

# Curriculum Vitae

## Personal information

**First name:** Mahsa

**Surname:** Sani

**Nationality:** Iranian

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🏠 Department of Tissue engineering & applied cell, Advanced Medical Science and Technologies  
- Shiraz University of Medical Sciences-Shiraz-Iran

## Education

**Ph.D.:** Tissue Engineering, Medical Science and Technologies, Shiraz University of Medical Science (SUMS), (2017 – 2022), **Thesis title:** The Influence of Mechanical Stimuli and IGF-1 on Bioengineered Articular Cartilage Using Decellularized Tissue.

## Honors and Awards

- **Top student** in School of Advanced Medical Science and Technology in 2021.
- **The top-ranking student** in all Shiraz universities in 2019.
- The **first rank** in the 2017 Tissue Engineering Ph.D. exam.
- Member of **Gifted Talent Office**
- Awarded acceptance for an M.Sc. program in cellular and molecular biology without the entrance exam by the "Gifted Talent Office" in 2008.
- **First top** student in cellular and molecular Biology in M.Sc. and B.Sc.

## Institutional and technical experiments

- Tissue engineering of cartilage, liver, bone, and skin.
- Cell Culture Techniques
- Three-dimensional (3D) culture and tissue engineering.
- **Exosome** isolation
- Isolation and culture of human mesenchymal stem cells (**Adipose, Umbilical cord blood, Umbilical cord, Bone marrow, Breast milk**)
- Isolate, purify, and characterize **human periodontal ligament stem cells**.
- Isolation and culture of **human Menstrual Blood Stromal Stem Cells**.
- Isolation and culture of **pyogenic granuloma cells**.

- **Synoviocyte** Cell isolation and Culture.
- **Embryonic stem cell** Culture.
- **Neural stem cell** Culture.
- Scaffold fabrication (Freeze-drying, electrospinning, slurry foam replication, organ decellularization, fabrication of Spongy scaffold, 3D printing, ...)
- 3D culture on hydrogel scaffold (PVA, alginate, agarose, collagen, ...), poly caprolactone (PCL)
- Isolation of collagen type I from rat tail tendon.
- Working and Handling with laboratory animals
- Tissue and cells staining (H&E, Immunocytochemistry, immunohistochemistry ...)
- Cell purification with density gradient media
- Real-Time PCR
- RNA& DNA extraction
- Electrophoresis
- MACS
- ELISA
- Flow cytometry
- Transfection methods
- Cell Differentiation methods
- Magnetic Nano-particle

## Computer skills

- Microsoft Office (Word, PowerPoint, Excel,...)
- SPSS
- Photoshop
- ImageJ
- EndNote
- Prism

## Research Interest

- Tissue engineering and regenerative medicine
- Transplantation
- Stem cells and differentiation
- Cell signaling and molecular pathway
- Cell therapy

## Publications

- Piezoelectric PvdF-Bt/Pva-Ha Co-Electrospun Fibrous Scaffolds for Bone Regeneration. Askarzadeh N, Sherafat Z, **Sani M**, Azarpira N. (2024) Available at SSRN 4674671.
- Piezoelectric Core-Shell Fibrous Scaffolds of PvdF-Zno/Pcl for Bone Regeneration. Pcl for Bone Regeneration. Ghaedsharafi H, Sherafat Z, **Sani M**, Azarpira N. (2024)
- Effect of Amniotic Membrane/Collagen Scaffolds on Laryngeal Cartilage Repair. Iravani Kamyar, Mousavi Simin, Owji Seyed Mohammad, **Sani Mahsa**, Owji Seyed Hossein. Laryngoscope Investigative Otolaryngology. (2024) DOI: 10.1002/lio2.1222
- **Sani Mahsa**, Sani F, Moayedfard Z, Darayee M, Tayebi L, Azarpira N. Potential advantages of genetically modified mesenchymal stem cells in the treatment of acute and chronic liver diseases. Stem Cell Research & Therapy. (2023) Dec;14(1):1-1.
- Engineered an artificial articular cartilage made of decellularized extracellular matrix by mechanical and IGF-1 stimulation. **Mahsa Sani**, Mona latif, Mehri Shadi, Mahbubeh Razmkhah, Mahin Salmannejad, Tahereh Talaei-Khozani, Biomaterials Advances. (2022) 1; 139:213019.
- Optimizing artificial meniscus by mechanical stimulation of the chondrocyte-laden acellular meniscus using at hoc bioreactor. Mehri Shadi, Tahereh Talaei-Khozani, **Mahsa Sani**, Radmarz Hosseini, Hossein Parsaee, Zahra Vojdani. Stem Cell Research & Therapy. (2022) Dec;13(1):1-5.
- Synergistic impact of platelet rich plasma-heparin sulfate with hydroxyapatite/zirconia on the osteoblast differentiation potential of adipose-derived mesenchymal stem cells. Mona Latifi, **Sani M**, Salmannejad M, Kabir-Salmani M, Babakhanzadeh Bavanati H, Talaei-Khozani T. Cell and Tissue Banking. (2021) Oct 19:1-5.
- Novel strategy of cartilage repairing via application of *P. atlantica* with stem cells and collagen. Tanideh N, Borzooeian G, Lotfi M, **Sani M**, Irajie C, Ghaemmaghami P, Koochi-Hosseiniabadi O, Tanideh R, Hashempour Sadeghian M, Borzooeian Z, Irajie A. Artificial Organs. (2021) Nov 1; 45(11):1405-1421.
- AICAR and nicotinamide treatment synergistically augment the proliferation and attenuate senescence-associated changes in mesenchymal stromal cells. Khorraminejad-Shirazi M, **Sani M**, Talaei-Khozani T, Dorvash M, Mirzaei M, Faghihi MA, Monabati A, Attar A. Stem Cell Research & Therapy. (2020) Dec 1; 11(1):45.

- Concomitant use of mesenchymal stem cells and neural stem cells for treatment of spinal cord injury: A combo cell therapy approach. Hosseini SM, **Sani M**, Haider KH, Dorvash M, Ziaee SM, Karimi A, Namavar MR. *Neuroscience letters* (2018) Mar 6; 668:138-46.
- Fabrication of platelet-rich plasma heparin sulfate/hydroxyapatite/zirconia scaffold. Mona Latifi, Tahereh Talaei-Khozani, Hossein Mehraban-Jahromi, **Mahsa Sani**, Mahmood Sadeghi-Atabadi, Abbas Fazel Anvari-Yazdi. *Bioinspired, Biomimetic and Nanobiomaterials* (2018): 1-9.
- Differentiation potential of breast milk-derived mesenchymal stem cells into hepatocyte-like cells. **Mahsa Sani**, Sepideh Ebrahimi, Fatemeh Aleahmad, Mahin Salmannejad, Seyed Mojtaba Hosseini, Gelareh mazarei, Tahereh Talaei-Khozani. *Tissue Engineering and Regenerative Medicine* (2017) 14(5):587–593.
- Nicorandil potentiates sodium butyrate induced preconditioning of neurons and enhances their survival upon subsequent treatment with H<sub>2</sub>O<sub>2</sub>. Tabeshmehr P, Husnain HK, Salmannejad M, Sani M, Hosseini SM1, Khorraminejad Shirazi MH. *Transl Neurodegener.* (2017) Oct; 6:29.
- Fabrication and Characterization of Heparin/Collagen Sponge for in Vitro Differentiation of Wharton’s Jelly-Derived Mesenchymal Stem Cells into Hepatocytes. Fatemeh Aleahmad, Tahereh Talaei-Khozani, Sareh Rajabi-Zeleti, **Mahsa Sani**, Sasan Jalili-Firoozinezhad, Shahin Bonakdar, Sanaz Heshmat-Azad, Mahnaz Azarnia, Mansoureh Jaberipour. *Hepat Mon.* (2017) 17(2): e40599.
- Fabrication of SiO<sub>2</sub>/platelet rich plasma scaffolds for bone tissue engineering application. Farnaz Sani, Fatemeh Mehdipour, **Mahsa Sani**, Tahereh Talaei-Khozani, Vahid Razban. *bioinspired biomimetic and nanobiomaterials J.* (2017) Sep 7:1-8.
- Fabrication and characterization of platelet-rich plasma scaffolds for tissue engineering applications. Mahmoud Sadeghi-Ataabadi, Zohreh Mostafavi-pour, Zahra Vojdani, **Mahsa Sani**, Mona Latifi, Tahereh Talaei-Khozani. *Materials Science and Engineering C* 71; (2017) 372–380.
- Partial replacement of left hemidiaphragm in dogs by either cryopreserved or decellularized heterograft patch. Hamid Reza Davari, Mohammad Bagher Rahim, Nader Tanideh, **Mahsa Sani**, Hamid Reza Tavakoli, Ali Reza Rasekhi, Ahmad Monabati, Omid Koohi-Hosseiniabadig and Siavash Gholamih. *Interactive CardioVascular and Thoracic Surgery*; (2016) 1–7
- Low Level Laser Irradiation Effects on Proliferation and Apoptosis in Bone Marrow Mesenchymal Stem Cells. Somayeh Delavarifar, Zahra Razi, Alireza Mehdizadeh, Mahin

Salmannejad, **Mahsa Sani**, Mona Latifi, Seyed Mojtaba Hosseini. International Journal of Sciences: Basic and Applied Research (IJSBAR); (2016) Volume 26, No 1, pp 72-84.

- Differentiation of menstrual blood derived stem cell (MenSCs) to hepatocyte-liked cell on three dimensional nanofiber scaffold:poly caprolacton( PCL). Farnaz Sani, Giti Borzooeian, Somayeh Kazemnejad, Sepideh Ebrahimi, Mahin Salmannejad, Fatemeh Aleahmad, Hossein Mehraban Jahromi, **Mahsa Sani**. J. Biomedical Science and Engineering ;( 2016), 9, 216-225.

- Origins of the breast milk-derived cells; an endeavor to find the cell sources. **Mahsa Sani**, Seyed Mojtaba Hosseini, Mahin Salmannejad, Fatemeh Aleahmad, Sepideh Ebrahimi, Samira Jahanshahi and Tahereh Talaei-Khozani. Cell Biol Int; 39 (2015) 611–618.

- The Preventive Effects of Neural Stem Cells and Mesenchymal Stem Cells Intra-Ventricular Injection on Brain Stroke in Rats. Seyed Mojtaba Hosseini\*, Nastaran Samimi, Mohammad Farahmandnia, Benafshe Shakibajahromi, Fatemeh Sabet Sarvestani, **Mahsa Sani**, Masoomeh Mohamadpour. The North American Journal of Medical Sciences (NAJMS); (2015), 390-396.

- Differentiation of Human Breast-milk Stem Cells to Neural Stem Cells and Neurons. Seyed Mojtaba Hosseini, Tahere Talaei-khozani, **Mahsa Sani**, Bahare Owrangi. Neurology Research International; (2014), Article ID 807896, 8 pages.

- Proliferation and chondrogenic differentiation potential of menstrual blood- and bone marrow-derived stem cells in two-dimensional culture . Manijeh Khanmohammadi, **Mahsa Sani** , Amir Hassan Zarnani, Haleh Edalatkhah, Mohammad Mehdi Akhondi, Ebrahim Mirzadegan, Kouros Kamali, Kamran Alimoghadam and Somaieh Kazemnejad . International Journal of Hematology; (2012), Volume 95, Issue 5, pp 484-4932.

- بررسی خواص پوشش با ساختار تغییرات تدریجی اکسید تیتانیوم/هیدروکسی اپتایت، اعمال شده به روش الکتروفوریتیک بر روی آلیاژ تیتانیوم Ti-6Al-4V علیرضا عراق ، محمد جعفر هادیان فرد\*، طاهره طلائی خوزانی ، **مهسا ثانی**. فصلنامه علمی پژوهشی فرایند های نوین در مهندسی مواد/سال دهم/ شماره دوم/تابستان 1395.

- بررسی تاثیر عصاره هیدروالکلی میوه بنه همراه با سلول های بنیادی مشتق از مغز استخوان در استئوآرتریت ایجاد شده در زانوی رت. گیتی برزونیان ، دکتر نادر تنیده ، دکتر مهرزاد لطفی ، دکتر مارال مختاری، دکتر حبیب اله ناظم ، **مهسا ثانی**، مهین سلمان نژاد، امید کوهی حسین آباد، سجاد دانشی. مجله جراحی استخوان و مفاصل ایران/ جلد ۱۴ شماره ۱ /صفحات ۷-۱۷/1394.

## Presented papers at international conferences

1. **Mahsa Sani\***, Mona Latifi, Mahin Salmannejad, Farnaz Sani. Fabrication of functional composite in bone tissue regeneration. The First International Iranian Tissue Engineering and Regenerative (ITERM) July 18-20 2018, Iran, Tehran.
2. Mobin Haghdel, Farnaz Sani, Mona Latifi, Mahsa Sani\*. Application of 3D bioprinting in Skin tissue engineering. The First International Iranian Tissue Engineering and Regenerative (ITERM) July 18-20 2018, Iran, Tehran.
3. Farnaz Sani, Fatemeh Mehdipour, Tahereh Talaei-Khozani, Mahsa Sani, Vahid Razban\*. Fabrication of SiO<sub>2</sub>/platelet rich plasma scaffolds for bone tissue engineering application. The First International Iranian Tissue Engineering and Regenerative (ITERM) July 18-20 2018, Iran, Tehran.
4. Tahereh Talaei-Khozani, Mona Latifi, Maryam Kabirsalmani, Hossein mehraban-jahromi, **Mahsa Sani**, Mahnmood Sadeghi-atabadi. Designating a 3D scaffold by platelet rich plasma/heparin sulfate/hydroxyapatite/zirconia for bone tissue engineering applications. European Cells and Materials Vol. 33 Suppl. 2, **2017** (P197) (ISI).
5. 5th International Summit on Medical Biology & Bioengineering conference, invited as a Speaker. **Chicago, USA**, September 27-28, **2017**.
6. **Mahsa Sani**, Seyed Mojtaba Hosseini, Farnaz Sani, Mahin Salmannejad, Mona Latifi. The Footprint of Stem Cells in Pyogenic Granuloma; a Lesion of Oral Cavity. 3rd Iranian Congress on Progress in Tissue Engineering and Regenerative Medicine 19 - 21 October **2016**, Tehran, Iran (Oral presentation).
7. World Summit on bioengineering conference, invited as a Speaker. **Las Vegas, USA**, November 7-8, 2016.
8. **Mahsa Sani**, Sepideh Ebrahimi, Fatemeh Aleahmad, Mahin Salmannejad, Seyed Mojtaba Hosseini, Tahereh Talaei, Farnaz Sani. Hepatogenic Differentiation of Human Breast Milk Derived Stem Cells, The Unique and New Source of Stem Cell. Cell Journal (Yakhteh); Royan 11<sup>th</sup> Congress on Stem Cell Biology and Technology, 2-4 September; **2015** (ISI).
9. Semsar-Kazerooni M, Hosseini SM, Salmannejad M, **Sani M**. The Optimum Time for Neural Stem Cells Transplantation for Brain Stroke in Rats. Cell Journal (Yakhteh); Royan 11<sup>th</sup> Congress on Stem Cell Biology and Technology, 2-4 September; **2015**.

10. Zahra Vojdani, Jafar Bagheri, Tahereh Talaei-Khozani, Negar Azarpira, Mahin Salmannjad, **Mahsa Sani**, Ali Farokhi, Fetal microchimerism in mouse caerulein-induced pancreatitis model. Cell Journal (Yakhteh); Royan 11<sup>th</sup> Congress on Stem Cell Biology and Technology, 2-4 September; **2015**
11. **Sani M**, Hosseini SM, Aleahmad F, Ebrahimi S, Salmannejad M, Talaei T, Sani F. The Efficacy of Differentiation Potential of the Breast Milk-Derived Stem Cells into Hepatocyte, Cardiomyocyte, Neuron, Osteocyte and Adipocyte. Royan International Twin Congress 10th Congress on Stem Cell Biology and Technology. Journal (Yakhteh), Vol 16, Suppl 1, Summer **2014** (ISI).
12. **Mahsa Sani**, Seyed Mojtaba Hosseini, Fatemeh Aleahmad, Mahin Salman Nejad, Sepideh Ebrahimi, Samira Jahanshahi, Tahereh Talaei. The characterization of CD marker profile of breast milk-derived stem cell. The 2nd Annual Congress Stem Cells Research and Application. International Journal of Pediatrics (Supplement 3), Vol.2, N.2-3, Serial No.6, May **2014** (ISI) (Oral presentation).
13. Ebrahimi S, Mokarram P, Azari H, Saeb S, Hosseini SM, **Sani M**. Effect of Crocin on Differentiation of Neural Stem Cells to Oligodendrocytes. Royan International Twin Congress 10th Congress on Stem Cell Biology and Technology .3-5 September **2014**. CELL JOURNAL (Yakhteh), Vol 16, Suppl 1, summer 2014 (ISI).
14. Hamidreza Davari, Nader Tanideh, **Mahsa Sani**, Siavash Gholami,Alireza Rasekhi, Ahmad Monabbati. Patch replacement of left hemidiaphragm in dog by cryopreserved heterograft. 24th Annual World Congress of the WSCTS to be held in Geneva, Switzerland from 6 to 10 September **2014**(Oral presentation).
15. Mahboobeh Erfani Zadeh, Masoomeh Mohamadpour, Maryam Ghasemi, Elham Nadimi, **Mahsa sani**, Elyas Salavatchi, Mansoureh Mohamadpour. Evaluation of anti-inflammatory effect of Trifluoperazine. The 6th Internal Congress of Students Research Committee. 9March, **2014**.
16. Khanjani, Sayeh, Kazemnejad, Somaiehl, Khanmohammadi Manijeh, **Sani Mahsa**, Torabi, Foroughr, Amini, Nazila, Zarnani, Amir Hassan, Hayati Roudbari, Nasima. Evaluation of hepatogenic differentiation potential of menstrual blood derived stem cell. 10th annual meeting ISSCR. June 13-16, **2012**.
17. **Mahsa Sani**, Sayeh khanjani, Masoud soleimani, Mohammad Mehdi Akhondi, Somaieh Kazemnejad. Hepatogenic differentiation of menstrual blood derived stem cells on a three dimensional nanofibrous scaffold.10th annual meeting ISSCR. June 13-16, **2012**.

18. Sayeh Khanjani, Manijeh Khanmohammadi, **Mahsa Sani**, Haleh Edalatkhah, Saeed Talebi, Mohammad Mehdi Akhondi, Somaieh Kazemnejad. Differentiation potential of menstrual blood derived stem cells into hepatocyte-like cell. 9<sup>th</sup> International Congress on obstetrics and gynecology 8-11 Nov 2011 (poster presentation).

## Patent

1. Design and invention of a shear and compressive biaxial bioreactor for cartilage tissue engineering. Registration number: 140150140003002082
2. Engineered cartilage scaffold, compatible for grafting. Registration number: 139950140003010763
3. Fabrication of chia seed's polysaccharides hydrogel scaffold in tissue engineering. Registration number: 139850140003010322
4. Fabrication of functional nanocomposite in bone tissue regeneration. Registration number: 139550140003009318
5. Preparation and Characterization of PRP/Eggshell Membrane as a Hydrogel Scaffold. Registration number: 139550140003005826

## BOOK

Mona Latifi, Hossein Mehraban, **Mahsa Sani**, Principles of Genetics. Ariya and Gita tak Press; 2017.

## Editorial Board / Reviewer in journal

1. Science Reports (Nature)
2. BMC Molecular and Cell Biology
3. HardwareX
4. Journal of Biomedical Science and Engineering (JBiSE)
5. Scientific & Academic Publishing
6. Crosby publication



## **Executive responsibility**

1. Members of the Stem cell and Tissue Engineering Incubator of Members of Shiraz University of Medical Sciences
2. Head of Student Technology Center of Shiraz University and Shiraz University of Medical Sciences.
3. Members of the Occupational Health and Safety Committee of Shiraz University of Medical Sciences.
4. Members of the Documentation Committee of Shiraz University of Medical Sciences.

## **Establishment of Knowledge Enterprise Company**

Pars Tissue Armaghan Company, As Chief Executive Officer

## **Research Projects**

1. Tissue engineering and diabetics wound dressing (to be continued).
2. Microfluidics project (to be continued).
3. Bioprinting of decellularized liver hydrogel for transplantation (to be continued).
4. Bioprinting of cartilage scaffold.
5. Transplantation of natural cartilage scaffold for laryngotracheal reconstruction in rabbit model
6. Exosomes as therapeutic vehicles in liver organoid models
7. Design a new model of liver microtissue
8. Design a new model of multi-cellular bone microtissue
9. Cell senescence of mesenchymal stem cells.
10. The influence of mechanical stimuli in bioengineered articular cartilage.

11. Simultaneous effect of hydroalcoholic extract of *Pistacia Atlantica* and stem cells derived from adipose tissue on the osteoarthritis model.
12. In vitro and in vivo study of engineered cartilage tissue.
13. Study of anti-inflammatory efficacy of *Boswellia Serrata* extracts and its potential as a therapy for osteoarthritis.
14. Evaluation of the success rate of transplantation of decellularized human tracheal with stem cells in animal models.
15. Decellularization of trachea and diaphragm for use as bionic tissue-engineered transplantation.
16. The assessment of tracheal regeneration in decellularized allogenic transplant compared to autogenic in animal models.
17. The Study of amniotic membrane properties in tissue engineering.
18. Efficiencies replacing fetal bovine serum with human platelets released during propagation and differentiation of human bone marrow-derived mesenchymal stem.
19. Isolation of breast milk as a novel source of stem cells with multilineage differentiation Potential.
20. Application of expired platelets in the preparation of platelet gel.
21. Hepatic differentiation of menstrual blood-derived stem cells.
22. The study of hepatic specific markers in differentiated cells from breast milk-derived stem cells.
23. Amnion membrane as a resorbable scaffold for culturing of human gingival fibroblast.