

Curriculum Vitae

Behnaz Bakhshandeh

Associated Professor

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RESEARCH INTEREST

Tissue Engineering and Regenerative Medicine, Stem Cells, Epigenetics, Medical Biotechnology, Bioengineering, Science and Technology Parks

EDUCATIONAL BACKGROUND

- 2007-2012 **PhD Degree** (third step of **Direct PhD program of Biotechnology***)
Department of Biotechnology, University of Tehran, Tehran, Iran
Thesis title: Comparative Evaluation of microRNA patterns in undifferentiated mesenchymal stem cells, differentiated chondrocytes and osteoblasts. Under the supervision of Dr. Masoud Soleimani (ORCID iD: 0000-0003-1972-7771) and Dr Elahe Elahi, Performed jointly at Tarbiat Modares University.
- 2004-2007 **MSc Degree** (second step of **Direct PhD program of Biotechnology**)
Department of Biotechnology, University of Tehran, Tehran, Iran
Thesis title: Investigation of the relationship between point polymorphisms in SNPs in NOD2 and TLR2 genes and susceptibility to leishmaniasis in the Iranian population. Under the supervision of Dr. Sima Rafati (ORCID iD: 0000-0002-7221-1320), Performed jointly at Pasteur Institute of Iran.
- 2000-2004 **BSc Degree** (first step of **Direct PhD program of Biotechnology**)
Department of Biotechnology, University of Tehran, Tehran, Iran
- 1993-2000 **Diploma** in Natural and Experimental Sciences
NODET (National Organization for Development of Exceptional Talents)

PROFESSIONAL APPOINTMENTS

- Since 2012 Associated Professor, Department of Biotechnology, College of Science, University of Tehran, Tehran, Iran
- Since 2013 Founder and Head of Advanced Medical Biotechnology Laboratory, University of Tehran, Tehran, Iran

HONORS / AWARDS

- 2021 Review Editor on the Editorial Board of Integrative and Regenerative Pharmacology, specialty section of Frontiers in Pharmacology journal.
- 2014 Conductor of Exemplary research achievement, Exhibition of selected findings and achievements of research and technology, University of Tehran

* This program leads to a direct Ph.D. degree through intermediately BSc. and MSc. degrees that are conferred at intermediary stages upon student's demand. The program accepts only about ten students each year, who must have either demonstrated an outstanding performance in Nationwide Entrance Exam for universities (Konkour) or are Olympiad medalists. This program includes three steps which equals to BSc., MSc. and PhD.

- 2012 Ranked 15th in the 18th Razi Medical Sciences Research Festival
- 1999 Ranked 17th in Nationwide Entrance Exam (Konkour) for universities among about 500,000 participants
- 1998 Won a Silver Medal in National Biology Olympiad

GRANTS / FELLOWSHIPS

- 2016 Ranked 3rd and achieved research grant, 18th Kharazmi Youth Festival
- 2012 Young Assistant Professor Fellowship, National Elite Foundation
- 2011 Exemplary PhD student award, University of Tehran
- 2002-2011 Exceptional Talents Fellowship, Ministry of Science, Research and Technology
- 1999-2011 Fellowship of High Ranks in National Entrance Exam, University of Tehran

PUBLICATIONS

1. Babaie, A., **Bakhshandeh, B.**, Abedi, A., Mohammadnejad, J., Shabani, I., Ardeshtyrlajimi, A., Moosavi, S. R., Amini, J., Tayebi, L. (2020) Synergistic effects of conductive PVA/PEDOT electrospun scaffolds and electrical stimulation for more effective neural tissue engineering. *European Polymer Journal* 140, 110051.
2. Abedi, A., **Bakhshandeh, B.**, Babaie, A., Mohammadnejad, J., Vahdat, S., Mombeiny, R., Moosavi, S. R., Amini, J., Tayebi, L. (2020) Concurrent application of conductive biopolymeric chitosan/polyvinyl alcohol/MWCNTs nanofibers, intracellular signaling manipulating molecules and electrical stimulation for more effective cardiac tissue engineering. *Materials Chemistry and Physics* 258, 123842.
3. Abdollahi Boraie SB, Nourmohammadi J, **Bakhshandeh B**, Dehghan MM, Gholami H, Gonzalez Z, Sanchez-Herencia AJ, Ferrari B. Capability of core-sheath polyvinyl alcohol-Polycaprolactone emulsion electrospun nanofibrous scaffolds in releasing strontium ranelate for bone regeneration. *Biomed Mater*. 2021 Feb;16(2):025009.
4. Talaei A, Mazaheri S, Bayat E, **Bakhshandeh B**, Sabzalinejad M, Damough S, Mahboudi F, Nematollahi L, Talebkhan Y. Production of Soluble and Functional Anti-TNF- α Fab' Fragment in Cytoplasm of E. coli: Investigating the Effect of Process Conditions on Cellular Biomass and Protein Yield Using Response Surface Methodology. *Protein J*. 2021 May 23. doi: 10.1007/s10930-021-09996-3.
5. **Bakhshandeh B**, Sorboni SG, Javanmard AR, Mottaghi SS, Mehrabi MR, Sorouri F, Abbasi A, Jahanafrooz Z. Variants in ACE2; potential influences on virus infection and COVID-19 severity. *Infect Genet Evol*. 2021 Feb 17; 90:104773.
6. **Bakhshandeh B**, Jahanafrooz Z, Abbasi A, Goli MB, Sadeghi M, Mottaqi MS, Zamani M. Mutations in SARS-CoV-2; Consequences in structure, function, and pathogenicity of the virus. *Microb Pathog*. 2021 Mar 13; 154:104831.
7. Abdollahi Boraie, S. B., Nourmohammadi, J., **Bakhshandeh, B.**, Dehghan, M. M., Gonzalez, Z., Ferrari, B. (2020) The Effect of Protelos Content on the Physicochemical,

Mechanical and Biological Properties of Gelatin-Based Scaffolds. *Journal of Applied Biotechnology Reports* 7, 41-47.

8. Abdollahi Boraie, S. B., Nourmohammadi, J., **Bakhshandeh, B.**, Dehghan, M. M., Gholami, H., Calle Hernández, D., Gonzalez, Z., Ferrari, B. (2020) Enhanced osteogenesis of gelatin-halloysite nanocomposite scaffold mediated by loading strontium ranelate. *International Journal of Polymeric Materials and Polymeric Biomaterials*, 1-11.
9. Vahdat, S., Pahlavan, S., Mahmoudi, E., Barekat, M., Ansari, H., **Bakhshandeh, B.**, Aghdami, N., Baharvand, H. (2019) Expansion of Human Pluripotent Stem Cell-derived Early Cardiovascular Progenitor Cells by a Cocktail of Signaling Factors. *Sci Rep* 9, 16006.
10. Vahdat, S., Pahlavan, S., Aghdami, N., **Bakhshandeh, B.**, Baharvand, H. (2019) Establishment of A Protocol for in Vitro Culture of Cardiogenic Mesodermal Cells Derived from Human Embryonic Stem Cells. *Cell J* 20, 496-504.
11. Mombini, S., Mohammadnejad, J., **Bakhshandeh, B.**, Narmani, A., Nourmohammadi, J., Vahdat, S., Zirak, S. (2019) Chitosan-PVA-CNT nanofibers as electrically conductive scaffolds for cardiovascular tissue engineering. *Int J Biol Macromol* 140, 278-287.
12. Zarrintaj, P., **Bakhshandeh, B.**, Saeb, M. R., Sefat, F., Rezaeian, I., Ganjali, M. R., Ramakrishna, S., Mozafari, M. (2018) Oligoaniline-based conductive biomaterials for tissue engineering. *Acta Biomater* 72, 16-34.
13. Oftadeh, M. O., **Bakhshandeh, B.**, Dehghan, M. M., Khojasteh, A. (2018) Sequential application of mineralized electroconductive scaffold and electrical stimulation for efficient osteogenesis. *J Biomed Mater Res A* 106, 1200-1210.
14. Vahdat, S., **Bakhshandeh, B.** (2018) Prediction of putative small molecules for manipulation of enriched signalling pathways in hESC-derived early cardiovascular progenitors by bioinformatics analysis. *IET Systems Biology* 13, 77-83.
15. Zamanlui, S., Mahmoudifard, M., Soleimani, M., **Bakhshandeh, B.**, Vasei, M., Faghihi, S. (2018) Enhanced chondrogenic differentiation of human bone marrow mesenchymal stem cells on PCL/PLGA electrospun with different alignments and compositions. *International Journal of Polymeric Materials and Polymeric Biomaterials* 67, 50-60.
16. Zarrintaj, P., **Bakhshandeh, B.**, Rezaeian, I., Heshmatian, B., Ganjali, M. R. (2017) A Novel Electroactive Agarose-Aniline Pentamer Platform as a Potential Candidate for Neural Tissue Engineering. *Sci Rep* 7, 17187.
17. Shahrabi, S., Kaviani, S., Soleimani, M., Pourfathollah, A. A., **Bakhshandeh, B.**, Hajizamani, S., Saki, N. (2017) MicroRNA Modulation during the In vitro Culture of Hematopoietic Stem Cells Prior to Transplantation. *Iran J Med Sci* 42, 40-47.
18. Rasekhi, M., Soleimani, M., **Bakhshandeh, B.**, Sadeghizadeh, M. (2017) A novel protocol to provide a suitable cardiac model from induced pluripotent stem cells. *Biologicals* 50, 42-48.
19. Jahanafrooz, Z., Motamed, N., **Bakhshandeh, B.** (2017) Effects of miR-21 downregulation and silibinin treatment in breast cancer cell lines. *Cytotechnology* 69, 667-680.

20. **Bakhshandeh, B.**, Zarrintaj, P., Oftadeh, M. O., Keramati, F., Fouladiha, H., Sohrabi-Jahromi, S., Ziraksaz, Z. (2017) Tissue engineering; strategies, tissues, and biomaterials. *Biotechnol Genet Eng Rev* 33, 144-172.
21. **Bakhshandeh, B.**, Kamaledin, M. A., Aalishah, K. (2017) A Comprehensive Review on Exosomes and Microvesicles as Epigenetic Factors. *Curr Stem Cell Res Ther* 12, 31-36.
22. Zarrintaj, P., Rezaeian, I., **Bakhshandeh, B.**, Heshmatian, B., Ganjali, M. R. (2017) Bio-conductive scaffold based on agarose-polyaniline for tissue engineering. *Journal of Skin and Stem Cell* 4.
23. Sadeghi, M., **Bakhshandeh, B.**, Dehghan, M. M., Mehrnia, M. R., Khojasteh, A. (2016) Functional synergy of anti-mir221 and nanohydroxyapatite scaffold in bone tissue engineering of rat skull. *J Mater Sci Mater Med* 27, 132.
24. Jahanafrooz, Z., Motameh, N., **Bakhshandeh, B.** (2016) Comparative Evaluation of Silibinin Effects on Cell Cycling and Apoptosis in Human Breast Cancer MCF-7 and T47D Cell Lines. *Asian Pac J Cancer Prev* 17, 2661-2665.
25. Zare, M., Soleimani, M., Akbarzadeh, A., **Bakhshandeh, B.**, Aghaee-Bakhtiari, S. H., Zarghami, N. (2015) A Novel Protocol to Differentiate Induced Pluripotent Stem Cells by Neuronal microRNAs to Provide a Suitable Cellular Model. *Chem Biol Drug Des* 86, 232-238.
26. Sarvari, S., Seyedjafari, E., Amoozgar, M. A., **Bakhshandeh, B.** (2015) The effect of moderately halophilic bacteria supernatant on proliferation and apoptosis of cancer cells and mesenchymal stem cells. *Cell Mol Biol (Noisy-le-grand)* 61, 30-34.
27. Mohamadyar-Toupkanlou, F., Vashghani-Farahani, E., **Bakhshandeh, B.**, Soleimani, M., Ardeshtyrlajimi, A. (2015) In Vitro and In Vivo investigations on fibronectin coated and hydroxyapatite incorporated scaffolds. *Cell Mol Biol (Noisy-le-grand)* 61, 1-7.
28. Havasi, P., Soleimani, M., Morovvati, H., **Bakhshandeh, B.**, Nabiuni, M. (2014) The proliferation study of hps cell-derived neuronal progenitors on poly-caprolactone scaffold. *Basic Clin Neurosci* 5, 117-123.
29. Gheidari, F., **Bakhshandeh, B.**, Teimoori-Toolabi, L., Mehrtash, A., Ghadir, M., Zeinali, S. (2014) TCF4 silencing sensitizes the colon cancer cell line to oxaliplatin as a common chemotherapeutic drug. *Anticancer Drugs* 25, 908-916.
30. Ziraksaz, Z., Nomani, A., Soleimani, M., **Bakhshandeh, B.**, Arefian, E., Haririan, I., Tabbakhian, M. (2013) Evaluation of cationic dendrimer and lipid as transfection reagents of short RNAs for stem cell modification. *Int J Pharm* 448, 231-238.
31. Ranji, N., Sadeghizadeh, M., Shokrgozar, M. A., **Bakhshandeh, B.**, Karimipour, M., Amanzadeh, A., Azadmanesh, K. (2013) MiR-17-92 cluster: an apoptosis inducer or proliferation enhancer. *Mol Cell Biochem* 380, 229-238.
32. Havasi, P., Nabioni, M., Soleimani, M., **Bakhshandeh, B.**, Parivar, K. (2013) Mesenchymal stem cells as an appropriate feeder layer for prolonged in vitro culture of human induced pluripotent stem cells. *Mol Biol Rep* 40, 3023-3031.
33. Hafizi, M., Atashi, A., **Bakhshandeh, B.**, Kabiri, M., Nadri, S., Hosseini, R. H., Soleimani, M. (2013) MicroRNAs as markers for neurally committed CD133+/CD34+ stem cells derived from human umbilical cord blood. *Biochem Genet* 51, 175-188.

34. Ahvaz, H. H., Mobasheri, H., **Bakhshandeh, B.**, Shakhssalim, N., Naji, M., Dodel, M., Soleimani, M. (2013) Mechanical characteristics of electrospun aligned PCL/PLLA nanofibrous scaffolds conduct cell differentiation in human bladder tissue engineering. *J Nanosci Nanotechnol* 13, 4736-4743.
35. Hafizi, M., **Bakhshandeh, B.**, Soleimani, M., Atashi, A. (2012) Exploring the enkephalinergic differentiation potential in adult stem cells for cell therapy and drug screening implications. *In Vitro Cell Dev Biol Anim* 48, 562-569.
36. **Bakhshandeh, B.**, Soleimani, M., Paylakhi, S. H., Ghaemi, N. (2012) A microRNA signature associated with chondrogenic lineage commitment. *J Genet* 91, 171-182.
37. **Bakhshandeh, B.**, Soleimani, M., Hafizi, M., Paylakhi, S. H., Ghaemi, N. (2012) MicroRNA signature associated with osteogenic lineage commitment. *Mol Biol Rep* 39, 7569-7581.
38. **Bakhshandeh, B.**, Soleimani, M., Hafizi, M., Ghaemi, N. (2012) A comparative study on nonviral genetic modifications in cord blood and bone marrow mesenchymal stem cells. *Cytotechnology* 64, 523-540.
39. **Bakhshandeh, B.**, Hafizi, M., Ghaemi, N., Soleimani, M. (2012) Down-regulation of miRNA-221 triggers osteogenic differentiation in human stem cells. *Biotechnol Lett* 34, 1579-1587.
40. Ahvaz, H. H., Soleimani, M., Mobasheri, H., **Bakhshandeh, B.**, Shakhssalim, N., Soudi, S., Hafizi, M., Vasei, M., Dodel, M. (2012) Effective combination of hydrostatic pressure and aligned nanofibrous scaffolds on human bladder smooth muscle cells: implication for bladder tissue engineering. *J Mater Sci Mater Med* 23, 2281-2290.
41. **Bakhshandeh, B.**, Soleimani, M., Ghaemi, N., Shabani, I. (2011) Effective combination of aligned nanocomposite nanofibers and human unrestricted somatic stem cells for bone tissue engineering. *Acta Pharmacol Sin* 32, 626-636.
- Positive Synergism of Carbon Quantum Dot/Alginate Nanocomposite and Electrical Stimulation on Chondrogenic and Osteogenic Differentiation of Stem Cells, Mahsa Kord-Mostafapour, Behnaz Bakhshandeh, Fatemeh Yazdian, Hamid Rashedi, Meisam Omid, Rezvan Tavakoli, Mehrab Pourmadadi, submitted.
- Microvesicles as Magic Bullets for Hormone-Free Cell Therapy of Bone Defects, Shiva Daryani, Behnaz Bakhshandeh, Bahman Zeynali, submitted.
- Comparative Evaluation of Dendrimer and Lipofectamine for Transfection of Short RNA into Breast Cancer Cells, Behnaz Bakhshandeh, Zohreh Jahanafrooz, Erfan Shirzadi, submitted.
- The Influence of iPSC-derived Microvesicles on Stemness Potential of Mesenchymal Stem Cells, Fatemeh Foroughi Fard, Behnaz Bakhshandeh, Negar Vahdani, Bahareh Hassan Sichani (submitted).
- Human iPSC-Derived Microvesicles Presented a Notable Potential for Skin Rejuvenation and Regeneration, Behnaz Bakhshandeh, Zohreh Jahanafrooz, Shiva Allahdadi, Shiva Daryani, Mahya Sadeghi, Mohammad Mehdi Dehghan, submitted.
- Manipulation of Biochemical and Biophysical Factors for Engineering Functional Tissues, Behnaz Bakhshandeh, Nika Ranjbar, Elahe Amiri, Ali Abedi, Mohammad-Reza Mehrabi, Ardeshir Abbasi, Cristian Pablo Pennisi, submitted.

- Advances in the Applications of Spider Silk in Biomedical Issues, Behnaz Bakhshandeh, Seyedeh Saba Nateghi, Mohammad Maddah Gazani, Zahra Dehghani, Fatemeh Mohammadzadeh, submitted.
- New Analytical Methods Using Carbon-Based Nanomaterials for Detection of Salmonella Species as A Major Food Poisoning Organism in Water and Soil Resources, Behnaz Bakhshandeh, Shokufeh Ghasemian Sorboni, Dorrin Mohtadi Haghighi, Fatemeh Ahmadi, Zahra Dehghani, Alireza Badiei, submitted.

BOOKS

- 2009 Bakhshandeh B. Askary A. **Petroleum Biotechnology** (In Persian). 1st ed. Research Institute of Petroleum Industry press. ISBN: 9786009135318, containing Microbial Desulfurization & denitrogenation, Single Cell Protein, Aerobic & Anaerobic Hydrocarbon Biodegradation, Thermophiles in Oil Industry.
- 2011 Bakhshandeh B. Hamidimotlaq R. Khajeh K. **Medical Biotechnology, From Science to Market** (In Persian). House of Biology Press. ISBN: 978-964-2605-93-4, containing Drug Delivery, Expression Systems, Stem Cells, Monoclonal Antibodies, Gene Therapy and Antisense Technology, Biotechnology Market, Downstream Process in Biotechnology Industry, Clinical Trials, Post-Translation Modifications in Biopharmaceuticals.

CONFERENCES/ ABSTRACTS

- 2021 Behnaz Bakhshandeh, Bone Tissue Engineering; Advances and Challenges, 21th National & 9th International Congress on Biology (lecture)
- 2021 Zahra Mohseni, Behnaz Bakhshandeh. " Applications of Bacterial Cellulose in Tissue Engineering and Regenerative Medicine". 2nd International Conference on Nanotechnology & Nanoscience, Iran (Abs)
- 2018 Shiva Allahdadi, Behnaz Bakhshandeh, Shiva Daryani, Mahya Sadeghi, and Najmeh Seyedkatooli. "The effect of iPS cell-derived microvesicles on stemness characteristics of MSCs." 1st nanotechnology in health sciences congress, Iran (Abs)
- 2018 Ehsan Qasemi, Mohammad Mehdi Dehghan, Behnaz Bakhshandeh, Sirous Sadeghian Chaleshtori, Masoumeh Jabbari Fakhr. "Evaluation of the Osteogenic Induction of Adipose Tissue-Derived Mesenchymal Stem Cells by OCS-B Collagen Scaffold and Osteoblast-Derived Microvesicles." 1st nanotechnology in health sciences congress, Iran (Abs)
- 2018 Morteza Molaei, Mohammad Mahjoob, and Behnaz Bakhshandeh. "Combinational methods of scaffold fabrication for joint-cartilage tissue engineering application." The First International Iranian Tissue Engineering and Regenerative Medicine Congress, Iran (Abs)
- 2018 Fereshteh Jafarbeglou, Behnaz Bakhshandeh, and Mohammad Nazari. "Application of mechanotransduction in induction of efficient and targeted differentiation into the stem cells." The First International Iranian Tissue Engineering and Regenerative Medicine Congress, Iran (Abs)
- 2016 Behnaz Bakhshandeh, Mohammad Ali Jafari, and Mohammad Gafar Sedigh Damghanizadeh. "a model for promotion of post-graduate theses into knowledge-based spin-offs." 20th annual conference asian science park association (ASPA), Hyderabad, India (Abs)
- 2016 Bakhshandeh B. MicroRNAs in Osteogenic Differentiation of Unrestricted Somatic Stem Cells, 3rd International Conference on Stem Cells and Cancer: Proliferation, Differentiation, and Apoptosis, New Delhi, India (lecture)
- 2015 Sadaf Vahdat, Hassan Ansari, Behnaz Bakhshandeh, Nasser Aghdami, and Hossein Baharvand. "long-term expansion and characterization of human pluripotent stem cells-derived cardiac progenitor cells." ISSCR, Stockholm, Sweden (Abs)

2016 Payam Zarrintaj, Behnaz Bakhshandeh, Eiraj Rezaeiyan Bajgiran, Behnam Heshmatian, and Mohammadreza Ganjali. "Conductive amphiphilic polymer co network (APCN) scaffold for neuraltissue engineering based on agarose-aniline pentamer-polycaprolactone: Synthesis, drug release and cell culture studies." 3rd Iranian Congress on Progress in Tissue Engineering and Regenerative Medicine, Iran (lecture)

2016 Seyyed Behnam Abdollahi, Jhamak Nourmohammadi Kouhanestani, Behnaz Bakhshandeh, and Mohammad Mehdi Dehghan. "Bisphosphonate drugs in tissue engineering, as a novel method for bone regenerative." 3rd Iranian Congress on Progress in Tissue Engineering and Regenerative Medicine, Iran (Abs)

2014 Bakhshandeh B., The Role of Non-Coding RNAs in Differentiation, The 1st Comprehensive National Congress of Novel Findings in Biology, Tehran, Iran (lecture)

2014 Sohrabi S, Bakhshandeh B. Selective laser sintering for scaffold fabrication for tissue engineering, 1st National Congress on Application of Biomaterials in Regenerative Medicine, Tehran, Iran (Abs)

2013 Mohammad Amin Kamaledin, and Behnaz Bakhshandeh. A tale of two vesicles: exosomes and microvesicles as RNA transporting vehicles in intercellular communication. 24th European students conference, Berlin, Germany (Abs)

2009 Bakhshandeh B, Soleimani M, Shahrzad Z, Ghaemi N. The comparison between the hydroxyapatite nanoparticle and hydroxyapatite scaffold in osteoblast differentiation, 5th conference on hydroxyapatite and related products, Munich, Germany (Abs)

2009 Bakhshandeh B, Shahrzad Z. The Future of Biopharmaceutic's Production, International Conference on Chemical, Biological & Environmental Engineering, Nanyang Technological University, Singapore (lecture)

2008 Bakhshandeh B, Shahrzad Z. Industrial production of biopharmaceutics, Chemical Nanotechnology Talks IX, Frankfurt, Germany (Abs)

2007 Bakhshandeh B, Y. Taslimi, D. Eravani, M. Mahmoudi, A.A. Shamsian, A. Dessein, Rafati S. NOD2 and TLR2 gene polymorphism in cutaneous leishmaniasis due to l. tropica infection, The First International Congress on Health Genomics and Biotechnology, Pasteur institute, Iran (Abs)

2005 Bakhshandeh B, Delalat B, Soleimani M. The Expansion and Differentiation of Umbilical Cord Blood CD133+ Cells into Neurons, the 6th Royan International Congress on Reproductive Biomedicine, Yakhteh (the cell), 7: 42 Iran (lecture)

PROJECTS

Date	Title	Position	Granting Agency
Since 2020	Fabrication and evaluation of nerve conductors with electrical induction with the aim of repairing peripheral nerve lesions	Director	National Elite Foundation
2020	Reverse engineering of vesicular derivatives of stem cells with the aim of producing skin rejuvenating creams	Director	Iran National Science Foundation
Since 2019	Design of network management systems for digital economy development and technology grant	Director	ICT Park

2019	Synergistic study between induction effects of quantum dot carbon / alginate nanocomposite substrate and electrical stimulation on encapsulated mesenchymal stem cell differentiation into bone and cartilage cells	Director	Iran National Science Foundation
2019	Production of skin rejuvenating and repairing creams based on induced pluripotent stem cell derivatives	Director	The Vice-Presidency for Science and Technology Affairs
2018	Bone tissue engineering	Director	National Elite Foundation
2018	Increased survival and proliferation of human proliferative cells derived from pluripotent cells using small molecules under specified culture conditions	Co-investigator	Royan Institute
2017	Engineering Rat skull bone tissue using conductive scaffolds and electrically induced stem cells	Director	The Vice-Presidency for Science and Technology Affairs
2017	Evaluation of differentiation of mesenchymal stem cells into cartilage cells on PLGA-PCL nanofiber scaffold in perfusion bioreactor	Co-investigator	National Institute of Genetic Engineering and Biotechnology
2014	Evaluation of the efficacy of co-application of bone marrow mesenchymal stem cells treated with anti-mir-221 and nanofiber scaffolds to engineer rat skull bone tissue in vivo	Director	Iran National Science Foundation
2013	Investigation of osteogenic differentiation of stem cells by microvesicles	Director	Stem Cell Technology Research Center

Since 2013 Evaluating 20 research projects for Iran National Science Foundation

Since 2014 Evaluating 25 research and technology projects for The Vice-Presidency for Science and Technology Affairs

2014-2018 Evaluating 42 technology-based projects for Science and Technology Park, University of Tehran

Since 2020 Evaluating 20 technology-based projects for Young Scientists Festivals

TEACHING EXPERIENCE

Instructor, University of Tehran, Since 2012

Course titles:

- Molecular Genetics (undergraduate), 3 times

- Research Strategies (undergraduate), 5 times
- Essentials of Medical Biotechnology (undergraduate), 11 times
- Principals of Genetics (undergraduate), 4 times
- Scaled Up Production (undergraduate), 2 times
- Microbial Biotechnology (undergraduate), 4 times
- Stem Cells and Regenerative Medicine (graduate), 7 times
- Cell and Tissue Culture (graduate), 3 times
- Cellular and Molecular Immunology (graduate), 2 times
- Advanced Molecular Biology (graduate), 2 times
- Biologic Products (graduate), 2 times
- Acid Nucleic Based Technology (graduate), 3 times
- Biomaterials and Tissue Engineering (graduate), 8 times
- Advanced Genetic Engineering (graduate), 2 times
- Commercialization in Biotechnology (graduate), 1 time

SUPERVISED AND ADVISED THESES

2021 Supervisor of MSc student (M. Mehrabi), Microbial Biotechnology, University of Tehran

Thesis title: Microbial cloning of genes involved in skin repair and rejuvenation processes with the aim of making a commercial recombinant construct

2020 Supervisor of PhD student (B. Abdollahi), Biomaterials, University of Tehran

Thesis title: The effect of supplementation of strontium ranelate to scaffolds as a new release system for bone regeneration

2019 Supervisor of MSc student (A. Talaie), Biotechnology, University of Tehran

Thesis title: Cloning and comparison of the expression of Fab fragment of Certolizomab anti-TNF-alpha antibody in E. coli hosts

2019 Supervisor of MSc student (E. Ahmadi), Chemical Engineering, University of Tehran

Thesis title: Fabrication and characterization of graphene oxide- incorporated polycaprolactone-cellulose acetate composite scaffold for neural tissue regeneration

2019 Supervisor of PhD student (S. Vahdat), Biotechnology, University of Tehran

Thesis title: Increased survival and proliferation of human precursor stem cells derived from pluripotent stem cells under specified culture

2018 Supervisor of MSc student (M. Molaie), Mechanical Engineering, University of Tehran

Thesis title: Design and implementation of a new method for the production of articular cartilage tissue scaffolding

2018 Supervisor of PhD student (P. Zarrintaj), Chemical Engineering, University of Tehran

Thesis title: Aniline oligomer synthesis and coupling to agarose for neural disorder regeneration

2018 Supervisor of Veterinary student (E. Ghasemi), Veterinary Medicine, University of Tehran

Thesis title: Evaluation of the effects of bovine cancellous bone mineral and collagen (OCS-B collagen) and adipose-derived stem cells induced by extra membranous vesicles in healing of critical size bone defect in rat calvarium

2017 Supervisor of MSc student (M. Mostafapour), Chemical Engineering, University of Tehran

Thesis title: Differential effects of carbon quantum dot on encapsulated mesenchymal stem cells into bone, cartilage and nerve tissues in the nanocomposite substrate of carbon quantum dot/alginate

2017 Supervisor of MSc student (R. Mahdaviifar), Chemical Engineering, University of Tehran

Thesis title: Conductive polymer scaffold based on alginate and aniline oligomer to improve treatment of damaged nerve tissue

2017 Supervisor of PhD student (Z. Jahanafrooz), Biology, University of Tehran

Thesis title: The effect of silibinin and anti-miR21 on apoptosis and cell cycle in 7-MCF and T47D breast cancer cell lines

2017 Supervisor of MSc student (M.O. Oftadeh), Biotechnology, University of Tehran

Thesis title: Bone tissue engineering with the help of electrically induced mesenchymal stem cells

2016 Supervisor of MSc student (A. Abedi), Medical Engineering, University of Tehran

Thesis title: Cardiac Tissue engineering using simultaneous induction of Small molecules and electrical stimulation on chitosan based conductive scaffolds

2016 Supervisor of MSc student (A. Babaie), Medical Engineering, University of Tehran

Thesis title: Application of conductive scaffolds containing PEDOT conductive polymer for nerve tissue engineering applications

2016 Supervisor of MSc student (S. Daryani), Biology, University of Tehran

Thesis title: Investigation of induction of differentiation of stem cells into bone line by microvesicles

2016 Supervisor of MSc student (M. Akbar Shirazian), Biology, University of Tehran

Thesis title: Investigation of the chondrogenic differentiation of mesenchymal stem cells by microvesicles

2016 Supervisor of MSc student (F. Foroughi), Biology, University of Tehran

Thesis title: Evaluation of the stemness durability of in vitro cultured stem cells using assays of their shed-microvesicles

2015 Supervisor of MSc student (S. Mombeini), Medical Engineering, University of Tehran

Thesis title: Using chitosan-based electrical conducting scaffolds for cardiac tissue engineering

2015 Supervisor of MSc student (M. Zargarbashi), Biology, University of Tehran

Thesis title: The effect of anti-miR21 on Bcl2 gene expression in MDA - MB - 231 breast cancer cell line

2015 Supervisor of MSc student (M. Sadeghi), Chemical Engineering, University of Tehran

Thesis title: Evaluation of simultaneous application of anti-mir221, mesenchymal stem cells and nanofiber scaffolds containing hydroxyapatite nanoparticles for Bone tissue engineering to repair defects in the rat skull

2014 Supervisor of MSc student (R. Lal), Nanobiotechnology, University of Tehran

Thesis title: The effect of microRNA-221 on induction of bone differentiation in mesenchymal cells on polycaprolactone nanofiber scaffolds containing hydroxyapatite nanoparticles

2013 Supervisor of MSc student (F. Gheidari), Biotechnology, University of Tehran

Thesis title: Evaluation of the effect of TCF4 inhibition on the sensitivity of the therapeutic response of colon cancer cells

2021 Advisor of MSc student (M. Kalateh), Chemical Engineering, University of Tehran

Thesis title: Fabrication of nanobiosensor based on aptamer to diagnose the ovarian cancer utilizing g-C₃N₄

2015 Advisor of MSc student (S. Sarvari), Biotechnology, University of Tehran
Thesis title: Investigation of the effect of culture supernatant of 10 halophilic bacteria on the growth of stem cells and cancer cells

2015 Advisor of MSc student (N. Damavandi), Biotechnology, University of Tehran
Thesis title: Establishment of an engineered CHO cell line for the expression of recombinant proteins using the simultaneous use of the integrase insertion system of R4 and Phic31

LAB SKILLS

Cellular Skills

- Western blot
- Flow cytometry
- Immunocytochemistry
- Apoptosis assay
- Cell culture
- ELISA
- Cell proliferation assay, MTT

Molecular Skills

- PCR, RT-PCR, Real-Time qPCR
- Gene Cloning
- Primer designing
- RNA and DNA purification
- Agarose gel electrophoresis, SDS-PAGE
- Gene silencing (siRNA)
- Stably DNA transfection into cell lines

Computer Skills

- Microsoft Office
- Photoshop
- End Note, SPSS
- Gene Runner, Primer3, Oligo Analyzer
- REST

LANGUAGE

Persian (Mother tongue), English (Upper Intermediate).

EXECUTIVE EXPERIENCES

- | | |
|------------|---|
| Since 2020 | Official Justice Expert in the field of Biotechnology, Iranian Association of Official Experts |
| Since 2019 | Senior Consultant to the President of ICT Park, member of the Referee Recognition Committee and the ICT Park Education and Research Committee |
| 2020 | Consultant and leader of the Secretariat of the Technology Grant Program, Ministry of Science, Research and Technology |
| Since 2017 | Expert mentor for technology cores supported by the National Elite Foundation |
| 2016 | Secretary of the first national award in stem cells and regenerative medicine, Vice-Presidency for Science and Technology |
| 2015-2018 | Member of the Admission and Evaluation Council, Science and Technology Park of the University of Tehran |
| 2015-2018 | Director of Center for Entrepreneurship, Science & Technology Park, University of Tehran |
| Since 2013 | Secretary of the Stem Cell committee, University of Tehran |
| 2013-2015 | Head of Department of Biotechnology, College of Science, University of Tehran |