Sajedeh Ghasemi

Biomedical engineer

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ABOUT ME

I hold a master's degree in Biomedical Engineering with research interests centered on cellular and molecular neuroscience, particularly how microenvironmental and structural cues influence neural cell behavior. During my master's studies, I worked as a research assistant investigating stem cell differentiation, which allowed me to develop strong technical skills in gene expression analysis, animal handling and disease modeling, cell culture, and imaging techniques such as DAPI analysis and scanning electron microscopy (SEM). These experiences have deepened my interest in applying cellular and molecular approaches to understand neural function and dysfunction. I am now seeking PhD positions in neuroscience, especially those focused on cell culture–based studies of neural development and related mechanisms.

EDUCATION

M.Sc., Biomedical Engineering (Tissue engineering) *2019-2023*
Tehran University, Tehran
GPA: 18.36/20

Thesis: "Investigating the Impact of Epigallocatechin Gallate on the Differentiation of Dental Stem Cells towards Osteogenic Fate"
Advisor: Dr. Hosein Shahsavarani
Courses: Cell Culture Systems and lab, Engineering of Stem Cells, Cellular mechanics, Histopathology Application in Tissue Engineering
Merit-based Full Tuition Waiver Scholarship for Undergraduate Studies in 2014

B.Sc., Materials Engineering *2014-2018*
University of Kashan, Kashan
GPA: 16.68/20

Thesis: "Investigation of Phase Transformation-Induced Corrosion of Nickel-Titanium Shape Memory Alloy"
Courses: Mechanical Properties of Material, Physical Chemistry of Materials, Physical Properties of Material, Crystallography and Lab
Merit-based Full Tuition Waiver Scholarship for Undergraduate Studies in 2014

PUBLICATIONS

- *Hasanzadeh. Ahmad, Alipour. Atefeh, Ghasemi. Sajedeh, Hosseini. Saadi, Farrokhi. Naser, Wang. Peng-Yuan, Zarrabi. Ali, Mohammadi. Javad, Shahsavarani. Hosein; "Proanthocyanidin-Imbued Cellulosic 3-Dimentional Intrinsic Aligned Nanostructures: A Novel Approach for Dental and Bone Regeneration using Dental Pulp Derived Stem Cells, 2024, S2468-2179(24)00151-5, https://doi.org/10.1016/j.jsamd.2024.100820*
- *Ghasemi. Sajedeh, Hasanzadeh. Ahmad, Shahsavarani. Hosein, Alipour. Atefe. "Investigating the Effect of the Structure of Plant-Based Scaffolds Modified with Epigallocatechin Gallate on the Fate of Dental Mesenchymal Stem Cells" (In preparation, Based on Master's Thesis)*
- ***Conference:** "Decellularized Coleus amboinicus and Echium vulgare leaves: a potential natural nanostructure matrix for stem cell tissue engineering"; 5th International TPCF Preclinical Imaging Symposium, 2022, Tehran.*

ACADEMIC PROJECTS

- *Optimization of Plant Tissue Decellularization Methods - Shahid Beheshti University, 2021*

Problem Statement: *Develop cost-effective natural plant-based scaffolds as alternatives to synthetic scaffolds for tissue engineering.*

Compared and evaluated multiple decellularization techniques to determine the most suitable methods for diverse plant tissues.

- *Extraction of Dental Stem Cells from Milk Tooth Pulp - Pasteur Institute, 2022*

Problem Statement: *Identify the most efficient method for isolating dental stem cells.*

Applied and tested various stem cell isolation techniques reported in scientific literature to optimize extraction efficiency.

- *Culturing Bone Marrow–Derived Mesenchymal Stem Cells on Plant-Based Scaffolds, 2022*

Problem Statement: *Assess the suitability of plant-derived scaffolds as platforms for tissue engineering applications.*

Evaluated cell viability and cytotoxicity of mesenchymal stem cells cultured on prepared plant-based scaffolds.

- *Induction of Liver Cirrhosis and Varicocele in a Mouse Model - GeneIran Research Institute, 2020*

Problem Statement: *Establish an animal model to study pathological effects of disease progression and assess therapeutic interventions.*

Induced liver cirrhosis and varicocele in mice and analyzed resulting pathological signs.

- *Genotyping of Polymorphisms in Schizophrenia Patients Using GAP-PCR, 2024*

Problem Statement: *Differentiate treatment-responsive from treatment-resistant schizophrenia patient samples.*

Designed primers for polymorphism detection and conducted GAP-PCR assays on patient-derived blood samples.

CERTIFICATES

Essential Lab Skills and Molecular Biology Techniques *(100 hours)* *2024*
Nucleic acid purification, primer design, PCR methods (multiplex, ARMS, real-time), gel electrophoresis, laboratory solution preparation, instrument handling, and Sanger sequencing data analysis. *GeneIran Research Institute*

Laboratory Animal Handling Internship *(50 hours)* *2020*
Anesthesia, surgical procedures, tissue extraction for histotechnology, and estrous cycle analysis; administering treatments (injections, gavage) and collecting biological samples (blood, serum) *GeneIran Research Institute*

Bioinformatics Internship *(30 hours)*
Gene/protein databases (NCBI, dbSNP, Gene Expression Atlas), sequence alignment, phylogenetic analysis, molecular modeling (homology, docking, dynamics), and tools such as BioLinux, SnapGene, and Cytoscape — *2020 GeneIran Research Institute*

Blood Sampling and Injection Training — *2021 GeneIran Research Institute*
Nanomaterials Synthesis Introduction and Training — *2012 Isfahan Textile Research Institute Course*

RESEARCH EXPERIENCES

Research Assistant — *2022- 2023*
Pasteur Institute's Regenerative Medicine Department
Cell culture, MTT test, real-time PCR, RNA extraction, DNA extraction

Research Assistant at — *2021-2022*
Shahid Beheshti University in Tehran
Optimization of decellularization methods, surface modification of scaffolds, SEM analysis

Research Assistant — *2020-2021*
University of Tehran
Culturing mesenchymal stem cell, BET Staining

VOLUNTEER EXPERIENCE

Clinical Assistant — *2019-2020*
Tebyar Sanat Isfahan Company
Monitoring COVID-19 Patients

SOFT SKILLS

Time management
Team work
Verbal and written communication
Creativity

TECHNICAL AND LAB SKILLS

Cell culture
Animal handling
PCR techniques
Bioinformatics
Gwyddion cfx maestro
Gene runner
GraphPad Prism
Origin

HONORS AND AWARDS

- *Ranked 44th in the Iran's Graduate Admission Exam (Master's level)* — *2019*
- *Awarded 4th place in the National Heat Treatment Competition* — *2018*
- *Awarded 3rd place at the National Nanotechnology Festival (Nanomaterials Synthesis)* — *2012*

- Synthesis of TiO2/SiO2 Nanocomposite Using the Sol-Gel Method for the Fabrication of Air Purification Filters

REFERENCES

Dr. Hosein Shahsavarani
Assistant Professor of Biotechnology, Department of Biotechnology
Shahid Beheshti University of Medical Sciences, Tehran, Iran.
Email: hosein.shahsavarani@gmail.com

- evaluating toxicity and accumulation of cells cultured on scaffolds
- Developing and modifying decellularization protocols of plant scaffolds.
- Surface modification and coating of scaffolds

Dr. Javad Mohammadi
Associate Professor
College of Interdisciplinary Science and Technology, Tehran University, Tehran, Iran.
Email: javad.mohammadi@ut.ac.ir

- Attended the course “Engineering of Stem Cells”
- Attended the course “Histopathology Application in Tissue Engineering”
- Analyzed the surface topography of plant-derived scaffolds using SEM