Curriculum Vitae

Personal Information

Name: Sadaf Vahdat

Date of Birth: September /01/ 1988

Place of Birth: Tehran, Iran

Nationality: Iranian

Mailing Address:

Hematology Group, Faculty of Medical Sciences, Tarbiat Modares University, Jalal Aleahmad Street, Tehran, Iran.
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Educational Background

- 2006 to 2018: student in *Direct Biotechnology Course*, medical biotechnology student, department of biotechnology, college of sciences, University of Tehran, Tehran, Iran

  M.S. project title: "isolation and characterization of congenital heart patients-derived cardiac progenitor cells and comparison of three common isolation protocols"

  Ph.D. project title: "long-term expansion and characterization of human pluripotent stem cells-derived cardiac progenitor cells"

- 2002-2006: high school student of natural sciences, Aboureihan High School, Tehran, Iran

Employment

- September 2019 to present: Assistant Professor, Applied Cell Sciences Division of Hematology Group, Faculty of Medical Sciences, Tarbiat Modares University, Tehran, Iran.
- February 2008 to 2019: Royan Institute for Stem Cell Biology and Technology, Tehran, Iran.

Executive and Scientific Activities

- Scientific manager of "Pathobiology Research" journal, (Tarbiat Modares University Press), Since March 2021
- Question making for "National Olympiad of Stem Cell Sciences and Technologies and Tissue Engineering", Council for Stem Cell Sciences and Technologies, Tehran, Iran, Since 2019
- Question making for "National Olympiad of Stem Cells and Regenerative Medicine", Council for Stem Cell Sciences and Technologies, Tehran, Iran, Since 2018
- Scientific committee member of "National Olympiad of Stem Cells and Regenerative Medicine", Council for Stem Cell Sciences and Technologies, Tehran, Iran, 2018-2020
- Referee of Khwarizmi Youth Award, Tehran, Iran, 2018-2020
- Invited reviewer of journal of "Cell Journal/ Yakhteh" (Royan Institute Publication)
- Invited reviewer of journal of "Pathobiology Research" (Tarbiat Modares University Press)

- Referee of eligible Ph.D. thesis for supportive grant, Council for Stem Cell Sciences and Technologies, Tehran, Iran, 2019 and 2020
- Referee of "Bio Idea Market", Center for Research and Development of Biotechnology, Tarbiat Modares University, Tehran, Iran, 2019
- Executive committee member of "4th International Student Conference of Biotechnology", University of Tehran, Tehran, Iran, 2019
- Editorial membership of journal of "Applied Tissue Engineering", 2017-2019
- Executive committee member of "2nd International Student Conference of Biotechnology", University of Tehran, Tehran, Iran, 2008

Honors and Awards

- Winner of the National Elite Foundation award for the Young Assistant Professors (Dr. Kazemi Ashtiani), 2022
- Selection of the doctoral dissertation in the "19th Annual Iranian Student Thesis Festival" as the honorable thesis, 2021
- University of Tehran sabbatical scholarship for 5 months, 2016
- Award for "The Best Poster Presentation" at the 9th congress on stem cell biology and technology, Royan Institute International Twin congresses, Tehran, Iran, 2013
- National patent of "Cardiac Stem Cells isolation", 2012
- Ranked 22nd person in Universities Entrance Exam, 2006

Internships

- Five months internship, Experimental and clinical research center (ECRC), Charite medical faculty and Max-Delbruck-Center for molecular medicine, cardiovascular genetics group, Berlin, Germany, 2016
- Three months internship, Pasteur Institute of Iran, Tehran, Iran, 2007

Interests

- Cell-based and cell-free approaches for regenerative medicine
- Disease modeling
- Stem cells research
- Gene therapy

- Molecular researches (mRNA and microRNA expression array and sequencing, and cloning)
- Bioinformatics

Membership of Society

- Iranian biotechnology society
- Iranian molecular medicine network
- Universal scientific education and research network (USERN)
- International society for stem cell research (ISSCR)

Research Experiences and Skills

- Cell isolation from tissues and primary cell culture
- Two-dimensional and three-dimensional cell cultures
- Heart and skeletal muscle tissue culture
- PCR, RT-PCR and real-time PCR
- Immunofluorescence staining (cell and tissue), flowcytometry, FACS and MACS systems and histology
- Pluripotent stem cells culture (adherent and suspension) and all related techniques
- Bioinformatics and data analysis
- Primer design (RT-PCR, real time RT-PCR, cloning)
- Cloning, protein extraction and western blotting
- Animal studies

Presentations

Oral presentations

1. "In vitro three-dimensional organoids; new powerful tools to model COVID-19 disease" (**presenter**), 5th National Olympiad of Stem Cells and Regenerative Medicine, the final level (summer course), Tehran, Iran, 2020
2. "Experimental tools and methods in cell-based regenerative medicine" (**presenter**), 4th National Olympiad of Stem Cells and Regenerative Medicine, the final level (summer course), Tehran, Iran, 2019

3. "The path through bio-banking cardiac progenitor cells" (**presenter**), 24th Iranian and 3rd International Congress of Physiology and Pharmacology, Tehran, Iran, 2019
4. "The banking of cardiovascular progenitor cells; establishment for applications in regenerative medicine of cardiovascular diseases" (**presenter**), 4th symposium of Stem Cells, Tissue Engineering and Regenerative Medicine in Cardiovascular Diseases, Yazd, Iran, 2019
5. "Chemically defined culture condition for expansion and maintenance of human pluripotent stem cell-derived early cardiovascular progenitor cells" (**presenter**), Royan international twin congress, Tehran, Iran, 2018
6. "Cardiac Stem Cells; The Role Of These Resident Regenerative Reservoirs In Myocardial Repair" (**presenter**), International Preventive Cardiology Congress, Shiraz, Iran, 2015
7. "Three-Dimensional Pericardium Sponge Improves Proliferation and Differentiation of Sca-1+ Cells", Royan international twin congress, Tehran, Iran, 2013

Poster presentations

1. "A Novel Electroactive Polyurethane Scaffold for Cardiac Tissue Engineering", Royan international twin congress, Tehran, Iran, 2015
2. "Long-Term Expansion And Characterization Of Human Pluripotent Stem Cells–Derived Cardiac Progenitor Cells" (**first presenter**), ISSCR annual meeting, Stockholm, Sweden, 2015
3. "Pu.1 Silencing To Reprogram Monocytes Into Erythrocytes" (**presenter**), ISSCR annual meeting, Stockholm, Sweden, 2015
4. "Whole Genome Transcriptom Analysis Showed Significantly Changed Gene Expression After in Vitro Human Cardiac Stem Cells and Satellite Cells Passages " (**first presenter**), Royan international twin congress, Tehran, Iran, 2013
5. "Pericardium Membrane: Well Suited For Myocardial Tissue Engineering", Royan international twin congress, Tehran, Iran, 2012

Publications

1. Ali Abedi, Behnaz Bakhshandeh, Ali Babaie, Javad Mohammadnejad, **Sadaf Vahdat**, Reza Mombeiny, Seyed Reza Moosavi, Javid Amini, Lobat Tayebi, Concurrent application of conductive biopolymeric chitosan/ polyvinyl alcohol/ MWCNTs nanofibers,

intracellular signaling manipulating molecules and electrical stimulation for more effective cardiac tissue engineering. **Materials Chemistry and Physics**, Volume 258, 15 January **2021**, 123842.

2. Ali Mousavi, **Sadaf Vahdat** (**co-first author**), Nafiseh Baheiraei, Mehdi Razavi, Mohammad Hadi Norahan, Hossein Baharvand, Multifunctional conductive biomaterials as promising platforms for cardiac tissue engineering. **ACS biomaterials science & engineering**, **2020** Dec 14.
3. Leila Montazeri, Motahareh Sobat, Reza Kowsari-Esfahan, Shahram Rabbani, Hassan Ansari, Maryam Barekat, Saman Firoozi, Sarah Rajabi, **Sadaf Vahdat**, Hossein Baharvand, Sara Pahlavan, Vascular endothelial growth factor sustained delivery augmented cell therapy outcomes of cardiac progenitor cells for myocardial infarction. **Journal of tissue engineering and regenerative medicine**, **2020** Dec;14(12):1939-1944.
4. **Sadaf Vahdat**, Sara Pahlavan, Elena Mahmoudi, Maryam Barekat, Hassan Ansari, Behnaz Bakhshandeh, Nasser Aghdami, Hossein Baharvand, Expansion of human pluripotent stem cell-derived early cardiovascular progenitor cells by a cocktail of signaling factors. **Scientific reports**, **2019** Nov 5;9(1):16006.
5. Shabanm Mombini, Javad Mohammadnejad, Behnaz Bakhshandeh, Asghar Narmani, Jhamak Nourmohammadi, **Sadaf Vahdat**, Shahrzad Zirak, Chitosan-PVA-CNT nanofibers as electrically conductive scaffolds for cardiovascular tissue engineering. **International Journal of Biological Macromolecules**, **2019** Nov 1;140:278-287.
6. Parisa Shabani, Zaniar Ghazizadeh, Sattar Gorgani-Firuzjaee, Sarah Rajabi, **Sadaf Vahdat**, Yaser Azizi, Mohammad Molazem, Hossein Baharvand, Nasser Aghdami, Cardioprotective effects of omega-3 fatty acids and ascorbic acid improve regenerative capacity of embryonic stem cell-derived cardiac lineage cells. **Biofactors**, **2019** May;45(3):427-438.
7. **Sadaf Vahdat**, Behnaz Bakhshandeh, Prediction of putative small molecules for manipulation of enriched signaling pathways in hESC-derived early cardiovascular progenitors by bioinformatics analysis. **IET systems biology**, Volume 13, Issue 2, **2019**, p. 77 – 83.
8. **Sadaf Vahdat**, Sara Pahlavan, Nasser Aghdami, Behnaz Bakhshandeh, Hossein Baharvand, Establishment of a protocol for in vitro culture of cardiogenic mesodermal cells

derived from human embryonic stem cells. **Cell Journal** (Yakhteh), Vol 20, No 4, **2019** Jan-Mar (Winter);20(4):496-504.

9. **Sadaf Vahdat**, Fateme Abbasi, Vajiheh Azimian, Tina Bolurieh, Neda Jaroughi, Soura Mardpour, Ahmad Amin, Hoda Madani, Nasser Aghdami, Optimization of animal sera-free culture condition for generation and expansion of human cardiosphere-derived cells. **Journal of Applied Tissue Engineering**, **2018**; 5(2).
10. Zaniar Ghazizadeh, **Sadaf Vahdat**, Faranak Fattahi, Hananeh Fonoudi, Gholamreza Omrani, Maziar Gholampour, Nasser Aghdami, Isolation and characterization of cardiogenic, stem-like cardiac precursors from heart samples of patients with congenital heart disease. **Life Sciences**, **2015** Sep 15;137:105-15.
11. **Sadaf Vahdat**, Seyed Ahmad Mousavi, Gholamreza Omrani, Maziar Gholampour, Fattah Sotoodehnejadnematalahi, Zaniar Ghazizadeh, Javad Gharechahi, Hossein Baharvand, Ghasem Hosseini Salekdeh, Nasser Aghdami, Cellular and molecular characterization of human cardiac stem cells reveals key features essentials for their function and safety. **Stem Cells and Development**, **2015** Jun 15;24(12):1390-404.
12. Nafiseh Baheiraei, Hamid Yeganeh, Jafar Ai, Reza Gharibi, Somayeh Ebrahimi-Barough, Mahmoud Azami, **Sadaf Vahdat**, Hossein Baharvand, Preparation of a porous conductive scaffold from aniline pentamer-modified polyurethane/PCL blend for cardiac tissue engineering. **Journal of biomedical materials research. Part A**, **2015** Oct;103(10):3179-87.
13. Sareh Rajabi-Zeleti, Sasan Jalili-Firoozinezhad, Mahnaz Azarnia, Fahimeh Khayyatan, **Sadaf Vahdat**, Saman Nikeghbalian, Ali Khademhosseini, Hossein Baharvand, Nasser Aghdami, The behavior of cardiac progenitor cells on macroporous pericardium-derived scaffolds. **Biomaterials**, **2014**. 35(3): p. 970-82.

Books

1. "Practical Basics and Principles of Animal Cell Culture", Fatemeh Bagheri, Nafiseh Baheiraei, Sadaf Vahdat, Royan Pazhouh publisher, 2022.
2. "Royan Stem Cells and Regenerative Medicine Book Series: Cell Therapy and Regenerative Medicine", Chapter 10, Khaneh Zistshenasi publisher, 2021.
3. "Royan Stem Cells and Regenerative Medicine Book Series; Second book: Adult Stem Cells", Chapters 9 and 10, Khaneh Zistshenasi publisher, 2020.

4. “Heart and regenerative medicine; potential and perspective aspects of new therapeutic strategies in cardiovascular diseases”, Nafiseh Baheiraei, Sadaf Vahdat, Hoda Madani, Royan Pazhouh publisher, 2018.

Other completed projects

1. “Evaluation of therapeutic potential of exosomes secreted by hypoxia preconditioned human cardiosphere-derived cells (CDCs)”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
2. “Therapeutic outcome of intracoronary transplantation of autologous cardiac stem cells in patients with ischemic heart failure: Randomized Double Blind Clinical trial”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
3. “Investigating somatic cell source effects on human iPS cells production efficiency and differentiation potential into cardiomyocytes”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
4. “Evaluation of the presence of the CD133 antigen on cardiac progenitor cells in the hearts of patients with congenital heart disease; in vitro and in vivo assessment of differentiation and functionality”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
5. “The cardiomyocyte differentiation of human cardiac progenitor cells on acellular human pericardial matrix”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
6. “Isolation, expansion and differentiation of cardiac stem cells into functional cardiomyocytes”. Royan Institute for Stem Cell Biology and Technology, Department of Stem Cells and Developmental Biology.
7. “Co-application of small molecules and electrical induction on stem cells in chitosan-based scaffolds for cardiac tissue engineering”. University of Tehran, Faculty of New Sciences and Technologies.
8. “Using chitosan-based electrical conducting scaffolds for cardiac tissue engineering”. University of Tehran, Faculty of New Sciences and Technologies.

9. “Fabrication of cardiac patch using electroactive and biodegradable polyurethanes and neonatal rat cardiomyocytes”. Tehran University of Medical Sciences, School of Advanced Technologies in Medicine.