

Arefeh Basiri

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Education:

- **PhD in Tissue Engineering,**
School of Advanced Technologies in Medicine, Tehran University of Medical Sciences, Tehran, Iran. 2015- 2019.
- **MSc in Biomedical Engineering-Tissue Engineering,**
Faculty of New Sciences and Technologies, University of Tehran, Tehran, Iran. 2010-2013.
- **BSc in Animal Biology,**
College of Biology, Tarbiat Moalem University of Tehran, Tehran, Iran. 2006-2010.

Teaching experience:

- 2D & 3D Cell Culture for tissue engineering PhD students
- Cells, Tissues and Organs Biobanks for tissue engineering PhD students

Executive secretary at webinars Entitled:

- Microfluidic systems in tissue engineering and regenerative medicine, 2021
- Bioreactors in tissue engineering and regenerative medicine, 2021

Research Interests:

- Tissue Engineering
- Expansion and differentiation of stem cells and iPSCs
- Scaffold synthesis, hydrogel fabrication
- 3D printing & bioprinting
- Bioreactor & microfluidic systems

Research Projects:

Chondrogenic Differentiation of Endometrial Stem Cells on Silk fibroin/ Decellularized Wharton's jelly hydrogel (Ph.D dissertation)

Performed at:

- Core facilities of **Tehran University of Medical Sciences**, Tehran, Iran.
Under direction of Prof. Dr. Jafar Ai.

- Stem Cell Department of **Royan Institute**, Tehran, Iran. Under direction of Prof. Dr. Mohammadreza Baghaban Eslaminejad.
- Cell Bank Department of **Pastor Institute**, Tehran, Iran. Under direction of Dr. Mehdi Farokhi.

Evaluation of nasal septum chondrocyte culture on PCL/PLGA hybrid nanofiber with insulin controlled release ability (MSc Thesis)

Performed at:

- Research Center of new Technologies in Biomedical Engineering, **University of Tehran**, Tehran, Iran. under direction of Dr. Ghasem Amoabedini.
- **Stem Cell Technology Research Center**, Tehran, Iran and **Tarbiat Modares University**, Tehran, Iran. Under direction of Dr. Masoud Soleimani.
- **Clean Room of Shariatee hospital**, Tehran, Iran and **Children's Medical Center, Imam Khomeini Hospital**, Tehran, Iran. under direction of Dr. Mohammad Vasei.

Supervision:

I am currently serving as the co-supervisor or consulting supervisor of some researchers at Isfahan University of Medical Sciences and University of Tehran.

Honor and Awards:

- Talented student in BSc, MSc and Ph.D
- The first-ranked in PhD entrance exam
- The first-ranked in comprehensive exam in PhD
- The first-ranked among Ph.D majormates
- The second-ranked among MSc majormates
- The second-ranked among BSc majormates

Membership:

- Member of Iranian tissue engineering and regenerative medicine society (ITERM)
- Member of Universal Scientific Education and Reaserch Network(USERN)
- Member of Systematic Review and Meta-analysis Expert Group (SRMEG)
- Member of Regenerative Medicine Group (REMEDI)

Patent:

PCL/PLGA hybrid Nanofiber with Insulin Controlled Release, Basiri A, Amooabediny GH, Vasei M, Solimani M, 2014.

Publications:

- Golchin A, Shams F, Basiri A, Ranjbarvan P, Kiani S, Sarkhosh-Inanlou R, Ardeshirylajimi A, Gholizadeh-Ghaleh Aziz S, Sadigh S, Rasmi Y. Combination Therapy of Stem Cell-derived Exosomes and Biomaterials in the Wound Healing. *Stem Cell Reviews and Reports*. 2022, 26:1-20.
- Basiri A, Mansouri F, Azari A, Ranjbarvan P, Zarein F, Heidari A, Golchin A. Stem cell therapy potency in personalizing severe COVID-19 treatment. *Stem Cell Reviews and Reports*, 2021, 1-21.
- Ebrahimi L, Farzin A, Ghasemi Y, Alizadeh A, Goodarzi A, Basiri A, Maria Zahiri, Ahmad Monabati, Ai J. Metformin-Loaded PCL/PVA Fibrous Scaffold Preseeded with Human Endometrial Stem Cells for Effective Guided Bone Regeneration Membranes. *ACS Biomaterials Science & Engineering*, 7(1), 2020, 222-231.
- Basiri A, Heidari A, Nadi MF, Fallahy MT, Nezamabadi SS, Sedighi M, Saghadzadeh A, Rezaei N. Microfluidic devices for detection of RNA viruses. *Reviews in medical virology*. 2020, 1:e2154.
- Basiri A, Pazhouhnia Z, Beheshtizadeh N, Hoseinpour M, Saghadzadeh A, Rezaei N. Regenerative medicine in COVID-19 treatment: real opportunities and range of promises. *Stem cell reviews and reports*. 2020, 20:1-3.
- Hasanzadeh E, Mahmoodi N, Basiri A, Esmaeili Ranjbar F, Hassannejad Z, Ebrahimi-Barough S, Azami M, Ai J, Rahimi-Movaghar V. Proanthocyanidin as a crosslinking agent for fibrin, collagen hydrogels and their composites with decellularized Wharton's-jelly-extract for tissue engineering applications. *Journal of Bioactive and Compatible Polymers*, 2020, 35(6), 554-571.

- Hasanzadeh E, Ebrahimi-Barough S, Mahmoodi N, Mellati A, Nekounam H, Basiri A, Asadpour S, Ghasemi D, Ai J. Defining the role of 17 β -estradiol in human endometrial stem cells differentiation into neuron-like cells. *Cell Biology International*. 2020.
- Mahmoodi N, Ai J, Ebrahimi-Barough S, Hassannejad Z, Hasanzadeh E, Basiri A, Vaccaro AR, Rahimi-Movaghar V. Microtubule stabilizer epothilone B as a motor neuron differentiation agent for human endometrial stem cells. *Cell Biology International*. 2020 May;44(5):1168-83.
- Basiri A, Hashemibeni B, Kazemi M, Valiani A, Aliakbari M, Ghasemi N. Cartilage tissue formation from human adipose-derived stem cells via herbal component (Avocado/soybean unsaponifiables) in scaffold-free culture system. *Dental Research Journal*. 2020 Jan;17(1):54.
- Basiri A, Farokhi M, Azami M, Ebrahimi-Barough S, Mohamadnia A, Rashtbar M, Hasanzadeh E, Mahmoodi N, Eslaminejad MB, Ai J. A silk fibroin/decellularized extract of Wharton's jelly hydrogel intended for cartilage tissue engineering. *Progress in biomaterials*. 2019 Mar 1;8(1):31-42.
- Hasanzadeh E, Ebrahimi-Barough S, Mirzaei E, Azami M, Tavangar SM, Mahmoodi N, Basiri A, Ai J. Preparation of fibrin gel scaffolds containing MWCNT/PU nanofibers for neural tissue engineering. *Journal of Biomedical Materials Research Part A*. 2019 Apr;107(4):802-14.
- Basiri A, Vasei M, Soleimani M. Preparing PCL/PLGA Hybrid Nanofiber Scaffold Capable of Controlled Releasing of Insulin for Cartilage Tissue Engineering Application. *SSU_Journals*. 2014 Aug 10;22(3):1175-86.

Conference presentations (Oral and Poster):

Oral presentations:

- Chondrogenic potential of piacledine as a herbal drug in micromass 3D culture. *Tissue Engineering Congress*, 2015.
- Insulin-coated PCL/PLGA for cartilage regeneration, *TERMIS-eu*, 2013.

Poster presentations:

- In vitro modeling of disease as a paving road into personalized medicine: with an eye to COVID19, *International Conference on Biotechnology and Global Development*, 2021.
- The potential of Wharton's Jelly in regenerative medicine applications, *1th International Conference on Biotechnology and Global Development*, 2021.
- The role of microfluidic devices in point-of-risk conditions such as COVID19, *5th USERN congress*, 2020.
- Multiwall carbon nanotubes/polyurethane composite fibers suitable for neural tissue engineering, *Nanofiber congress*, 2018.

- The effect of epothilone B on HB9 expression in motor neuron-like cell differentiation of human endometrial stem cells, ITERM congress, 2018.
- Decellularized Wharton's Jelly as an Appropriate Material for Tissue Engineering Application, ITERM congress, 2018.
- Tissue engineered fibrin/polyurethane hydrogel scaffold suitable for neural regeneration, ITERM congress, 2018.
- The effect of avocado/soybean unsaponifiables (piasclidine) on viability of human articular chondrocytes and adipose derived stem cells, Royan International Twin Congress, 10th Congress on Stem Cell Biology and Technology, 2014.

Research assistant:

- Effect of Wharton jelly extracellular matrix on polyhydroxybutyrate-chitosan / carbon nanotubes nanofibers for using in cartilage tissue engineering, Isfahan University of Medical Sciences, Isfahan, Iran.
- Evaluation of physicochemical and biological properties of electrospun scaffold polyhydroxybutyrate-extracellular matrix Wharton's jelly/ carbon nanotubes, modified by plasma method for using in cartilage tissue engineering, Isfahan University of Medical Sciences, Isfahan, Iran.
- Evaluation of Insulin Controlled Release of the Nanoliposome synthesized by Sonication and HPH, Research Center of new Technologies in Biomedical Engineering, University of Tehran, Tehran, Iran.
- The effect of Piasclidine on Expansion of Chondrocytes and Adipose Derived Stem Cells, Isfahan University of Medical Sciences, Isfahan, Iran.
- The role of Piasclidine in Chondrogenic Differentiation of Adipose Derived Stem Cells, Isfahan University of Medical Sciences, Isfahan, Iran.
- The effect of Wharton's jelly on collagen and fibrin hydrogels with or without crosslinking, Tehran University of Medical Sciences, Tehran, Iran.
- Fabrication of fibrin/polyurethane hydrogel scaffold seeded with endometrial stem cells differentiated into neural cells for repair and regeneration of spinal cord injury, Tehran University of Medical Sciences, Tehran, Iran.

- Evaluation of efficacy of self-assembling peptide scaffold containing epothilon B-loaded nanoparticles on axon elongation of motor neuron like cells derived from human endometrial stem cells, Tehran University of Medical Sciences, Tehran, Iran.
- Fabrication of PLA/PCL/Gelatin particles containing metformin using freeze casting/freeze drying method intended for regeneration and bone tissue engineering (in vitro and in vivo studies), Shiraz University of Medical Sciences, Shiraz, Iran and Tehran University of Medical Sciences, Tehran, Iran.
- Evaluation of the performance of alginate hydrogel scaffold containing Valproate Sodium-loaded chitosan nanoparticles and hydrogel/ Valproate Sodium-loaded PVA/chitosan nanofiber composite scaffold with endometrial mesenchymal stem cells for spinal cord tissue engineering in a rat model, Tehran University of Medical Sciences, Tehran, Iran.
- Taurine-loaded PCL nanofiber as a conduit for sciatic nerve regeneration in a rat model, , Tehran University of Medical Sciences, Tehran, Iran.
- Evaluation of the performance of alginate hydrogel scaffold containing berberine-loaded chitosan nanoparticles and hydrogel/ berberine-loaded PCL nanofiber composite scaffold with endometrial mesenchymal stem cells for spinal cord tissue engineering in a rat model, Tehran University of Medical Sciences, Tehran, Iran.
- Osteogenic differentiation of human placental stem cells in silk fibroin/ WJ-ECM hydrogel, Tehran University of Medical Sciences, Tehran, Iran.

Translation of Books:

Principles of Tissue Engineering, ISBN: 978-600-408-428-4, 2017.

Technical Skills:

- Working at Clean Rooms (clean room of emam Khomeini hospital and clean room of Shariati hospital, Tehran, Iran)
- Reological study and analysis (Amplitude sweep, Frequency sweep, Time sweep)
- Decellularization and Recellularization of tissues (physical and chemical techniques)
- Cell Culture (2D and 3D)
- Flow cytometry
- Electrospinning
- Preparing samples for SEM imaging

- Preparing samples for histological staining
- Working with microtome and cryostat
- Histological Staining (H&E, Alcian Blue, Toluidin Blue,...)
- Immunohistochemistry and Immunofluorescence studies
- Soybean nanoliposome fabrication by sonication and HPH as a drug carrier
- Cytotoxicity tests [Direct and Indirect (insert well) MTT, XTT,...]
- Live/Dead assay
- ELISA and RIMA tests
- FTIR (Fourier transform infrared spectroscopy) analysis
- GAG assay
- Collagen Soluble and Insoluble Assay
- Silk fibroin gelation setup by sonication
- Working with Satellite mill and cryomill