

## About:

Leila Taghiyar earned her B.Sc in Animal Biology from University of Isfahan, Isfahan, Iran. Then she continued her graduate studies in University of Lorestan jointly with Royan Institute, where she studied on differentiation of bone marrow derived-mesenchymal stem cells (BmMSCs) into cartilage lineage. After graduation, she joined to Bone and cartilage team of Royan Institute in 2006 and continued her research studies in professor Eslaminejad's lab at Royan Institute. They used BmMSCs cultured on collagen scaffold in patients with osteoarthritis disease as a clinical trial study for the first time, in Iran. Furthermore, she got interested in using of stem cells in limb regeneration. To pursue her interest, she started her PhD studies on limb regeneration; Specifically, she developed new blastema like-cells of BmMSCs induced by *Msx1* and *Msx2* genes for the first time that have great regenerative potential in mouse digit tip amputated. Currently, she is an Assistant Professor in bone and cartilage Group of Royan institute and her research is focused on limb regeneration, bone and cartilage differentiation and tissue engineering of bone and cartilage and its clinical utilization.

## Research interests:

### **Bone & cartilage tissue engineering/ regenerative medicine/ limb regeneration**

The manufacture of new constructs contains whole organ decellularized as a biological scaffolds or bio-printing technology to fabricate 3D fictional scaffolds for Bone, cartilage and digit/limb with custom shapes along with stem cells is the correct aim of our research group. Our group is also interested to use of new cell-free therapeutic approaches such as extracellular matrix (EVs) and ECM- derived MSCs as some new therapeutic methods in bone and cartilage disease/limb regeneration in animal models.

## Selected Publications:

- Mohamadreza Baghaban Eslaminejad, Aghbibi Nikmahzar, Leila **Taghiyar**, Samad Nadri, Mohamad Massumi. *Murine mesenchymal stem cells isolated by low density primary culture system*. Develop. Growth Differ. 2006; 48,361-370
- Mohamadreza Baghaban Eslaminejad, Aghbibi Nikmahzar, Leila **Taghiyar**, Samad Nadri, Mohamad Massumi. *Murine mesenchymal stem cells isolated by low density primary culture System keep differentiation potential up to passage 10*. *Cell Reseach*, 2006,16: S36-S37
- Mohamadreza Baghaban Eslaminejad, Fahimeh Falahi, Hamid nazarian, **Leila Taghiyar**. *Differentiation Potential and Culture Requirements of Mesenchymal Stem cells from Ovine Bone Marrow for Tissue Regenetation Applications*. J of IJVS, Vol. 2, No. 5, 2007
- Mohamadreza Baghaban Eslaminejad, Hamid nazarian, **Leila Taghiyar**, *Mesenchymal stem cell isolation from the removed medium of rat's bone merrow primary culture and their differentiation into cell lineages*, cell Journal, Vol:10, No:1 Spring 2008
- Mohamadreza Baghaban Eslaminejad, **Leila Taghiyar**, Fahimeh Falahi. *Co-Culture of Mesenchymal stem cells with Mature Chondrocytes: Producing cartilage construct for Application in Cartilage Regeneration*. Journal of IJMS. Vol. 34, No.4, 2009.
- Mohamadreza Baghaban Eslaminejad, **Leila Taghiyar**, Fahimeh Falahi. *Quantitative Analysis of the Proliferation and Differentiation of Rat Articular Chondrocytes in Alginate 3D Culture*. Iranian Journal of Biomedical. Vol. 13, No.3, 2009.
- Mohsen Emadedin, Naser Aghdami, **Leila Taghiyar**, Roghayeh Fazeli, Reza Moghadasali, Shahrbanoo Jahangir, Reza Farjad, Mohamadreza Baghaban Eslaminejad. *Intra-articular Injection*

*of Autologous Mesenchymal Stem Cells in Six Patients with Knee Osteoarthritis*. Archives of Iranian Medicine, Volume 15, Number 7, July 2012.

- Fekrazad R, Sadeghi Ghuchani M, Eslaminejad MB, **Taghiyar L**, Kalhori KA, Pedram MS, Shayan AM, Aghdami N, Abrahamse H. *The effects of combined low level laser therapy and mesenchymal stem cells on bone regeneration in rabbit calvarial defects*. J Photochem Photobiol B. 151:180-5, 2015.
- Reza Fekrazad, Mohamadreza Baghban Eslaminejad, Arman M. Shayan, Katayoun A.M. Kalhori, Fatemeh Mashhadi Abbas, **Leila Taghiyar**, Mir Sepehr Pedram, Mostafa Sadeghi Ghuchani. *Effects of Photobiomodulation and Mesenchymal Stem Cells on Articular Cartilage Defects in a Rabbit Model*. Photomedicine and Laser Surgery Volume X, Number X, 2016.
- **Leila Taghiyar**, Samaneh Hosseini, Mahdi Hesaraki, Forough Azam Sayahpour, Nasser Aghdami, Mohamadreza Baghban Eslaminejad. *Isolation, Characterization and Osteogenic Potential of Mouse Digit Tip Blastema Cells in Comparison with Bone Marrow-derived Mesenchymal Stem Cells in vitro*. Cell Journal(Yakhteh). Volume 19, Number 4, 2018, Serial Number: 76. 2017
- **Leila Taghiyar**, Mahdi Hesaraki, Forough Azam Sayahpour, Leila Satarian, Samaneh Hosseini, Naser Aghdami, Mohamadreza Baghban Eslaminejad. *Msh homeobox 1 (Msx1) – and Msx2–overexpressing bone marrow–derived mesenchymal stem cells resemble blastema cells and enhance regeneration in mice*. JBC Journal, 2017.
- **Taghiyar L**, Hosseini S, Safari F, Bagheri F, Fani N, Stoddart MJ, Alini M, Eslaminejad MB. *New insight into functional limb regeneration: A to Z approaches*. J Tissue Eng Regen Med. 2018 Sep;12(9):1925-1943.
- Reza Fekrazad, Sohrab Asefi, Mohamadreza Baghban Eslaminejad, **Leila Taghiyar** & Sima Bordbar & Michael R. Hamblin. *Photobiomodulation with single and combination laserwavelengths on bone marrow mesenchymal stem cells: proliferation and differentiation to bone or cartilage*. Lasers in Medical Science (2019) 34:127.

#### **Chapter books:**

- Mohamadreza Baghban Eslaminejad, **Leila Taghiyar**, and Fatemeh Safari. “Nanotissue Engineering of Musculoskeletal Cells” in the book” Stem Cells Nanoengineering” Edited by Professor Hossein Baharvand and Nasser Aghdami, 2015, Published by John Wiley & Sons, Inc., Hoboken, New Jersey.
- Hosseini S, **Taghiyar L**, Safari F, Baghban Eslaminejad MR, “Regenerative medicine application of mesenchymal stem cells” in the book” Advances in Experimental Medicine and Biology – Cell Biology and Translational Medicine” Edited by Kursad Turksen, 2018, Springer International Publishing AG, part of Springer Nature