

## **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,**  
Faculty of Biological Sciences, Kharazmi University, 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
- Development, Repair & Regeneration of Organs for tissue engineering PhD students
- Special Topics for Bioelectric PhD students

### **Executive secretary at webinars entitled:**

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

### **Organizer of current clinical meetings generally entitled:**

- Repair & Regeneration of Different Tissues and Organs: approaches, challenges and opportunities

### **Research Interests:**

- Tissue Engineering
- Stem Cells
- Scaffold synthesis, Hydrogel fabrication
- 3D printing & Bioprinting
- Bioreactor & Microfluidic systems

### **Honor and Awards:**

- Talented student in BSc, MSc and Ph.D
- The first-ranked in Ph.D 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
- The second-ranked in problem solving competitions of the National Elite Foundation
- Top cited paper among work published in an issue between 1 January 2021 - 15 December 2022 entitled Microfluidic devices for detection of RNA viruses

### **Membership:**

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

### **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.

#### **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.
- **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.

**Recent 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.
- Fabrication and Evaluation of Umbilical Cord Extracellular Matrix Hydrogel Containing Carbon Nanotubes in order to Cartilage Tissue Engineering Applications, Isfahan University of Medical Sciences, Isfahan, Iran.

**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, Ardeshiryajimi 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, Saghazadeh 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, Saghazadeh 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  $17\beta$ -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:**

- 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, 1<sup>st</sup> International Conference on Biotechnology and Global Development, 2021.
- The role of microfluidic devices in point-of-risk conditions such as COVID19, 5<sup>th</sup> 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 (piascledine) on viability of human articular chondrocytes and adipose derived stem cells, Royan International Twin Congress, 10<sup>th</sup> Congress on Stem Cell Biology and Technology, 2014.
- Chondrogenic potential of piascledine as an herbal drug in micromass 3D culture. Tissue Engineering Congress, 2015.
- Insulin-coated PCL/PLGA for cartilage regeneration, TERMIS-eu, 2013.

### **Translation of Book:**

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 cryostate
- Histological Staining (H&E, Alcian Blue, Toloidin Blue,...)
- Immunohistochemistry and Immunofluorescence studies
- Soybean nanoliposom fabrication by sonication and HPH as a drug carrier
- Cytotoxicity tests [Direct and Indirect (insert well) MTT,...]
- Live/Dead assay
- ELISA tests
- FTIR (Fourior transform infrared spectroscopy) analysis
- GAG assay
- Collagen Soluble and Insoluble Assay
- Silk fibroin gelation setup by sonication
- Milling and cryomilling