

# Göklem ÜNER

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**Title:** Research Assistant, Bioengineer

**Address:** Izmir Institute of Technology, Bioengineering Department, Urla, Izmir Turkey



## EDUCATION

### **Ph.D. (2019-Present)**

Izmir Institute of Technology, Department of Bioengineering, Izmir, Turkey  
GPA 4.00/4.00

PhD Thesis Title: Development of Saponin-based Therapeutic Agents

Advisor: Prof. Dr. Erdal Bedir

Co-advisor: Prof. Dr. Petek Ballar Kırmızıbayrak

### **Master's Degree (2016-2019)**

Izmir Institute of Technology, Program of Biotechnology and Bioengineering, Department of Biotechnology, Izmir, Turkey, 2019

GPA 3.79/4.00

Master Thesis Title: Preparation of Some Semisynthetic Saponin Analogs and Investigation of Their Mechanism of Action on Necrotic Cell Death

Advisor: Prof. Dr. Erdal Bedir

Co-advisor: Prof. Dr. Petek Ballar Kırmızıbayrak

### **Bachelor's Degree (2011-2016)**

Ege University, Faculty of Engineering, Department of Bioengineering, Izmir, Turkey, 2016  
GPA 3.6/4.00

Bachelor Thesis Title: A Potential In Vitro Scanning Platform for the Treatment of Neuroblastoma

Advisor: Aylin Şendemir Ürkmez

## RESEARCH EXPERIENCE AND SCHOLARSHIPS

- Development of Self-assembly Structure Forming Sapogenol Derivatives as New Anti-tumor Immunotherapy Agents  
Funded by: The Scientific and Technological Research Council of Türkiye (04/2022-present)
- Investigating the effect of a new semi-synthetic sapogenol derivative AG-08 on autophagy inhibition, protease activation and cell death.

Funded by: The Scientific and Technological Research Council of Türkiye (10/2018-04/2022)

- Interrelationships of CAPN-1 and CAPN-2 in breast cancer  
Funded by: Ege University Office of Scientific Research Projects (05/2023-present)
- Isolation of Actinobacteria from Coastal Ecosystems, Antimicrobial and Cytotoxic Activity Guided Isolation Studies on Selected Bioactive Strains  
Funded by: The Scientific and Technological Research Council of Türkiye (07/2013-present)
- Identification of potential neuroprotective effects of new natural products  
Funded by: Ege University Office of Scientific Research Projects (08/2022-08/2023)
- Investigation of the Effects of AG-07 Molecule on Necrotic Cell Death  
Funded by: İzmir Institute of Technology Office of Scientific Research Projects (01/2018-01/2019)
- A Potential *In Vitro* Scanning Platform for the Treatment of Neuroblastoma  
Funded by: The Scientific and Technological Research Council of Türkiye (09/2015-06/2016)

## **LIST of PUBLICATIONs**

- **Üner G**, Tag Ö, Erzurumlu Y, Kirmizibayrak PB, Bedir E. (2020) *Identification of a Noncanonical Necrotic Cell Death Triggered via Enhanced Proteolysis by a Novel Sapogenol Derivative*, Chem Res Toxicol. 16;33(11):2880-2891
- Gezer E, **Üner G**, Küçüksolak M, Kurt M.Ü, Doğan G, Kirmizibayrak PB, Bedir E. (2022) *Undescribed polyether ionophores from Streptomyces cacaoi and their antibacterial and antiproliferative activities*, Phytochemistry, 195, 113038.
- İlhan R, **Üner G**, Yılmaz S, Sahar EA, Cayli S, Gozen O, Kirmizibayrak PB. (2022) *Novel regulation mechanism of adrenal steroid hormone synthesis via the endogen ERAD inhibitor small VCP- interacting protein (SVIP)*, Scientific Report, 12(1), 869.
- Küçüksolak, M., **Üner, G.**, Ballar Kirmizibayrak, P., & Bedir, E. (2022). *Neuroprotective metabolites via fungal biotransformation of a novel sapogenin, cyclocephagenol*. Scientific Reports, 12(1), 18481.
- **Üner, G.**, Bedir, E., Serçinoğlu, O., & Kirmizibayrak, P. B. (2022) *Non-apoptotic cell death induction via sapogenin based supramolecular particles*. Scientific Reports, 12(1), 13834.
- Kuru, G., **Üner, G.**, & Bedir, E. (2023) *Is telomerase a hidden player? Therapeutic potential of natural telomerase activators against age-related diseases*. Phytochemistry Reviews, 22(1), 35-72.

## **PRESENTATIONS**

### **Oral**

- Küçüksolak, M.; Üner, G.; Ballar-Kırmızıbayrak, P.; Bedir, E. (2022) *Novel neuroprotective metabolites produced via biotransformation of cyclocephagenol by Alternaria eureka 1E1BL1*. 70nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Thessaloniki, Greece
- Üner, G., Bedir, E., Serçinoğlu, O. Kırmızıbayrak, P. B. (2022) *A new perspective to natural product chemistry: non-apoptotic cell death induction via small molecule based supramolecular particles originating from sapogenins*, MMCS2022 Shaping Medicinal Chemistry for the New Decade, Rome, Italy

### **Poster**

- Dizmen, B., Üner, G., Küçüksolak, M., Kırmızıbayrak, P. B., & Bedir, E. (2022). *Secondary metabolites from endophytic fungus Penicillium roseopurpureum and investigation of their cytotoxic activities*. 70nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Thessaloniki, Greece.
- Demir, M., Üner, G., Aygün, M., Kırmızıbayrak, P. B., & Bedir, E. (2022). *Phytochemical Studies on Mastic Gum of Pistacia lentiscus var. chia Collected from Karaburun Peninsula and Neuroprotective Activities of the Isolates*. 70nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Thessaloniki, Greece
- Üner, G., Ballar-Kırmızıbayrak, P., & Bedir, E. (2019). *A new semi-synthetic sapogenol derivative inducing regulated necrosis*. 67th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Innsbruck, Austria, 2019
- Üner, G., Arslan, D., Dogan, A. A., Bedir, E., & Sendemir-Urkmez, A. (2016) *A Potential Natural Product for the Treatment of Neuroblastoma*. Basel Life Science Week, 2016

## **PATENT**

- "AG-08 Molecule That is a Sapogenol Derivative Exhibiting Cytotoxic Effects by Activating the Necrosis Pathway and Synthesis Method Thereof" Inventors: Petek Ballar Kırmızıbayrak, Erdal Bedir, Göklem Üner, Özgür Tağ, Yalçın Erzurumlu. Application number: PCT/TR2020/050351; Registration date: 22.11.2021

## **SKILLS&KNOWLEDGE**

qRT-PCR, Gel Electrophoresis, Detection of enzyme activity, Cell viability tests, Flow cytometry, ELISA, Fluorescence microscope, Immunohistochemistry, Immunoprecipitation, Cell Culture Maintenance, Cell transfection and generating stable cell line, Immunoprecipitation, SDS Page and Western Blotting, Syngeneic tumor model, Intratumoral injection, Column chromatography, Semi-synthesis studies, Structural elucidation of small compounds via spectroscopic methods (1D and 2D NMR, MS).

## **TEACHING EXPERIENCE**

Department of Bioengineering, Izmir Institute of Technology  
(Teaching Assistant)

**2017-Present**

- Biotransport Phenomena
- Bioprocess Engineering
- Biochemistry
- Fundamentals of Biotechnology
- Advanced Structural Characterization
- Drug Design
- Bioengineering Laboratory I