
Gene, vol.878, 2023 (SCI-Expanded)
- V. **Improved production of poly(3-hydroxybutyrate) by extremely halophilic archaeon *Haloarcula* sp. TG1 by utilization of rCKT3eng-treated sugar beet pulp**  
KURT KIZILDOĞAN A., Ture E., OKAY S., Otur C.  
BIOMASS CONVERSION AND BIOREFINERY, vol.13, no.12, pp.10911-10921, 2023 (SCI-Expanded)
- VI. **Whole genome analysis of *Flavobacterium aziz-sancaraii* sp. nov., isolated from Ardley Island (Antarctica), revealed a rich resistome and bioremediation potential**  
Otur Ç., OKAY S., Kurt-Kızıdoğan A.  
Chemosphere, vol.313, 2023 (SCI-Expanded)
- VII. **Editorial: The utilization of plants in vaccine research**  
OKAY S., Kurt Kızıdoğan A., Bañuelos-Hernández B., Avesani L.  
Frontiers in Plant Science, vol.14, 2023 (SCI-Expanded)
- VIII. **CHARACTERIZATION OF HIGHLY STABLE EXTRACELLULAR LIPASE FROM THE EXTREMELY HALOPHILIC ARCHAEON *Halolamina* sp.**  
OKAY S., ADEM Ş., KURT KIZILDOĞAN A.  
BIOSCIENCE JOURNAL, vol.38, 2022 (SCI-Expanded)
- IX. **Recombinant AhpC antigen from *Mycobacterium bovis* boosts BCG-primed immunity in mice**  
DÜZENLİ Ö. F., OKAY S., KAZKAYASI BÖLÜK İ., ÖNER A. F.  
TURKISH JOURNAL OF BIOLOGY, vol.46, no.1, pp.95-108, 2022 (SCI-Expanded)
- X. **Molecular characterization of VP2 and VP3 proteins of chicken anemia virus isolates in Turkey**  
Okay S., Aşkar Ş.  
Turkish Journal Of Veterinary & Animal Sciences, vol.45, pp.336-345, 2021 (SCI-Expanded)
- XI. **Synthesis, anticorrosion, antibacterial, and antifungal activity of new amphiphilic compounds possessing quinazolin-4(3H)-one scaffold**  
Öztürk S., Okay S., Yıldırım A.  
Russian Chemical Bulletin, vol.69, pp.2205-2214, 2020 (SCI-Expanded)
- XII. **Dynamic proteomic analysis of *Phanerochaete chrysosporium* under copper stress.**  
Okay S., Yildirim V., Büttner K., Becher D., Özcengiz G.  
Ecotoxicology and environmental safety, vol.198, pp.110694, 2020 (SCI-Expanded)
- XIII. **Overexpression of Chitinase A Gene from *Serratia marcescens* in *Bacillus subtilis* and Characterization of Enhanced Chitinolytic Activity**  
OKAY S., Alshehri W. A.  
BRAZILIAN ARCHIVES OF BIOLOGY AND TECHNOLOGY, vol.63, 2020 (SCI-Expanded)
- XIV. **Single-Molecule Characterization of Drug Delivery Systems.**  
OKAY S.  
Assay and drug development technologies, vol.18, pp.56-63, 2020 (SCI-Expanded)

- XV. **IMMUNE RESPONSES ELICITED BY THE RECOMBINANT ERP, HSPR, LPPX, MAAA4, AND OMPA PROTEINS FROM MYCOBACTERIUM TUBERCULOSIS IN MICE**  
Okay S., Cetin R., Karabulut F., Dogan C., Surucuoglu S., Kizildogan A. K.  
ACTA MICROBIOLOGICA ET IMMUNOLOGICA HUNGARICA, vol.66, no.2, pp.219-234, 2019 (SCI-Expanded)
- XVI. **Phenolic Profile, Essential Oil Composition and Bioactivity of *Lasia spinosa* (L.) Thwaites**  
Rahman A., Siddiqui S. A., Oke-Altuntas F., Okay S., Gul F., Demirtas I.  
BRAZILIAN ARCHIVES OF BIOLOGY AND TECHNOLOGY, vol.62, 2019 (SCI-Expanded)
- XVII. **Virtual Screening Approach of Bacterial Peptide Deformylase Inhibitors Results in New Antibiotics**  
Merzoug A., Chikhi A., Bensegueni A., Boucherit H., Okay S.  
MOLECULAR INFORMATICS, vol.37, no.3, 2018 (SCI-Expanded)
- XVIII. **Highly active and stable protease production by an extreme halophilic archaeon *Haloarcula* sp TG1 isolated from Lake Tuz, Turkey**  
Abanoz B., Okay S., Kurt-Kizildogan A.  
TURKISH JOURNAL OF BIOCHEMISTRY-TURK BIYOKIMYA DERGISI, vol.42, no.3, pp.307-315, 2017 (SCI-Expanded)
- XIX. **Global transcriptome analysis of *Halolamina* sp to decipher the salt tolerance in extremely halophilic archaea**  
Kurt-Kizildogan A., Abanoz B., Okay S.  
GENE, vol.601, pp.56-64, 2017 (SCI-Expanded)
- XX. **In silico characterization of the citrate synthase family in *Mycobacterium tuberculosis***  
Okay S.  
TURKISH JOURNAL OF BIOCHEMISTRY-TURK BIYOKIMYA DERGISI, vol.41, no.2, pp.118-126, 2016 (SCI-Expanded)
- XXI. **Functional Characterization of 4 ' OMT and 7OMT Genes in BIA Biosynthesis**  
Gurkok T., Ozhuner E., Parmaksiz I., Ozcan S., Turktas M., Ipek A., Demirtas I., Okay S., Unver T.  
FRONTIERS IN PLANT SCIENCE, vol.7, 2016 (SCI-Expanded)
- XXII. **Hexaploid wheat (*Triticum aestivum*) root miRNome analysis in response to salt stress**  
Eren H., Pekmezci M. Y., Okay S., Turktas M., Inal B., Ilhan E., Atak M., Erayman M., Unver T.  
ANNALS OF APPLIED BIOLOGY, vol.167, no.2, pp.208-216, 2015 (SCI-Expanded)
- XXIII. **Comparative genome analysis of five *Pasteurella multocida* strains to decipher the diversification in pathogenicity and host specialization**  
Okay S., Kizildogan A. K.  
GENE, vol.567, no.1, pp.58-72, 2015 (SCI-Expanded)
- XXIV. **Genome-wide fungal stress responsive miRNA expression in wheat**  
Inal B., Turktas M., Eren H., Ilhan E., Okay S., Atak M., Erayman M., Unver T.  
PLANTA, vol.240, no.6, pp.1287-1298, 2014 (SCI-Expanded)
- XXV. **Transcriptome-wide identification of bread wheat WRKY transcription factors in response to drought stress**  
Okay S., Derelli E., Unver T.  
MOLECULAR GENETICS AND GENOMICS, vol.289, no.5, pp.765-781, 2014 (SCI-Expanded)
- XXVI. **Nutrition Metabolism Plays an Important Role in the Alternate Bearing of the Olive Tree (*Olea europaea* L.)**  
Turktas M., Inal B., Okay S., Erkilic E. G., Dundar E., Hernandez P., Dorado G., Unver T.  
PLOS ONE, vol.8, no.3, 2013 (SCI-Expanded)
- XXVII. **Boron Stress Responsive MicroRNAs and Their Targets in Barley**  
Ozhuner E., Eldem V., Ipek A., Okay S., Sakcali S., Zhang B., Boke H., Unver T.  
PLOS ONE, vol.8, no.3, 2013 (SCI-Expanded)
- XXVIII. **Plant microRNAs: new players in functional genomics**  
Eldem V., Okay S., Unver T.  
TURKISH JOURNAL OF AGRICULTURE AND FORESTRY, vol.37, no.1, pp.1-21, 2013 (SCI-Expanded)
- XXIX. **Characterization, antifungal activity, and cell immobilization of a chitinase from *Serratia marcescens* MO-1**  
Okay S., ÖZDAL M., KURBANOĞLU E. B.

TURKISH JOURNAL OF BIOLOGY, vol.37, no.6, pp.639-644, 2013 (SCI-Expanded)

- XXX. **Immunogenicity and protective efficacy of the recombinant Pasteurella lipoprotein E and outer membrane protein H from Pasteurella multocida A:3 in mice**  
Okay S., Ozcengiz E., Gursel I., ÖZCENGİZ G.  
RESEARCH IN VETERINARY SCIENCE, vol.93, no.3, pp.1261-1265, 2012 (SCI-Expanded)
- XXXI. **IMMUNE RESPONSES AGAINST CHIMERIC DNA AND PROTEIN VACCINES COMPOSED OF PLPEN-OMPH AND PLPEC-OMPH FROM PASTEURELLA MULTOCIDA A:3 IN MICE**  
Okay S., Ozcengiz E., Ozcengiz G.  
ACTA MICROBIOLOGICA ET IMMUNOLOGICA HUNGARICA, vol.59, no.4, pp.485-498, 2012 (SCI-Expanded)
- XXXII. **Molecular cloning, characterization, and homologous expression of an endochitinase gene from Bacillus thuringiensis serovar morrisoni**  
Okay S., ÖZCENGİZ G.  
TURKISH JOURNAL OF BIOLOGY, vol.35, no.1, pp.1-7, 2011 (SCI-Expanded)
- XXXIII. **Expression of chitinase A (chiA) gene from a local isolate of Serratia marcescens in Coleoptera-specific Bacillus thuringiensis**  
Okay S., Tefon B. E., Oezkan M., Oezcengiz G.  
JOURNAL OF APPLIED MICROBIOLOGY, vol.104, no.1, pp.161-170, 2008 (SCI-Expanded)
- XXXIV. **Genotoxicity and antigenotoxicity of Origanum oil and carvacrol evaluated by Ames Salmonella/microsomal test**  
Ipek E., Zeytinoglu H., Okay S., Tuylu B., Kurkcuoglu M., Baser K.  
FOOD CHEMISTRY, vol.93, no.3, pp.551-556, 2005 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Comparative Analysis of Chemical Composition and Antibacterial Activities of Essential Oils from Two Ocimum Species**  
Rokonuzzaman M., Rahman A., Reza A., Liza N. Y., Okay S., Jamal M. A. H. M., Demirtas I.  
ANTI-INFECTIVE AGENTS, vol.22, no.2, pp.74-84, 2024 (Scopus)
- II. **Effect of coronavirus disease 2019 on the vaccine development paradigm**  
Okay S.  
Exploration of Immunology, vol.3, pp.433-441, 2023 (Scopus)
- III. **Involvement of retroelements in the autoimmune response in humans**  
Okay S.  
Exploration of Medicine, vol.3, pp.280-288, 2022 (Scopus)
- IV. **Promoter engineering for the recombinant protein production in prokaryotic systems**  
Düzenli Ö. F., Okay S.  
AIMS Bioengineering, vol.7, no.2, pp.62-81, 2020 (ESCI)
- V. **Nanoparticle-based delivery platforms for mRNA vaccine development**  
Okay S., Özcan Ö. Ö., Karahan M.  
AIMS Biophysics, vol.7, pp.323-338, 2020 (ESCI)
- VI. **Transgenic plants for the production of immunogenic proteins**  
Okay S., Sezgin M.  
AIMS BIOENGINEERING, vol.5, no.3, 2018 (ESCI)
- VII. **Homologous expression of aspartokinase ask gene in Streptomyces clavuligerus and its hom deleted mutant Effects on cephamycin C production**  
ÖZCENGİZ G., OKAY S., ÜNSALDI E., TAŞKIN B., Liras P., Piret J.  
Bioengineered Bugs, vol.1, pp.191-197, 2010 (Peer-Reviewed Journal)

## Books

- I. **Systems Biology in the Field of Vaccine Development**  
Okay S.  
in: Systems Biology II, Jan Barciszewski, Editor, Springer Nature, Basel, pp.267-282, 2024
- II. **Plant Molecular Farming for Vaccine Development**  
Okay S.  
in: Applications of Plant Molecular Farming, Kole C,Chaurasia A,Hefferon KL,Panigrahi J, Editor, Springer Nature, Singapore, pp.295-323, 2024
- III. **"Omics" Technologies in Vaccine Research**  
Okay S.  
in: Synthetic Peptide Vaccine Models, Mesut Karahan, Editor, CRC, New York , Florida, pp.251-265, 2021
- IV. **Identification of gene families using genomics and/or transcriptomics data**  
Okay S.  
in: Plant Omics-Trends and Applications, Khalid Hakeem,Huseyin Tombuloglu,Guzin Tombuloglu, Editor, Springer, London/Berlin , Basel, pp.217-254, 2016
- V. **Boşaltım Sistemi**  
OKAY S.  
in: Schaum s Outlines Biyoloji 4 baskıdan çeviri, Mehmet Karataş, Gökhan Sadi, Editor, Nobel Yayınevi, Ankara, pp.236-248, 2015

## Papers Published in Refereed Scientific Meetings

- I. **KARBONİK ANHİDRAZ IX ENZİMİ ÜZERİNDE BAZI FLAVONLARIN İNHİBİSYONETKİSİNİN ARAŞTIRILMASI**  
Köken S., Özdemir R., ADEM Ş., YERLİKAYA E., OKAY S.  
İĞDIR INTERNATIONAL CONFERENCE ON MULTIDISCIPLINARY STUDIES, Iğdır, Turkey, 6 - 08 November 2018, pp.1726-1730
- II. **RNA-SEQ ANALYSIS OF FUR-LIKE SCLAV\_01120 MUTANT OF STREPTOMYCES CLAVULIGERUS**  
KURT KIZILDOĞAN A., Abanoz B., Otur Ç., OKAY S., Türe E., Şafak H., Akcan Ç.  
10th Balkan Congress of Microbiology, 16 - 18 November 2017
- III. **SIDEROPHORE PRODUCTION IN FUR-RELATED SCLAV\_01120 MUTANT OF STREPTOMYCES CLAVULIGERUS**  
KURT KIZILDOĞAN A., Türe E., Abanoz B., OKAY S., Otur Ç.  
10th Balkan Congress of Microbiology, 16 - 18 November 2017
- IV. **Antimicrobial, Antioxidant, and Insecticidal Activities of Frullania tamarisci (L.)**  
OKAY S., KEÇELİ T., KARAKOÇ Ö. C.  
Ecology 2017, 11 - 13 May 2017
- V. **Isolation of Penicillium Sp. from Kars Kashar and Its Lipolytic Activity**  
OKAY S.  
Ecology 2017, 11 - 13 May 2017
- VI. **Aromatik etan sülfonil hidrazon bileşiklerinden elde edilen Ni (II) komplekslerinin sentezi ve karbonik anhidraz izoenzimler (hCA-II ve hCA-IX) üzerindeki inhibistion etkileri**  
ÖZDEMİR ÖZMEN Ü., Güler Ç., ADEM Ş., Kayhan N., YERLİKAYA E., OKAY S., HAMURCU F.  
3. Uluslararası İlaç ve Eczacılık Kongresi, 26 - 29 April 2017
- VII. **Aromatik ve heteroaromatik bütansülfonil hidrazon bileşiklerinin karbonik anhidraz II ve IX enzimleri üzerindeki inhibisyon etkilerinin incelenmesi**  
ÖZDEMİR ÖZMEN Ü., Güler Ç., ADEM Ş., Kayhan N., YERLİKAYA E., OKAY S., HAMURCU F., ŞENTÜRK O. S.  
3. Uluslararası İlaç ve Eczacılık Kongresi, 26 - 29 April 2017
- VIII. **Regulation of siderophore biosynthesis by different transcriptional regulators in Streptomyces**

## **clavuligerus**

Kizildogan A. K., Otur C., Bas L., Abanoz B., Okay S.

41st FEBS Congress on Molecular and Systems Biology for a Better Life, Kusadasi, Turkey, 3 - 08 September 2016, vol.283, pp.83-84

### **IX. Differential gene expression in *Halolamina* sp in response to excess salt**

Okay S., Kizildogan A. K., Abanoz B.

41st FEBS Congress on Molecular and Systems Biology for a Better Life, Kusadasi, Turkey, 3 - 08 September 2016, vol.283, pp.89

## **Supported Projects**

Kurt Kızıdođan A., Okay S., TUBITAK Project, Investigation of the Regulatory Effect of TunRS Two-Component System on Tunicamycin Biosynthesis in *Streptomyces clavuligerus*, 2021 - 2024

Tunca Gedik S., Okay S., TUBITAK Project, Relation between Lon protease and increased antibiotic production in *Streptomyces coelicolor*, 2019 - 2021

Kurt Kızıdođan A., Okay S., TUBITAK Project, Investigation of the relation between iron regulation and antibiotic biosynthesis in *Streptomyces clavuligerus*, 2015 - 2018

Okay S., Kurt Kızıdođan A., Adem Ş., Project Supported by Higher Education Institutions, Characterization of lipase enzyme in extreme halophilic archebacterium *Halolamina* sp., 2016 - 2017

Okay S., TUBITAK Project, Kaya Tuzundan İzole Edilmiş Halofilik Bir Bakteride Tuza Direncin Transkriptom Analiziyle İncelenmesi ve Biyoteknolojik Öneme Sahip Enzimlerin Karakterizasyonu, 2015 - 2016

Okay S., TUBITAK Project, Investigation of tebaine production mechanism in opium poppy (*Papaver somniferum* L.) at whole transcriptome levelm mekanizmasının bütün transkriptom düzeyinde incelenmesi, 2013 - 2015

Rodriguez F., Okay S., Project Supported by Public Organizations in Other Countries, Development of new vaccine strategies of utility in animal health, 2006 - 2008

Özcengiz G., Okay S., TUBITAK Project, Increasing larvicidal activity and spectrum of *Bacillus thuringiensis* subsp. *tenebrionis* via genetic manipulations, 2004 - 2006

Özcengiz G., Okay S., Project Supported by Higher Education Institutions, Cloning of chitinase A *chiA* gene from *Serratia marcescens* Bn10 and its expression in Coleoptera specific *Bacillus thuringiensis*, 2003 - 2005

## **Activities in Scientific Journals**

Frontiers in Microbiology, Evaluation Committee Member, 2022 - Continues

AIMS Biophysics, Committee Member, 2019 - Continues

FRONTIERS IN PLANT SCIENCE, Special Issue Editor, 2022 - 2023

## **Metrics**

Publication: 56

Citation (WoS): 466

Citation (Scopus): 531

H-Index (WoS): 11

H-Index (Scopus): 11

## **Awards**

Okay S., VetPath Conference Travel Grant, Vetpath Conference 2010, October 2010

Okay S., PhD Education Course Performance Award, Orta Dođu Teknik Üniversitesi, September 2006