

Melis KÜÇÜKSOLAK

EDUCATION

İzmir Institute of Technology
PhD in Bioengineering
GPA: 3.93/4.00

2015–2022

Thesis: Utilization of Endophytic Fungi and Their Enzymes for Transformation to Obtain Bioactive Compounds, Supervisor: Prof. Dr. Erdal BEDİR

Ege University
BSc in Bioengineering
GPA: 3.72/4.00 – 2nd place

2009–2014



PROFESSIONAL & RESEARCH EXPERIENCE AND SCHOLARSHIPS

Research Assistant
Department of Bioengineering, Izmir Institute of Technology

2017-Present

Scholar
Project: Production of Some Potent Telomerase Activators by Optimization of the Fungal Biotransformation Processes, Isolation and Characterization of the Enzymes Responsible for Transformation, Exploiting Potential of the Active Molecules in Regenerative Medicine
Funded by: The Scientific and Technological Research Council of Türkiye
PI: Prof. Dr. Erdal BEDİR

2020-2022

Merit Scholarship
2211/A National PhD Scholarship Program
Funded by: The Scientific and Technological Research Council of Türkiye

2016-2019

Scholar
Project: Biotransformation of *Astragalus* Cycloartanes by Endophytic Fungi and Investigation of Obtained Metabolites' Effects on Telomerase Activation
Funded by: The Scientific and Technological Research Council of Türkiye
PI: Prof. Dr. Erdal BEDİR

2015-2017

Researcher
Project: Discovery and Development of Telomerase Activators from Natural Sources
Funded by: TA Sciences Corp., USA
PI: Prof. Dr. Erdal BEDİR

2014-2016

SKILLS

Upstream Processes (Fermentation, Microbial Biotransformation, Bioreactors, Scale-Up Studies)
Downstream Processes (Isolation and Purification)
Analytical Method Development (High Performance Liquid Chromatography)

Structure Elucidation (Mass Spectrometry and Nuclear Magnetic Resonance)
Design of Experiment (Program: Design Expert, Minitab)
Bioactivity Screening (Disc Diffusion, Minimum Inhibitory Concentration)
Molecular Biology Techniques (SDS-PAGE, Western Blot)

PUBLICATIONS

Küçükşolak, M.; Yılmaz, S.; Ballar-Kırmızıbayrak, P.; Bedir, E. *Potent Telomerase Activators from a Novel Sapogenin via Biotransformation Utilizing Camarosporium laburnicola, an Endophytic Fungus. Microbial Cell Factories*, 2023: 22 (66).

Küçükşolak, M.; Üner, G.; Ballar-Kırmızıbayrak, P.; Bedir, E. *Neuroprotective Metabolites via Fungal Biotransformation of a Novel Sapogenin, Cyclocephagenol. Scientific Reports*, 2022: 12 (1), 1–15.

Gezer, E.; Üner, G.; **Küçükşolak, M.**; Kurt, M. Ü.; Doğan, G.; Kırmızıbayrak, P. B.; Bedir, E. *Undescribed Polyether Ionophores from Streptomyces cacaoi and Their Antibacterial and Antiproliferative Activities. Phytochemistry*, 2022: 195.

Aksoy, S. Ç.; **Küçükşolak, M.**; Uzel, A.; Bedir, E. *Benzodiazepine Derivatives from Marine-Derived Streptomyces cacaoi 14CM034. Records of Natural Products*, 2021: 15 (6).

Bedir, E.; Karakoyun, Ç.; Doğan, G.; Kuru, G.; **Küçükşolak, M.**; Yusufoglu, H. *New Cardenolides from Biotransformation of Gitoxigenin by the Endophytic Fungus Alternaria eureka 1E1BL1: Characterization and Cytotoxic Activities. Molecules*, 2021: 26 (10), 3030.

Karakoyun, Ç.; **Küçükşolak, M.**; Bilgi, E.; Doğan, G.; Çömlekçi, Y. E.; Bedir, E. *Five New Cardenolides Transformed from Oleandrin and Nerigoside by Alternaria eureka 1E1BL1 and Phaeosphaeria sp. 1E4CS-1 and Their Cytotoxic Activities. Phytochemistry Letters*, 2021: 41, 152–157.

Kızıлтаş, H.; **Küçükşolak, M.**; Duman, S.; Bedir, E. *Flavonol Glycosides from Reseda lutea L. Phytochemistry Letters*, 2019: 30.

PRESENTATIONS

Oral

Küçükşolak, M.; Üner, G.; Ballar-Kırmızıbayrak, P.; Bedir, E. *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, August 2022.*

Yılmaz, S.; **Küçükşolak, M.**; Ballar Kırmızıbayrak, P.; Bedir, E. *Identification of novel Cycloastragenol derivatives as potent NRF2 activators that delay replicative senescence. The 20S Proteasome Degradation Pathway, Rehovot, Israel, January 2023.*

Poster

Gezer, E.; **Küçüksolak, M.**; Bilgi, E.; Bedir, E. *A new iminol derivative from Streptomyces cacaoi in new fermentation conditions*. 70nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Thessaloniki, Greece, August 2022.

Dizmen, B.; Üner, G.; **Küçüksolak, M.**; Ballar-Kırmızıbayrak, P.; Bedir, E. *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, August 2022.

Kuru, G.; **Küçüksolak, M.**; Pulat, G.; Karaman, O.; Bedir, E. *The effects of novel telomerase activators on human adipose-derived mesenchymal stem cell (hAD-MSC) proliferation and osteogenic differentiation*. 70nd International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Thessaloniki, Greece, August 2022.

Küçüksolak, M.; Ekiz, G.; Duman, S.; Yılmaz, S.; Ballar-Kırmızıbayrak, P.; Bedir, E. *Telomerase activators derived from Astragalus sapogenins via biotransformation with the recently discovered endophytic fungus Camarosporium laburnicola*. 67th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Innsbruck, Austria, September 2019.

Gezer, E.; Bilgi, E.; **Küçüksolak, M.**; Bedir, E. *Induction of secondary metabolism of marine derived Streptomyces cacaoi*. 67th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research (GA), Innsbruck, Austria, September 2019.

TEACHING EXPERIENCE

Department of Bioengineering, Izmir Institute of Technology
Teaching Assistant

2017-Present

Biochemistry
Molecular Biology
Bioengineering Lab I - Microbiology Experiments
Applications of Biotechnology in Pharmaceutical Sector
Bioprocess Engineering
Principles of Bioengineering II
Fundamentals of Biotechnology II

Department of Bioengineering, Ege University
Teaching Assistant

2014-2015

Bioengineering Lab III – Isolation and Purification Experiments