

Gökçe Yağmur Summak (Gokce Yagmur Summak)

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Education

2022.06-present	PhD Degree in Ankara University Stem Cell Institute Department of Stem Cell and Regenerative Medicine (4.0/4.0)
2019.07-2022.06	MSc Degree in Ankara University Stem Cell Institute Department of Stem Cell and Regenerative Medicine (3.71/4.0)
2014.09-2019.06	BSc degree in Bilkent University Department of Molecular Biology and Genetics
2009.09-2014.06	Private Nesibe Aydın Anatolian High School

Research Experience

Visitor Scholar (2024.01-present)-Drexel University PI: Prof. Yury Gogotsi
Biomedical applications of MXenes

Graduate Laboratory (PhD and MSc) (2019.09 – present) - Ankara University Stem Cell Institute
PIs: Asst. Prof. Mehmet Altay Ünal and Assoc. Prof. Açelya Yilmazer

MSc Thesis: DMF Treatment Alleviates DOX-Induced Cardiotoxicity on CPCs

Doxorubicin (DOX) is a chemotherapeutic drug; it induces apoptosis by increasing ROS generation and senescence in cardiac progenitor cells (CPCs), known as endogenous cardiac stem cells, which are involved in the regeneration of cardiac cells. Dimethyl Fumarate (DMF) upregulates Nrf2 and activates the Nrf2-Keap1 antioxidant pathway against oxidative stress. Therefore, DMF treatment may protect CPCs from the destructive effect of DOX. In my MSc thesis, I aimed to reduce the destructive effect of DOX with administration of DMF. I measured the cell viability, ROS generation and apoptosis to show that DMF has a potential to be a candidate protective drug against DOX on CPCs.

Currently Studying Project: iPSC generation from PBMC with Sendai virus vectors

Covid19 Disease Map Project: Pathway analysis (Curator) <https://covid.pages.uni.lu/>

Molecular Biology Techniques:

- RNA isolation
- cDNA synthesis
- qPCR and PCR (mRNA grade)
- Protein isolation from cells and tissues
- Western Blotting
- ELISA
- Co-IP
- Flow Cytometry
- BCA Assay
- Exosome isolation and Ultracentrifugation
- Cell Culture
- BSL3 Laboratory Experience

Internship (2018.07. - 2018.08) - Institut für Genetik Universität zu Köln/Institute for Genetics of the University of Cologne
PI: Prof. Dr. Sigrun I. Korsching

Conventional PCR, Gel electrophoresis, cDNA synthesis, cryosectioning, *in situ* hybridization (ISH) for Zebrafish embryos and epithelium tissue of olfactory system

Internship (2017.07 - 2017.08) - Gazi University Faculty of Medicine Department of Medical Microbiology
PI: Prof. Dr. Meltem Yalınay

DNA extraction from different samples (blood, urinary, pituitary, cerebrospinal fluid, throat culture, amniotic fluid, tissues) which obtained from the patients for the detection of desired microorganisms and diseases such as tuberculosis by using RT-PCR. Sequencing for detecting unpredictable microorganisms from conserved 16S region and genotyping to detect the type of Hepatitis C.

Undergraduate Student Laboratory (2014.09 - 2019.06) - Bilkent University

Senior Project with *Asst. Prof. Serkan Göktuna*: Western Blotting, Cell Culture, RNA and Protein isolation

Publications:

1. Unal, M. A., Bayrakdar, F., Fusco, L., Besbinar, O., Shuck, C. E., Yalcin, S., ... Yilmazer, A. 2021. "2D MXenes with antiviral and immunomodulatory properties: A pilot study against SARS-CoV-2". *Nano Today*, 38, 101136.
2. Yilmazer, A., Alagarsamy, K. N., Gokce, C., Summak, G. Y., Rafieerad, A., Bayrakdar, F., Ozturk, B. I., Aktuna, S., Delogu, L. G., Unal, M. A., Dhingra, S., Low Dose of Ti₃C₂ MXene Quantum Dots Mitigate SARS-CoV-2 Infection. *Small Methods* 2023, 2300044. <https://doi.org/10.1002/smt.202300044>
3. Unal, M. A., Bitirim, C. V., Summak, G. Y., Bereketoglu, S., Cevher Zeytin, I., Besbinar, O., ... Akcali, K. C. 2021. "Ribavirin shows antiviral activity against SARS-CoV-2 and downregulates the activity of TMPRSS2 and the expression of ACE2 in vitro". *Canadian Journal of Physiology and Pharmacology*, 99(5), 449–460.
4. Ostaszewski, M., Niarakis, A., Mazein, A., Kuperstein, I., Phair, R., Orta-Resendiz, A., Singh, V., Aghamiri, S. S., Acencio, M. L., Glaab, E., Ruepp, A., Fobo, G., Montrone, C., Brauner, B., Frishman, G., Monraz Gómez, L. C., Somers, J., Hoch, M., Kumar Gupta, S., ... Schneider, R. (2021). COVID19 Disease Map, a computational knowledge repository of virus–host interaction mechanisms. *Molecular Systems Biology*, 17(10). <https://doi.org/10.15252/MSB.202110387>
5. Karaguzel, D., Sarac, B. E., Akel Bilgic, H., Summak, G. Y., Unal, M. A., Kalayci, O., et al. (2021). House dust mite-derived allergens effect on matrix metalloproteases in airway epithelial cells. <https://doi.org/10.1080/01902148.2021.1998734> 47, 436–450. doi:10.1080/01902148.2021.1998734.
6. Arif, T., Bilge, S., Uyar, R., Özçelikay-Akyildiz, G., Summak, G. Y., Unal, M. A., ... & Özkan, S. A. (2024). Biosensors for stem cell-based applications: Current trends and future prospects. *Microchemical Journal*, 110141.
7. Yurdakök Dikmen, B , Pat, Y , Dilekoz, E , Summak, G , Kul, O , Filazi, A . (2020). COVID-19 FARMAKOTERAPİSİ . *Veteriner Farmakoloji ve Toksikoloji Derneği Bülteni* , 11 (2) , 80-114 . DOI: 10.38137/vetfarmatoksbulen.769889
8. Gökçe Yağmur Summak, Ebru Kocakaya, Ömür Beşbinar, & Julia Somers. (2020). Immunometabolic strategies to combat COVID-19 inflammation. Zenodo. <https://doi.org/10.5281/zenodo.4267989> (poster)
9. Julia Somers, Ebru Kocakaya, Gökçe Yağmur Summak, & Ömür Beşbinar. (2020). SARS-CoV-2 and the NLRP3 inflammasome. Zenodo. <https://doi.org/10.5281/zenodo.4267982> (poster)

Skills and Software

- Reactome database
- KEGG pathway database
- WikiPathway database
- CellDesigner
- BioRender
- MATLAB
- RStudio
- JCreator (Java)
- Microsoft Office

Certificates:

Certificate of Animal Use in Experimental Studies

Languages:

- English (IELTS Academic Score: 6.5)
- Korean (B1)
- German (A2.1)

Conferences and Symposia

2020 - 5th Disease Maps Community Meeting (DMCM2020)

2019 - International Symposium on Cellular Therapy in Cardiovascular Medicine: Stem Cell Opportunity

2015 - Molecular Medicine and Immunology, Bilkent University Department of MBG

Fellowships:

- MX-MAP Horizon Europe Marie Curie Staff Exchanges program project named “MXenes’ biomedical applications by high-dimensional immune MAPping” (Project Number: 101086184) (2024.01-present)
- Full postgraduate performance scholarship-2250. Granted by TUBITAK-BIDEB (2022.06 - Present)
- Postgraduate Scholarship - Project: 20AG003, Regenerative and Restorative Medicine Research and Applications, 1004 - Center of Excellence Support Program. Granted by The Scientific and Technological Research Council of Turkey (TUBITAK). (2021.06 – present)
- Postgraduate Scholarship – Project: 13, Effectiveness of Existing Drug Active Substances Against COVID-19, In-Silico, In-Vitro and In-Vivo, Research Scholarship and Support Directorate, 2247-C Intern Researcher Scholarship Program. Granted by TUBITAK Scientist Support Department (BIDEB). (2020.06 - 2021.06)
- Postgraduate Scholarship - Project: 119O343, *in silico* and *in vitro* Investigation of the Effects of Structural Changes in Pediocin Molecule for its Antimicrobial Activity, 1001. Granted by TUBITAK. (2020.02 - 2020.05)
- 50% Scholarship by OSYM Placement for undergrad education at Ihsan Doğramacı Bilkent University. (2014.09 - 2019.06)

References:

Prof. Dr. Kamil Can Akçalı – *Ankara University School of Medicine, Department of Biophysics*
E-mail: akcali@ankara.edu.tr

Assoc. Prof. Açelya Yılmaz Aktuna - *Ankara University Faculty of Engineering, Department of Biomedical Engineering*

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