Sara Pahlavan

Royan Institute for Stem Cell Biology and Technology
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PERSONAL DETAILS
Gender: Female
Birthdate: 15th of July 1981
Birthplace: Damavand, Iran
Marital status: Single
Present citizenship: Iranian

EDUCATION
1995-1999 High School Diploma in Biological Science, Tehran, Iran

1999-2003 B.Sc. In Biology, University of Agricultural Sciences of Gorgan, Golestan, Iran

2003-2005 M.Sc. in Animal physiology, Shiraz University, Shiraz, Iran

2009-2012 Ph.D., Saarland University, Homburg (Saar), Germany

2012-2014 Postdoctoral fellow, Medical University of South Carolina, USA

2015-2017 Postdoctoral fellow, Royan Institute for Stem Cell Biology and Technology, Iran

2017-now Assistants Professor, Royan Institute for Stem Cell Biology and Technology, Iran

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RESEARCH INTERESTS
I am very much interested in using induced pluripotent stem cells (iPSCs)-derived cardiomyocytes (CMs) for modeling channelopathies and cardiomyopathies. Patient-specific iPSCs-derived CMs enable us to study heart diseases *in vitro*. I am particularly interested in studying ion channels and Ca^{2+} machinery in patient-specific iPSCs-derived CMs in order to better understand the underlying mechanisms for development of channelopathies and cardiomyopathies. Furthermore, I am interested in using patient-specific iPSCs-derived CMs as an *in vitro* model for personalized drug testing.

PUBLICATIONS

2007 Monsefi, M., **Pahlavan, S.** Effects of Aqueous Extract of *Anethum graveolens (L.)* On Male Reproductive System of Rats. *J Biol Sci*. 2007;7(5):815-8

2012 Tian, Q., **Pahlavan, S.**, Oleinikow, K., Jung, J., Ruppenthal, S., Scholz, A., Schumann, C., Kraegeloh, A., Oberhofer, M., Lipp, P., Kaestner, L. Functional and morphological preservation of adult ventricular myocytes in culture by sub-micromolar cytochalasin D supplement. *J Mol Cell Cardiol.* 2012 Jan;52(1):113-24

2012 **Pahlavan, S.,** Oberhofer, M., Sauer, B., Ruppenthal, S., Tian, Q., Scholz, A., Kaestner, L., Lipp, L. Gαq and Gα11 contribute to the maintenance of cellular electrophysiology and Ca2+ handling in ventricular cardiomyocytes. *Cardiovasc Res.* 2012 Jul 1;95(1):48-58

2012 Blaich, A., **Pahlavan, S.,**Tian, Q., Oberhofer, M., Poomvanicha, M., Lenhardt, P., Domes, K., Wegener, JW., Moosmang, S., Ruppenthal, S., Scholz, A., Lipp, P., Hofmann, F. Mutation of the CaV1.2 IQ Motif to CaV1.2 EQ induces dilated Cardiomyopathy and Death. *J Biol Chem.* 2012 Jun 29;287(27):22616-25

2015 Shabani P, Ghazizadeh Z, **Pahlavan S**, Hashemizadeh S, Baharvand H, Aghdami N, Doosti M. Exogenous treatment with eicosapentaenoic acid supports maturation of cardiomyocytes derived from embryonic stem cells. Biochem Biophys Res Commun. 2015 May 29;461(2):281-6

2015 Talkhabi M, **Pahlavan S**, Aghdami N, Baharvand H. Ascorbic acid promotes the direct conversion of mouse fibroblasts into beating cardiomyocytes. Biochem Biophys Res Commun. 2015 Aug 7;463(4):699-705

2015 Fonoudi H, Ansari H, Abbasalizadeh S, Rezaei Larijani M, Kiani S, Hashemizadeh S, Sharifi Zarchi A, Bosman A, Blue G.M, **Pahlavan S**, Perry M, Orr Y, Mayorchak Y, Vandenberg J, Talkhabi M, Winlaw D.S, Harvey R.P, Aghdami N, Baharvand H. A Universal and Robust Integrated Platform for the Scalable Production of Human Cardiomyocytes from Pluripotent Stem Cells. Stem Cells Translational Medicine, 2015 Dec;4(12):1482-94

2017 **Pahlavan S**, Morad M. Total internal reflectance fluorescence imaging of genetically engineered ryanodine receptor-targeted Ca2+ probes in rat ventricular myocytes. Cell Calcium. 2017 Sep;66:98-110

2017 Meyfour A, Ansari H, **Pahlavan S**, Mirshahvaladi S, Rezaei-Tavirani M, Gourabi H, Baharvand H, Salekdeh GH. Y Chromosome Missing Protein, TBL1Y, May Play an Important Role in Cardiac Differentiation. J Proteome Res. 2017 Dec 1;16(12):4391-4402

2017 Meyfour A, Pooyan P, **Pahlavan S**, Rezaei-Tavirani M, Gourabi H, Baharvand H, Salekdeh GH. Chromosome-Centric Human Proteome Project Allies with Developmental Biology: A Case Study of the Role of Y Chromosome Genes in Organ Development. J Proteome Res. 2017 Dec 1;16(12):4259-4272

2017 Sarah Rajabi, **Sara Pahlavan**, Mohammad Kazemi Ashtiani, Hassan Ansari, Saeed Abbasalizadeh, Forough Azam Sayahpour, Fahimeh Varzideh, Sawa Kostin, Nasser Aghdami, Thomas Braun, Hossein Baharvand. Human embryonic stem cell-derived cardiovascular progenitor cells efficiently colonize in bFGF-tethered natural matrix to construct contracting humanized rat hearts. Biomaterials, 2018 Feb;154:99-112

2017 **Pahlavan S**, Tousi MS, Ayyari M, Alirezalu A, Ansari H, Saric T, Baharvand H. Effects of hawthorn (*Crataegus pentagyna*) leaf extract on electrophysiologic properties of cardiomyocytes derived from human cardiac arrhythmia-specific induced pluripotent stem cells. FASEB J. 2018 Mar;32(3):1440-1451

2018 Meyfour A, **Pahlavan S**, Sobhanian H, Salekdeh GH. 17th Chromosome-Centric Human Proteome Project Symposium in Tehran. Proteomics. 2018 Apr;18(7):e1800012

2018 Parisa Ghiasi, Saman Hosseinkhani, Hassan Ansari, Nasser Aghdami, Saeed Balalaei, **Sara Pahlavan**, Hossein Baharvand. Reversible Permeabilization of the Mitochondrial Membrane Promotes

Human Cardiomyocyte Differentiation from Embryonic Stem Cells. J. Cell. Physiol, 2018 Jan;234(1):521-536

2018 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 J, 2019 Jan;20(4):496-504

2019 Varzideh F, **Pahlavan S**, Ansari H, Halvaei M, Kostin S, Feiz MS, Latifi H, Aghdami N, Braun T, Baharvand H. Human cardiomyocytes undergo enhanced maturation in embryonic stem cell-derived organoid transplants. Biomaterials. 2019 Feb;192:537-550

2019 Anna Meyfour, Mahya Hosseini, Hamid Sobhanian, **Sara Pahlavan**. Iran's Contribution to Human Proteomic Research. Cell J. Volume 21, Number 3, Autumn 2019, Serial Number: 83- Pages

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CONFERENCE ABSTRACTS AND ORAL PRESENTATIONS

2010 Hammer, K., Scholz, A., Tian, Q., **Pahlavan, S.**, Ruppenthal, S., Oberhofer, M., Kaestner, L., Lipp, P. Influence of Cytochalasin D on Morphology and Physiology of Rat Cardiac Myocytes. 2010, *Acta Physiologica*, Vol. 198, Supplement 677: P-SUN-87

2011 Kaestner, L., Tian, Q., **Pahlavan, S.**, Oleinikow, K., Ruppenthal, S., Scholz, A., Oberhofer, M., Schumann, C., Kraegeloh, A., Lipp, P. The Differential Action of Cytochalasin D in T-tubular Remodelling of Ventricular Myocytes.2011 Biophysical Society Meeting Abstracts, *Biophys. J*, Vol. 100(3), Supplement, pp.292-3a

2011 Tian, Q., **Pahlavan, S.**, Ruppenthal, S., Scholz, A., Wiesen, K., Oberhofer, M., Kaestner, L., Lipp, P. Alterations of Membrane Currents, Contractility and Calcium Signaling in Gq/G11 Single and Double KO Mice. 2011 Biophysical Society Meeting Abstracts, *Biophys. J*, Vol. 100(3), Supplement, pp.517a

2011 **Pahlavan, S.**, Wiesen, K., Oberhofer, M., Kaestner, L., Lipp, P. The Electrophysiological Effects of Chronic Application of Aldosterone on Ventricular Myocytes of Gq/11 Knockout Mice. 2011, *Acta Physiologica*, Vol. 201, Supplement 682: P021

2012 **Pahlavan, S**., Sauer, B., Wiesen, K., Oberhofer, M., Kaestner, L., Lipp, P., GαQ/Gα11 Modulate Aldosterone Mediated Electrical Remodeling and Ca2+ Handling Alterations in Ventricular Myocytes. 2012 Biophysical Society Meeting Abstracts, *Biophys. J*. Vol. 102(3), Supplement, pp.340a 2

2012 **Pahlavan, S.**, Oberhofer, M., Lipp, P. Excitation-Contraction Coupling Alterations in Ventricular Myocytes of RacET Mice. 2012, *Acta Physiologica*, Vol. 204, Supplement 689: P186

2013 Lipp P, Wiesen K, **Pahlavan S**, Oberhofer M, Kaestner L, Weissgerber P, Freichel M, Flockerzi V. Excision of the Cacnb2 Gene in Mice Results in Augmented SR-Ca Release and Impaired Cardiac Function in Vivo. *Biophys. J*. Volume 104, Issue 2, Supplement 1, p40a, 29 January 2013

2014 **Pahlavan, S**., Yang, Y., Robertson, C., Yamaguchi, N., Cleemann, L., Morad, M. A new Ca2+ probe, Calstabi-Cam, targeted to ryanodine receptors of cardiomyocytes. 2014 Biophysical Society Meeting Abstracts

2016 F Varzideh, H Ansari, **S Pahlavan**, N Aghdami, H Baharvand. The generation of beating multicell-type cardiac organoids by coculture of hPSC-CPCs with HUVECs and hPSC MSCs in 3D culture. 2016, ISSCR and ESGCT joint symposium abstracts, A74

2016 S Gholami, **S Pahlavan**, H Ansari, N Aghdami, H Baharvand. Human induced pluripotent stem cell-derived cardiomyocytes as an in vitro model to study molecular, cellular and functional phenotype of systemic scleroderma in the heart. 2016, ISSCR and ESGCT joint symposium abstracts, A102

2016 **Pahlavan S**, Ayyari M, Alirezalu A, Tousi MS, Ansari H, Baharvand H. Effects of Crataegus pentagyna on cardiomyocytes (CMs) differentiated from CPVT1 patient-derived induced pluripotent stem cells (iPSCs). Planta Med 2016; 82(S 01): S1-S381

2018 **Pahlavan S**, Arrythmic Heart Diseases in A Dish, Sixth Iran National Cardiovascular Congress, Invited Speaker

2018 **Pahlavan S**, The role of human pluripotent stem cells in the regeneration of cardiac conduction system, 3rd national symposium on stem cells, tissue engineering and regenerative medicine in cardiovascular system, Invited speaker

2018 Varzideh F, Ansari H, **Pahlavan S**, Mahmoudi E, Halvaei M, Kostin S, Braun T, Baharvand H, Human Cardiomyocytes Undergo Enhanced Maturation in Embryonic Stem Cell-Derived Organoid Transplants, The Stem Cell Niche Conference 2018

AWARDs AND GRANTs

2012 **DAAD** scholarship to study ion currents in Gq/G11 knockout mice

2015-2017 **Iran National Elite Federation** Research grant for drug screening on patient-specific iPSC-derived cardiomyocytes

2017 **Iran National Science Foundation** grant for preclinical studies of regenerative potential of mesenchymal stem cells in cardiovascular disorders

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LABORATORY METHOD EXPERIENCES

1. Isolation and primary cell culture (Rat ventricular myocytes, Rat neonatal cardiac myocytes)
2. iPSC culture and differentiation to cardiomyocytes
3. Patch clamp
4. Multielectrode array
5. Ca^{2+} imaging
6. TIRF
7. Western Blot
8. Immunocytochemistry
9. Histology

10. PCR
11. Cloning

TEACHING EXPERIENCES
1-Animal Physiology
2-Embriology (organogenesis of the vertebrates)
3-Comparative Anatomy of the Vertebrates
4-Medical Physiology
5-Cell biology
6-Laboratory techniques

WORKSHOPS
2009 Scientific Writing, Graduate Research Program 1326, Homburg (Saar)
2010 Scientific Presentation, GradUS, Saarbrueken
2011 Communicating at Conferences, Graduate Research Program 1326, Homburg

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PROFESSIONAL AFFILIATIONS
2005-present Member of Iranian Society of Physiology and Pharmocology 2009-present Associate Member of Graduate Research Program 1326, Calcium Signaling and Cellular Nanodomains, Medical Faculty, Saarland University, Homburg (Saar), Germany
2011-present Member of Biophysical Society, Maryland, USA
2015-now Member of European Society of Gene and Cell Therapy (ESGCT)

COMPUTER SKILLS
Operating System: Windows and Mac
Microsoft Office: Word, Excel, Powerpoint, Publisher Adobe: Photoshop, Illustrator
Statistical Softwares: SPSS, Prism Grafics softwares: Origin, Signal, IgorPro Patchmaster, Fitmaster, pCLAMP

REFEREES
Prof. Dr. Martin Morad moradm@musc.edu
Dr. Lars Cleemann cleemann@musc.edu
Prof. Dr. Peter Lipp peter.lipp@uks.de
Prof. Hossein Baharvand baharvand@royaninstitute.org