

Curriculum Vitae

Fatemeh Sadeghian-Nodoushan

Ph.D. in Applied Cell Sciences (Cell Therapy), Shahid Beheshti University of Medical Sciences, Tehran. I. R. Iran

Personal Information

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Current Position

- Cell culture and Tissue Engineering lab supervisor, 2013-Present
Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences
Description/Responsibilities:
 - Medical Nano Technology & Tissue Engineering Research Center Manager, 2017- present
Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences.
 - Research Council Member, 2017- present
Medical Nano Technology & Tissue Engineering Research Center, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences.

Education and Training

- **Ph.D.** in Applied Cell Sciences, 2016-2022
Faculty of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran
PhD Thesis: Regeneration of bone tissue using human mesenchymal stem cell-derived Exosomes & magnetic hydrogel, *in vitro* and *in vivo* study. (CGPA=19.81 out of 20)
- **M. SC.** in Developmental Biology, 2004-2007
School of Biology, College of Science, Tehran University, Tehran, Iran
MSc Thesis: Induction of cell cycle synchronization of sheep granulosa cells *in vitro*. (CGPA=19.5 out of 20)
- **B. Sc.** in Biology, 1999-2003
School of Biology, College of Science, Tehran University, Tehran, Iran

Research interest and area of expertise

- Stem cell therapy, Tissue Engineering, understand the network of transcription factors controlling self-renewal of Human embryonic Stem cells (ESCs) and human Mesenchymal Stem Cells (MSCs).
- Molecular and Cellular Biology of cancer, Epigenetic editing
- Molecular and Cellular Physiology, Intracellular signaling pathways in diseases.
- designing scaffold for Stem cell therapy.

Skills

- Cellular biology techniques (Isolation and Culture, Freezing and Passaging the Cell).
- Tissue processing techniques.
- Molecular biology techniques.
- Culture, live-cell imaging
- Animal modeling expert
- Isolation, derivation and isolation of various cells especially Mesenchymal Stem Cell from various cells.
- Cell migration assay.
- Derivation of Cell-based exosomes from various cells and related characteristics analysis.
- Labelling of Mesenchymal Stem Cells based on biotechnology approaches.
- Immunohistochemistry (IHC), Immunocytochemistry (ICC).
- SolidWorks, Online training course.
- Quality control in Laboratory.

Publications

1. Atefeh Jafari Jezeh, Mehdi Entezam, Bibi Fatemeh Haghirsadat, Habib Nikukar, **Fatemeh Sadeghian-Nodoushan**, Hossein Ali Khonakdar. Liposomal Nanocarriers-Loaded Poly (vinyl alcohol) (PVA)/Poly (ethylene glycol) (PEG) Hydrogels: Physico-mechanical Properties and Drug Release. Journal of Polymers and the Environment, 2023.
2. Niloofar Dehghani, Fatemeh Haghirsadat, Fatemeh Yazdian, **Fatemeh Sadeghian-Nodoushan**, Nasrin Ghasemi, Fahime Mazaheri, Mehrab Pourmadadi, Seyed Morteza Naghib. Chitosan/silk fibroin/nitrogen-doped carbon quantum dot/ α -tricalcium phosphate nanocomposite electrospun as

a scaffold for wound healing application: In vitro and in vivo studies. *International Journal of Biological Macromolecules*, 2023; 238:124078.

3. Leila Dehghani, Amir Hossein Kheirkhah, Arsalan Jalili, Arman Saadati Partan, Habib Nikukar, **Fatemeh Sadeghian-Nodoushan**. *Stem Cell Therapy and Its Products Such as Exosomes: Modern Regenerative Medicine Approach*; Chapter book: Possibilities and Limitations in Current Translational Stem Cell Research; 2023, Edited by Diana Kitale.
4. Mastaneh Parchami, Fateme Haghirsadat, **Fatemeh Sadeghian-Nodoushan**, Sajjad Shah Mohammadi, Nasrin Ghasemi, Ghasem Sargazi. A new approach to the development and assessment of nanoliposome containing doxorubicin for treating osteosarcoma in 2D and 3D culture systems. *Medical Sciences section of Heliyon*, 2022.
5. **Fatemeh Sadeghian-Nodoushan**, Habib Nikukar, Masoud Soleimani, Azarmidokht Jalali Jahromi, Simzar Hosseinzadeh, Arash Khojasteh. A smart magnetic hydrogel containing exosome promotes osteogenic commitment of human adipose-derived mesenchymal stem cells. *Iranian Journal of Basic Medical Sciences*, 2022.
6. Abbas Mokarramat-Yazdi, Hossein Soltaninejad, Hadi Zare-Zardini, Fatemeh Shishehbor, Ashraf Alemi, Farzaneh Fesahat, **Fatemeh Sadeghian**. Investigating the anticancer effect of a new drug originating from plant and animal: In vitro and in vivo study. *Journal of Advanced Pharmacy Education & Research*, 2020; 10(S2):72-78.
7. Mehran Naghibzadeh, Seifollah Gholampour, Majid Naghibzadeh, **Fatemeh Sadeghian-Nodoushan**, Habib Nikukar. The effect of electromagnetic field on decreasing and increasing of the growth and proliferation rate of dermal fibroblast cell. *Dermatologic Therapy*, 2020; 33, e13803.
8. Mojgan Moshrefi, Abbas Aflatoonian, Saeed Ghasemi-Esmailabad, Mojgan Karimi-Zarchi, **Fatemeh Sadeghian-Nodoushan**, Sajad Shahmohamadi. Supporting the in vitro Expansion of Human Cumulus Cells as an Initial Step for Culturing the Ovarian Follicles and Assembling an Artificial Ovary. 2022; 29(4), 313-332.
9. Borzouie Z, Naghibzadeh M, Talebi AR, Pourrajab F, Jebali A, Nikukar H, Molla Hoseini H, Khoradmehr A, Khoradmehr A, **Sadeghian-Nodoushan F**, Aflatoonian B, Hekmatimoghaddam S. Development of An Artificial Male Germ Cell Niche Using Electrospun Poly Vinyl Alcohol/Human Serum Albumin/Gelatin Fibers. *Cell J*. 2019 Oct; 21(3):300-306.

10. Tabibnejad N, Aflatoonian A, Motamedzadeh L, Soleimani M, **Sadeghian-Nodoushan F**, Talebi AR. Assessing ICSI outcome by combining non-invasive indicators: Early time-lapse morphokinetics and apoptosis in associated cumulus cells among women with the polycystic ovarian syndrome. *Mol Reprod Dev.* 2018 Nov; 85(11):865-874.
11. **Sadeghian-Nodoushan F**, Aflatoonian R, Borzouie Z, Akyash F, Fesahat F, Soleimani M, Aghajanpour S, Moore HD, Aflatoonian B. pluripotency and differentiation of cells from human testicular sperm extraction: an investigation of cell stemness. *Mol Reprod Dev.* 2016 Apr; 83(4):312-23.
12. Talebi AR, Fesahat F, Mangoli E, Ghasemzadeh J, Nayeri M, **Sadeghian-Nodoushan F**. Relationship between sperm protamine deficiency and apoptosis in couples with unexplained repeated spontaneous abortions. *Int J Reprod Biomed (Yazd).* 2016 Mar; 14(3):199-204.
13. Akyash F, Tahajjodi S, **Sadeghian-Nodoushan F**, Aflatoonian A, Abdoli AM, Nikukar H, Aflatoonian B. Reproductive biology, stem cells biotechnology and regenerative medicine: a 1-day national symposium held at Shahid Sadoughi University of Medical Sciences. *Int J Reprod Biomed (Yazd).* 2016 Sep; 14(9): 553–556.
14. Mirzazadeh A, Kheirollahi M, Farashahi E, **Sadeghian-Nodoushan F**, Sheikha M. H, Aflatoonian B. Assessment effects of resveratrol on human telomerase reverse transcriptase messenger ribonucleic acid transcript in human glioblastoma. *Advanced Biomedical Research.* 2016.
15. Akyash F, **Sadeghian-Nodoushan F**, Aflatoonian B. Isolation, Culture and Characterization of Human Endometrial Mesenchymal Stem/ Stromal Cells (EnMSCs): A Mini Review. *Austin Journal of Invitro Fertilization.* 2016; Vol.3, No. 1.
16. Khalili MA, **Sadeghian-Nodoushan F**, Fesahat F, Mi.r-Esmaili SM, Anvari M, Hekmati-Moghadam SH. Mesenchymal stem cells improved the ultra-structural morphology of cerebral tissues after subarachnoid hemorrhage in rats. *Exp Neurobiol.* 2014; 23(1):77-85.
17. Khalili MA, Nazari S, Dehghani-Firouzabadi R, Talebi A, Baghzadeh-Naeini S, **Sadeghian-Nodoushan F**, Agha-Rahimi A. Comparing the roles of sperm chromatin integrity and apoptosis in intrauterine insemination outcomes of couples with mild male and female factor infertility. *J Reprod Infertile.* 2014; 15(1):35-40.
18. **Sadeghian-Nodoushan F**, Poopak Eftekhari-Yazdi, Azam Dalman, Hossein

Eimani, and Houri Sepehri. Mimosine as Well as Serum Starvation Can Be Used for Cell Cycle Synchronization of Sheep Granulosa Cells. *Chinese Journal of Biology*, 2014, 7 pages.

19. Anbari F, Khalili MA, Bahrami AR, Khoradmehr A, **Sadeghian F**, Fesahat F, Nabi A. Intravenous transplantation of bone marrow mesenchymal stem cells promotes neural regeneration after traumatic brain injury. *Neural Regen Res.* 2014 May 1; 9(9):919-23.
20. Navabazam AR, **Sadeghian Nodoshan F**, Sheikhha MH, Miresmaeili SM, Soleimani M, Fesahat F. Characterization of mesenchymal stem cells from human dental pulp, preapical follicle and periodontal ligament. *Iran J Reprod Med.* 2013; 11(3):235-42.
21. Masoud Hafezi, AliReza Talebi, Seyed Mohsen Miresmaeili, **Fatemeh Sadeghian**, Farzaneh Fesahat. Histological analysis of bone repair in rat femur via nanostructured merwinite granules. *Ceramics International*, *Ceramics International* 39, 2013; 4575–4580.
22. Khalili MA, Anvari M, Hekmati-Moghadam SH, **Sadeghian-Nodoushan F**, Fesahat F, Miresmaeili SM. Therapeutic benefit of intravenous transplantation of mesenchymal stem cell after experimental subarachnoid hemorrhage in rats. *J Stroke Cerebrovasc Dis.* 2012 Aug; 21(6):445-51.
23. Hafezi-Ardakani M, Moztarzadeh F, Rabiee M, Talebi AR, Abasi-shahni M, Fesahat F and **Sadeghian F**. Sol-gel synthesis and apatite-formation ability of nanostructure merwinite (Ca₃MgSi₂O₈) as a novel bioceramic, *Journal of Ceramic Processing Research*, 2010; 11:765-768.
24. Dalman A, Eftekhari-Yazdi P, Valojerdi MR, Shahverdi A, Gourabi H, Janzamin E, Fakheri R, **Sadeghian F** and F Hasani, Synchronizing Cell Cycle of Goat Fibroblasts by Serum Starvation Causes Apoptosis, *Reprod Domest Anim* 2010;45(5): e46-53.
25. Dalman A, Eftekhari Yazdi P, Rezazadeh Valojerdi M, Shahverdi A, Gourabi H, Fakheri R, Janzamin E, **Sadeghian F**. Effect of Serum Starvation and Full Confluence on Cell Cycle Synchronization and Apoptosis of Goat Dermal Fibroblast, *cell journal (YAKHTEH)*, 2009; 11:212-219.
26. **Sadeghian nodoushan F**, Eftekhari-yazdi P, Sepehri H, Eimani H, Dalman A, In vitro cell cycle synchronization of sheep granulosa cells, *journal of Iranian Anatomical Sciences*, 2008; Vol6: 459-464.

1. Haghighi FS, Kalantar SM, Haghirosadat, Namjoo Kh, **Sadeghian-Nodoushan F**. Different cell sources for therapeutic exosomes in the female reproductive system: Advantages and disadvantages. 10th Yazd International Congress and Student Award on Reproductive Medicine and 4th International Congress of Reproductive Genetics, 2023, Yazd, Iran. (Oral Presentation)
2. Mojgan Moshrefi, Abbas Aflatoonian, Saeed Ghasemi-Esmailabad, Mojgan Karimi-Zarchi, Fatemeh Sadeghian-Nodoushan. Expression of mesenchymal, pluripotent and germ cell markers on the cortical, medullar and hilar cells of adult human ovary, 9th Yazd International Congress and Student Award on Reproductive Medicine and 4th International Congress of Reproductive Genetics, 2021, Yazd, Iran. (Poster Presentation)
3. **Sadeghian-Nodoushan F**, Aflatoonian R, Borzouie Z, Akyash F, Fesahat F, Soleimani M, Aghajanpour S, Moore HD, Aflatoonian B. An investigation of the stemness of the human testicular derived cells in culture. 2nd International Stem Cells and Regenerative Medicine Congress, 19-21 April, 2017 Mashhad, Iran. (Poster Presentation)
4. Aflatoonian B, **Sadeghian-Nodoushan F**, Fesahat F, Soleimani M, Khalili MA, Heidarian Meimandi H, Farashahi Yazd E, Nikukar H, Aflatoonian A. An introduction to Stem Cell Biology Research Center in Yazd. 7th Yazd International Congress and Student Award in Reproductive Medicine with 2nd Congress of Reproductive Genetic and Congress of Reproductive Immunology, 2017 Tehran, Iran. (Oral Presentation)
5. Borzouie Z, Jebali A, Naghibzadeh M, Pourrajab F, Nikukar H, Talebi AR, Khoradmehr A, **Sadeghian-Nodoushan F**, Aflatoonian B, Hekmati moghaddam SH. Testis tissue engineering: Novel scaffolds composed of human serum albumin for growth of human testicular cells. 7th Yazd International Congress and Student Award in Reproductive Medicine with 2nd Congress of Reproductive Genetic and Congress of Reproductive Immunology, 2017 Tehran, Iran. (Oral Presentation)
6. Rezaee R, Sardari R, Khoradmehr A, **Sadeghian-Nodoushan F**, Avijegani N, Deghani Ashkezari M, Aflatoonian, Efforts for generation of mouse embryonic stem cells on mouse embryonic fibroblast feeder layer in a medium supplemented with leukemia inhibitory factor in a microdrop culture system. 7th Yazd International Congress and Student Award in Reproductive Medicine with 2nd Congress of Reproductive Genetic and Congress of Reproductive Immunology, 2017 Tehran, Iran. (Poster Presentation)

7. Akyash F, **Sadeghian-Nodoushan F**, Aflatoonian B. Screening of human embryonic stem cells-derived neuronal progenitor cells using a microdrop culture system. The First National Festival & International Congress on Stem Cell and Regenerative Medicine. 2016 Tehran, Iran. (Oral Presentation)
8. Akyash F, **Sadeghian-Nodoushan F**, Aflatoonian B. Mesenchymal stem cells from human embryonic stem cells. The First National Festival & International Congress on Stem Cell and Regenerative Medicine. Tehran, Iran. 2016. (Poster Presentation)
9. Akyash F, Aflatoonian A, Rezazadeh Valojerdi M, **Sadeghian-Nodoushan F**, Aflatoonian R, Aflatoonian B. In vitro isolation, culture and identification of human endometrial mesenchymal stem/stromal cells (EnMSCs). 11th International Royan Congress on Stem Cells Biology and Technology. 2015 Tehran Iran. (Poster Presentation)
10. Z. Borzouie, S. H. Hekmati-Moghadam, A. R. Talebi, F. Poor-Rajab, A. Jebal5, H. Nikukar, F. Sadeghian-Nodoushan, B. Aflatoonian. Reconstitution of an artificial human testis using a 3-dimensional (3D) culture device, 31st Annual Meeting of ESHRE, 2015 Lisbon, Portugal, 14 June – 17 June. (Poster Presentation)
11. Anbari F. Khalili MA. Bahrami AR. Mahdavi shahri N. Aflatoonian B. Khoradmehr A. **Sadeghian F**. Fesahat F. Intravenous administration of mesenchymal stem cells improve functional recovery after traumatic brain injury in rats. The 8th Royan International Congress on stem cell biology & technology, 2012 Tehran, Iran. (Poster Presentation)
12. Aflatoonian Behrouz, **Sadeghian Fatemeh**, Fesahat Farzaneh, Soleimani-Salehabadi, Mohammad, Aflatoonian Nastaran. Embryonic stem cell like cells from human foreskin fibroblast. The Society for Reproduction and Fertility 2011 June. (Poster Presentation).
13. Aflatoonian B., Soleimani M., Fesahat F., **Sadeghian F.**, Aflatoonian A. In vitro generation of putative mesenchymal stem cells from testicular sperm extraction samples. 44th Annual meeting of the Society for the Study of Reproduction (SSR) in Portland, Oregon USA (31st 4th July 2011).
14. Aflatoonian B., **Sadeghian F.**, Fesahat F., Khorad-Mehr A., Janan A., Aflatoonian Reza., Aflatoonian A. The transdifferentiation of the human foreskin fibroblasts to form germ cells using retinoic acid. 9th Annual Meeting of International Society for Stem Cell Research (ISSCR2011) in Toronto in Canada (15th-18th June 2011).

15. Khalili MA, Clower BR, Findikli N, Anvari M, Hekmati MH, **Sadeghian F**, Fesahat F, Miresmaeili SM. Therapeutic benefit of intravenous transplantation of mesenchymal stem cells after experimental subarachnoid hemorrhage in Rats. 3rd Yazd International Student Award and Congress in Reproductive Medicine 2009 Yazd, Iran. (Oral Presentation)
16. Miresmaeili SM, Fesahat F, **Sadeghian F**. The effect of mobile wave on pregnant Mouse, 3rd Yazd International Student Award and Congress in Reproductive Medicine 2009 Yazd, Iran. (Poster Presentation)
17. Aflatoonian Behrouz, Soleimani Mehrdad, Fesahat Farzaneh, **Sadeghian Fatemeh**, Fazli, Hussein, Aflatoonian, Reza, Aflatoonian, abbas. Derivation of spermatogonial stem cells from TESE and PESA samples. International Society for Stem Cell Research. 2008-P-900-ISSCR (Poster Presentation)
18. B Aflatoonian, M Soleimani, F Fesahat, **F Sadeghian**, R Aflatoonian & A Aflatoonian. Potential of TESE and PESA samples for derivation of human germline stem cells. The Society for Reproduction and Fertility June – 1 July 2008 (Poster Presentation)
19. Navab A, Fesahat F, **Sadeghian F**, Soleimani M. Isolation and Characterization of Postnatal Stem Cells from Dental pulp and priapical follicle. Royan congress 2008 Tehran, Iran. (Poster Presentation)
20. **F. Sadeghian Nodushan**, P Eftekhari-yazdi, H. Sepehri, H. Eimani, Cell cycle stage analysis of sheep granulosa cells. P-381 Poster, Abstracts of the 23rd Annual Meeting of the ESHRE, Lyon, France, 1–4 July 2007. (Poster Presentation)

Patents

1. Magnetic hydrogels containing adipose mesenchymal stem cell-derived exosome for bone tissue regeneration
2. Optimization process of chitosan-quercetin scaffold using mesenchymal stem cells for tissue engineering

Honor and Awards

- Ranked 1st idea at the “3rd Startup event on Stem Cell and Regenerative Medicine”, 201
- Student of the year, Kharazmi national festival, 2022

Participants in Scientific Workshop and Congress

1. Member of the Scientific & Executive Committee of “Yazd international congress and student award in reproductive medicine and Regenerative medicine” held at Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran (2009- 2023, **Biennial**)
2. Faculty member of summer School workshop entitled “Culture of MSCs, Derivation of Mouse ESCs and Hands on Human Embryonic Stem Cells” held at Stem Cell Biology Research Center, Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran (2013-2017).
3. Member of the Executive Committee of “Conference on Medical Education” Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran (2014, 2019)
4. Member of the Executive Committee of the “1-day national symposium entitled “Reproductive biology, stem cells biotechnology and regenerative medicine” held at Shahid Sadoughi University of Medical Sciences, Yazd, Iran (3rd March 2016)
5. Member of Executive Committee of “7th Annual Congress of Iranian Neurogenetic Society” Yazd Reproductive Sciences Institute, Shahid Sadoughi University of Medical Sciences, Yazd, Iran (2014).
6. Member of Executive Committee of “Ethics in Medical Education Symposium” (2013)
7. Member of Executive Committee of “Fertility preservation seminar, research and clinical center for infertility”, Yazd, Iran (2013)
8. Member of Executive Committee of “2nd seminar on Reproductive Biology in Yazd” (2012).
9. Member of Executive Committee of “Stem Cell, one-day conference”, Collaboration of Royan Institute and Research and clinical center for infertility, Yazd, Iran (2008)
10. Viral gene transfer using the chemical delivery systems in mammalian cells Workshop, 15-17 November, Pasteur Institute, Tehran, Iran (2014)
11. Viral gene transfer using the Physical methods in mammalian expression systems Workshop, 18-20 November, Pasteur Institute, Tehran, Iran (2014)

12. Fluorescent in situ hybridization (FISH) Workshop- International Congress and Student Award for Reproductive Medicine- Yazd Reproductive Sciences Institute, Yazd, (2014)
13. PCR & RT-PCR Workshop, First laboratory skills, Yazd Reproductive Sciences Institute- Yazd, 2014
14. Lecturer & Member of Executive Committee “First laboratory skills Workshop”, Yazd Reproductive Sciences Institute, Yazd (2013)
15. Lecturer & Member of Executive Committee “Isolation and culture of bone marrow mesenchymal stem cells Workshop”, Research and Clinical Center for infertility, Yazd, Iran (2012)
16. Member of Executive Committee of “1st International Symposium and Workshop on Clinical Embryology”, 24-25 November, Yazd (2008).
17. Lecturer & Member of Executive “Andrology Workshop”, Research and Clinical Center for infertility, Yazd, Iran (2007)
18. Lecturer & Member of Executive Committee of “Nuclear Transfer Workshop”, Royan institute, Tehran, Iran (2006)

Students Advising OR Supervising

1. M.Sc. Thesis in Medical Biotechnology; Mastaneh Parchami; **The effect of Doxorubicin-containing liposomal nanocarrier system on Saos2 Osteosarcoma cell line in hydrogel Alginate three-dimensional.** International Campus, Shahid Sadoughi University of Medical Science, 2020.
2. M.Sc. Thesis in Medical Biotechnology; Niloofar Dehghani; **Performance evaluation of chitosan nanofiber containing CQDs and Tricalcium phosphate NPs in Wound Healing;** Shahid Sadoughi University of Medical Science, 2021.
3. M.Sc. Thesis in Biology- Genetic; Sajjad Shahmohammadi; **Evaluation of biocompatibility of chitosan / graphene oxide scaffold using mesenchymal stem cells.** Science & Art University, 2022.
4. M.Sc. Thesis in Biology- Genetic; Mahdieh Asoodeh; **Evaluation of Mesenchymal Stem Cells differentiation to Osteocyte by human MSC-derived exosomes.** Science & Art University, 2022.
5. M.Sc. Thesis in Medical Biotechnology; Amir Hossein Kheirkhah; **The electrospinning wound dressing of alginate and polyethylene oxide with exosomes**

derived from mesenchymal stem cells and silibinin substance on cell scratch regeneration in the in vitro; Shahid Sadoughi University of Medical Science,2022.

6. M.Sc. Thesis in Medical Biotechnology; Fatemeh Mohammadi; **differentiation of epidermal neural crest stem cell drived from human hair follicle toward pancreatic beta cell.** International Campus, Shahid Sadoughi University of Medical Science,2023.

References

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