

## POLEN KOÇAK

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### EDUCATION

- Ph.D. in Biotechnology, Yeditepe University, İstanbul, Turkey, January 2017 – March 2021  
*Thesis Title: The effect of (Triticum Aestivum) Wheat Derived Exosomes on Cutaneous Acute and Chronic Wound Healing (Şahin, F., Koçak, P., Güneş, M.Y. et al. In Vitro Wound Healing Activity of Wheat-Derived Nanovesicles. Appl Biochem Biotechnol 188, 381–394, 2019)*
- Research Scholar at BIRC Division of Engineering in Medicine BWH, Harvard Medical School, MA, US  
Research Title: Nanofunctionalized hybrid bioink with exosome-liposome fused nanoparticles for direct cellular reprogramming (Elkhoury, K.; Koçak, P.; Kang, A.; Arab-Tehrany, E.; Ellis Ward, J.; Shin, S.R. *Engineering Smart Targeting Nanovesicles and Their Combination with Hydrogels for Controlled Drug Delivery. Pharmaceutics 2020, 12, 849. <https://doi.org/10.3390/pharmaceutics12090849>*)
- M.Sc. in Genetics and Bioengineering, Yeditepe University, İstanbul, Turkey, September 2015 - January 2017  
*Thesis Title: Development of The Poly (2-Ethyl-2-Oxazoline) (Petox) Based Multifunctional Carrier Systems for Treatment and Diagnosis of Prostate Cancer (Kocak, P., Oz, U. C., Bolat, Z. B., Ozkose, U. U., Gulyuz, S., Tasdelen, M. A., ... Telci, D. (2020). The utilization of poly(2-ethyl-2-oxazoline)-b-poly(ε-caprolactone) ellipsoidal particles for intracellular BIKDDA delivery to prostate cancer. Macromolecular Bioscience, e2000287).*
- B.Sc. in Genetic and Bioengineering, Yeditepe University, İstanbul, Turkey, September 2009 - June 2014
- High School: Nişantaşı Nuri Akın Anatolian High School, September 2005- June 2009

### WORK EXPERIENCE

09/2021 Assistant Professor, İstinye University Biomedical Engineering

08/2020 –Still Cellestetix Biotechnology, Acıbadem University Incubation Center, İstanbul, Turkey

- Cellestetix is a biotech startup developing AI based genetic testing kits and personal products.

2019-Still Research Scholar at BIRC Division of Engineering in Medicine BWH, Harvard Medical School, MA, US

- The Shin Lab uses a multi-disciplinary approach to develop nano-biomaterials combined with micro and nano fabrication technologies for engineering tissue or organs for various biomedical application.
- I am working as a research scholar at Shin Laboratory at BIRC Division of Engineering in Medicine BWH, on the research about Cardiac Reprogramming using

exosomes and liposomes. The research is basically focused on the Nano functionalization and bio fabrication of natural hydrogels for various tissue engineering applications.

12/2014 –08/2015 Liv Hospital Group, İstanbul, Turkey – Center for Regenerative Medicine and Stem Cell Research & Manufacturing.

- Working as a geneticist and bioengineer at Liv Hospital (Istanbul/Ulus) Center for Regenerative Medicine and Stem Cell Research & Manufacturing. My responsibilities including cell culture techniques, flow cytometry analysis, genetic analysis, gene expression analysis, telomerase activity tests, mycoplasma detection of the biological products (cell/tissue products) produced in the GMP (Good Manufacturing Practices) laboratories, before applying to the patients.

06/2014 – 12/2014 Harvard-MIT Health Sciences & Technology and Harvard Medical School / Brigham and Women's Hospital, Khademhosseini Lab

- The Khademhosseini Lab uses a multi-disciplinary approach, to develop microscale and nanoscale technologies with the ultimate goal of generating tissue-engineered organs and controlling cell behavior. I worked as a research trainee in Harvard- MIT (HST) Division of Health Science and Technology, Harvard Medical School, Brigham and Women's Hospital, Khademhosseini Lab, Cambridge, MA on the research about the development of next generation anti-cancer drug based on multi-functional Salmonella using tumor-on-a-chip test platform. In addition, I also worked on the research about promoting the polarization of Macrophages towards an M2 phenotype in micropatterned 3D hydrogels.

06/2013 – 09/13 Bahçeci IVF Center, Fulya, İstanbul

- I worked as an intern at Bahçeci IVF center R&D department on the research included the preparation and setting up the research project involving Human endometrial stem cells and their preclinical application in fertility restoration.

04/2012 – 10/2012 Student Assistant, Immunology Laboratory, Yeditepe University, İstanbul

- My job is to assist experiments with the help of the supervisor as a undergraduate researcher in May Korachi's immunogenetics laboratory.

06/2011 – 10/2011 College Program Member, Walt Disney World, Orlando, United States

- International College Student Program, this program allows students to connect with people from across the globe, create lifelong experiences and be immersed in an English-speaking environment. Additionally, gain valuable leadership, presentation and customer service skills.

06/2010 – 09/2010 Student Assistant, Galatasaray University, Yener Boran Art Gallery, Ortaköy, İstanbul

## **PROJECTS INVOLVED**

- Nanofunctionalized hybrid bioink with exosome-liposome fused nanoparticles for direct cellular reprogramming
- The effect of Wheat Derived Exosomes on Cutaneous Acute and Chronic Wound Healing.
- The Development of an Exosome Based Anti-Cancer Drug.
- The Poly (2-ethyl-2-oxazoline) (Petox) Based Multifunctional Carrier Systems for Treatment and Diagnosis of Prostate Cancer. TUBITAK 1003 Project, #213M726

## SCHOLARSHIP AND AWARDS

- TUBITAK 2211-C Priority National Doctorate Scholarship Program for the Fields, Qualified for Scholarship, 2019 -1, 01.03.2019 - 30.09.2021.
- Kagider, Türkiye'nin Kadın Girişimcisi Yarışması, Finalist
- Women in Business Award Yeditepe University

## PUBLICATIONS

- *S Gulyuz, UU Ozkose, P Kocak, D Telci, O Yilmaz..., In-vitro cytotoxic activities of poly (2-ethyl-2-oxazoline)-based amphiphilic block copolymers prepared by CuAAC click chemistry. - Express Polymer Letters, 2018*
- *Şahin, F., Koçak, P., Güneş, M.Y. et al. In Vitro Wound Healing Activity of Wheat-Derived Nanovesicles. Appl Biochem Biotechnol 188, 381–394, 2019)*
- *P Kocak, S Canikyan, M Batukan, R Attar, F ŞAHİN..., Comparison of enzymatic and nonenzymatic isolation methods for endometrial stem cells- Turkish Journal of Biology, 2016*
- *Elkhoury, K.; Koçak, P.; Kang, A.; Arab-Tehrany, E.; Ellis Ward, J.; Shin, S.R. Engineering Smart Targeting Nanovesicles and Their Combination with Hydrogels for Controlled Drug Delivery. Pharmaceutics 2020, 12, 849.*
- *S Gulyuz, D Bayram, UU Ozkose, ZB Bolat, P Kocak... , Synthesis, biocompatibility and gene encapsulation of poly (2-Ethyl 2-Oxazoline)-dioleoyl phosphatidylethanolamine (PEtOx-DOPE) and post-modifications with peptides and fluorescent dye coumarin, International Journal of Polymeric Materials and ..., 2020*
- *Hollands P. Tiryaki T. , Canikyan S. , Koçak P. , Cohen S. , Sterodimas A. , Schlaudraff K. U. , Scheflan M., Adipose-derived Stromal Vascular Matrix (SVM): a new paradigm in regenerative medicine, CellR4, 2021*
- *P Kocak, UC Oz, ZB Bolat, UU Ozkose, S Gulyuz... -, The Utilization of Poly (2-ethyl-2-oxazoline)-b-Poly (ε-caprolactone) Ellipsoidal Particles for Intracellular BIKDDA Delivery to Prostate Cancer, Macromolecular Bioscience, 2021*
- *KT Tiryaki, S Cohen, P Kocak, S Canikyan Turkay... , In-Vitro Comparative Examination of the Effect of Stromal Vascular Fraction Isolated by Mechanical and Enzymatic Methods on Wound Healing, Aesthetic Surgery Journal, 2020*
- *T Tiryaki, A Condé-Green, SR Cohen, S Canikyan, P Kocak, A 3-step Mechanical Digestion Method to Harvest Adipose-derived Stromal Vascular Fraction, Plastic and Reconstructive Surgery Global Open, 2020*
- *Sahin Fikrettin Kocak Polen\*,Kala Ezgi Yagmur , Gunes Merve , Unsal Naz , Yilmaz Hazal , Metin Buse, Edible plant-derived exosomes and their therapeutic applications. Journal of Biomedical Imaging and Bioengineering, 2020*
- *P Kocak, S Canikyan, M Batukan, R Attar, F Sahin..., Effect of enzymatic and non-enzymatic isolation methods of endometrial stem cells on their cell proliferative potential and mesenchymal stem cell characteristics, FEBS JOURNAL, 2016*

## **PATENTS**

- *ŞAHİN, F., YILDIRIM, M., KOÇAK, P., & ULUKAN, B. (2019). ISO 690*

## **EXPERIMENTAL SKILLS**

- Genetic Engineering techniques
- Exosome isolation, purification and characterization
- DNA sequencing (NGS, Miseq)
- Flow-Cytometry (FACS Calibur), Clinical Flow Cytometry
- Cell Culture (Cell viability assays, gene and protein expression techniques)
- Tissue Culture
- Gene Cloning (DNA and RNA Preparation, PCR, RT-PCR, DNA Electrophoresis, Homology Modelling, Use of Bioinformatics Tools, Sample Preparation for Microarray Analysis)
- Mycoplasma detection of the biological products, telomerase activity tests, endotoxin analysis
- Biochemical Studies (Western Blotting, Protein purification, Protein Electrophoresis, Enzyme Kinetics)
- Bioengineering
- Structure Based Drug Design

## **TEACHING EXPERIENCE**

- Lab instructor for CHEM215 course: Analytical Chemistry Laboratory
- Lab instructor for GBE404 course: Molecular Biology Laboratory
- Lab instructor for GBE302 course: Biochemistry Laboratory
- Teaching assistant for GBE302 course: Biochemistry

## **TALKS**

- MBK on air, Online Meeting, Yıldız Technical University, February 2021
- IUPSAINTE Online Meeting, İstanbul University, January 2021
- Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA, September 2019
- Yeditepe WEB
- Hello Tomorrow x Facebook Başlat Programme
- 2014 – Genetics and Bioengineering days at Yeditepe University

## **CONFERENCES & WORKSHOPS**

- 2019- Next Generation Diagnostics, Wyss Institute, Boston, MA, USA
- 2017- Broad Institute, Boston, MA, USA
- 2014- Genetics and Bioengineering days at Yeditepe University
- 2014– Harvard-MIT Health Sciences & Technology and Harvard Medical School / Brigham and Women's Hospital, New coming students training and safety program
- 2013 – Genetics and Bioengineering days at Yeditepe University (Also worked in the organization committee)

- 2012 –Molecular Biology and Genetics Weekend, Boğaziçi University (Bioengineering seminars)
- 2011 – Walt Disney World Collage Program Training

## **LANGUAGES**

Turkish (native), English (fluent), German (intermediate)