



## Samaneh Dehghan, PhD

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**Date of Birth:** 1983

**Place of residence:** Tehran, Iran

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**Affiliation:** Assistant professor of physiology

**1:** Stem cell and regenerative medicine research center, Iran university of medical sciences, Tehran, Iran. **2:** Eye Research Center, The Five Senses Institute, Rassoul Akram Hospital, Iran University of Medical Sciences, Tehran, Iran

### **Education:**

- **Tarbiat Modares University, Tehran, Iran**  
2009-2015, PhD; Physiology

Dissertation: Increasing the pluripotent capacity of the central nervous system using the pluripotent inducer and investigating the effect of the increase in repair capacity on myelin repair in the mouse optic nerve and chiasm

- **Tarbiat Modares University, Tehran, Iran**

2006-2009, M.Sc; Physiology

Dissertation: Molecular and electrophysiological study of the effect of FGF2 on myelin repair of optic nerve and chiasm following induced demyelination.

- **Lorestan University, Khoram Abad, Lorestan, Iran**

2001-2005 B.Sc, Biology (Zoology)

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### **Academic Experience:**

- **Post- Doc training:** Tarbiat Modares University, Tehran, Iran, Physiology department, 2015- 2017.

Title of project: Trans-differentiation of melanocytes toward neural progenitor cells; an approach for application in neurodegenerative disorders.

- **Sabbatical training:** Research fellow at Biochemistry and Molecular Medicine Department, Institute for Pediatric Regenerative Medicine (IPRM), Medical Center, **UC Davis, California, USA**, 2013-2014,
- **Research fellow:** Tissue engineering and regenerative medicine, Avicenna research institute, shahid Beheshti university, Tehran, Iran, 2017-2018.
- **Research assistant:** Physiology department, Tarbiat Modares University, Tehran, Iran, 2018-2019,
- **Reviewer of several international and ISI journals.**
- **Topic editor of Frontier in cellular neuroscience,** Activation and Stimulation of Endogenous Neural Stem/Progenitor Cells in Multiple Sclerosis and Other Neurodegenerative Diseases, 2021 up to present.
- **Consultant Committee** of Precision Medicine and Clinical OMICS, 2021 up to present.
- **Thesis supervisor:** Evaluation of the effectiveness of mesenchymal stem cells conditioned media on skin fibroblasts protein synthesis: in vitro studies, ongoing, 2022.
- **Thesis Advisor:** The effect of GABA A receptor antagonist on avoidance memory and the expression of BDNF and MBP genes in the lysolecithin local model of demyelination in the hippocampus of rats, 2017.
- **Teaching experiences including:**
  - 1) General physiology lab, 2017- present.
  - 2) General physiology, 2017- present.
  - 3) Respiratory physiology, 2018.
  - 4) Cell and molecular biology, 2018.

**Publication:**

<https://scholar.google.com/citations?user=Pffpv3UAAAAJ&hl=en>

1. **Dehghan S**, Mirshahi R, Shoaee-Hassani A, Naseripour M. Human-induced pluripotent stem cells-derived retinal pigmented epithelium, a new horizon for cells-based therapies for age-related macular degeneration. *Stem cell research & therapy*.13(1):217 (2022). doi: 10.1186/s13287-022-02894-0.
2. Salimi, M., Tabasi, F., Abdolsamadi, M., **Samaneh Dehghan.**, et al. Disrupted connectivity in the olfactory bulb-entorhinal cortex-dorsal hippocampus circuit is associated with recognition memory deficit in Alzheimer's disease model. *Sci Rep* 12, 4394 (2022). doi: 10.1038/s41598-022-08528-y.
3. Navidhamidi, M., Nazari, A., **Dehghan, S.** et al. Therapeutic Potential of Combined Therapy of Vitamin A and Vitamin C in the Experimental Autoimmune Encephalomyelitis (EAE) in Lewis Rats. *Mol Neurobiol* (2022). doi: 10.1007/s12035-022-02755-0. Epub 2022 Jan 24.
4. **Dehghan S**, Aref E, Raoufy MR, Javan M. An optimized animal model of lysolecithin induced demyelination in optic nerve; more feasible, more reproducible, promising for studying the progressive forms of multiple sclerosis. *Journal of neuroscience methods*, 352:109088.2021. doi: 10.1016/j.jneumeth.2021.109088.
5. Pazhoohan S, Aref E, Zare L, **Dehghan S**, Javan M, Hajizadeh S, et al. Inhibition of Rho-kinase improves response to deep inspiration in ovalbumin-sensitized guinea pigs. *Iranian journal of basic medical sciences*. 23(12):1584-9.2020, doi: 10.22038/ijbms.2020.46258.10683.
6. Roshanbakhsh H, Elahdadi Salmani M, **Dehghan S**, Nazari A, Javan M, Pourabdolhossein F. Piperine ameliorated memory impairment and myelin damage in lysolecithin induced hippocampal demyelination. *Life sciences*. 253:117671.2020. doi: 10.1016/j.lfs.2020.117671. Epub 2020 Apr 24.
7. Dehdar, K., Mahdidoust, S., Salimi, M. **Dehghan S**, et al. Allergen-induced anxiety-like behavior is associated with disruption of medial prefrontal cortex - amygdala circuit. *Scientific reports*, 2019.
8. Raziieh Rohani, Abbas Ali Aghaei, Mohammad\_Amin Abdollahifar, Yousef Sadeghi, Leila Zare, **Samaneh Dehghan**, Mohammad Hassan Heidari, Long-term effects of hippocampal low-frequency stimulation on pro-inflammatory factors and astrocytes activity in kindled rats, *Cell Journal (Yakhteh)*, 2021.
9. Biswas Sangita, Chung SH, Jiang Peng, **Dehghan Samaneh**, Deng Wen bin, Development of glial restricted human neural stem cells for oligodendrocyte differentiation in vitro and in vivo, *Scientific reports*, 2019.
10. **Samaneh Dehghan**, Sahar Farhangi, Mehdi Totonchi, Mohammad Javan, in vivo conversion of astrocytes to oligodendrocyte lineage cells in adult mice demyelinated brains by Sox2, *Multiple sclerosis and related disorders*, 2019.
11. Saman Esmaeilnejad, **Samaneh Dehghan**, Mohammad Javan. Therapeutic Stem Cells and Their Utilization in Multiple Sclerosis Clinical Trials: A Mini Review, *J Human Genome*, 2019.
12. Seung Chung; Sangita Biswas; Jiho Sohn; Peng Jiang; **Samaneh Dehghan**; Hassan Marzban; Wenbin Deng. The p38 $\alpha$  MAPK deletion in oligodendroglia does not attenuate myelination defects in a mouse model of periventricular leukomalacia, *Neuroscience*, 2018.
13. Parastoo Mardani, Abdolrahman Sarihi, Alireza Komaki, Amir Shojaei, Javad Mirnajafi-Zadeh, **Samaneh Dehghan**, Shahrbanoo Oryan. ERK activation is required for the antiepileptogenic effect of low frequency electrical stimulation in kindled rats, *Brain Research Bulletin*, 2018.

14. Alireza Mousavi Majda, Forough Ebrahim Tabara, Arghavan Afghania, Sahand Ashrafpoura, **Samaneh Dehghan**, Mohammad Gola, Manouchehr Ashrafpourc, Fereshteh Pourabdolhossein, Inhibition of GABA A Receptor Improved Special Memory Impairment in the Local Model of Demyelination in Rat Hippocampus, Behavioural Brain Research, 2017.
15. Fereshteh Pourabdolhossein , **Samaneh Dehghan**, Barbara Demeneix, Mohammad Javan, Nogo receptor blockade enhances subventricular zone's stem cells proliferation and differentiation in demyelination context, Physiology and pharmacology, 2017.
16. **S. Dehghan**, M Hesaraki, M. Soleimani, J. Mirnajafi-Zadeh, Y. Fathollahi and M. Javan, Oct4 TRANSCRIPTION FACTOR IN CONJUNCTION WITH VALPROIC ACID ACCELERATE MYELIN REPAIR IN DEMYELINATED OPTIC CHIASM IN MICE, Neuroscience, 2016.
17. **Samaneh Dehghan**, Sareh Asadi, Maryam Hajikaram, Masoud Soleimani, Seyed Javad Mowla, Yaghoob Fathollahi, Abolhassan Ahmadiani, Mohammad Javan, Exogenous Oct4 in Combination with Valproic Acid Increased Neural Progenitors Markers, An Approach for enhancing the Repair Potential of Brain, Life Science Journal, 2015.
18. Asadi S, **Dehghan S**, Haji karam M, Mola S. J, Ahmadiani A, Javan M. Comparing the Effects of Small Molecules BIX-01294, Bay K8644, RG-108, Valproic Acid and Their Different Combinations on Induction of Pluripotency Marker-Genes by Oct4 in Mice Brain, Cell journal, 2015.
19. **Samaneh Dehghan**, Mohammad Javan, Fereshteh Pourabdolhossein, Javad Mirnajafi-Zadeh, Hossein Baharvand. Basic Fibroblast Growth Factor Potentiates Myelin Repair Following Induction of Experimental Demyelination in Adult Mouse Optic Chiasm and Nerves. Journal of molecular neuroscience, 2012.
20. Fereshteh Pourabdolhossein, Mohammad Javan, Javad Mirnajafi-zadeh, **Samaneh Dehghan**, Mohammad Amin Sherafat, Sabah Mozafari, Abolhassan Ahmadiani. PKC mediates the endogenous inhibition of myelin repair in the context of local demyelination Induced in mouse optic chiasm. Iranian Journal of Feyz 2011.

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### **Research Projects:**

1. Investigation of the possibility of increasing endogenous optic nerve repair using encapsulated-exosomes in an animal model of optic nerve crush, ongoing, 2022.
2. Investigation the possibility of cell-based therapy in Glaucoma derived optic neuropathy, ongoing, 2021.
3. Evaluation of the injectable hyaluronic acid-based macro particles loaded with canabidiol on sciatic nerve injury model in male rats, ongoing, 2022.
4. In vitro study of the effect of alpha 1 and alpha 2 adrenergic receptor blockers on glioblastoma cell survival, ongoing, 2022.
5. Direct differentiation of Embryonic stem cells into retinal pigmented epithelium cells in order to further application in cell-based therapy for animal model of age-related macular degeneration, ongoing, 2020.
6. Investigating the possibility of decellularizing retinal tissue in a bioreactor, ongoing, 2022.
7. The effect of GABA A receptor antagonist on avoidance memory and the expression of BDNF and MBP genes in the lysolecithin local model of demyelination in the hippocampus of rats, Completed, 2017.
8. Determining the optimal conditions for axonal damage caused by myelination, creating a non-transgenic model for the progressive form of MS, Completed, 2018.

9. Trans-differentiation of melanocytes toward neural progenitor cells; an approach for application in neurodegenerative disorders, Completed, 2016.
  10. Determining priorities and frameworks for the use of stem cell technology in the field of cognitive science and technology, 2015.
  11. Production of stem cells in the brain tissue in order to increase the power of endogenous repair in neurodegenerative diseases, Completed, 2011.
  12. Physiology and pharmacology of Iran: current situation and future prospects, Completed, 2018.
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### **Honor and award:**

1. University grant for research project entitle" Investigation the possibility of cell-based therapy in Glaucoma derived optic neuropathy", 2021.
  2. Young Scientist Travel award, Kobe, JAPAN, FAOPS, 2019.
  3. Stipend travel grant for attend in Achucarro international glial school, Bilbao, Spain, 2018.
  4. IBRO Travel grant for JNS meeting, Japan, 2015.
  5. MSIF Du Pre grant for research at UC Davis, California, USA, 2012.
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### **International conferences:**

#### **Oral presentation:**

1. **2021**, Oral presentation, Iran 4<sup>th</sup> international and 15<sup>th</sup> national congresses of physiology and pharmacology, long term chemical demyelination using agarose loaded lysolecithin for induction axonal damage; method development for studying the secondary progressive Multiple Sclerosis.
2. **2017**, Invited speaker for MS symposium, Iran, Tehran, Reprogramming technology, an approach for neurodegenerative condition.
3. **2017**, Oral Presentation, Iran, 2nd National festival & international congress on stem cell and regenerative medicine, Trans-differentiation of gliosis to oligodendrocyte progenitor cells.
4. **2015**, Oral Presentation, Kobe, Japan, Oct4 transcription factor in conjunction with Valproic acid accelerate myelin repair in demyelinated optic chiasm in mice, oral presentation in 38<sup>th</sup> Japanese neuroscience meeting
5. **2015**, Oral Presentation, Iran, 4<sup>th</sup> BCNC congress, Oct4 overexpression in Conjunction with Valproic Acid increase neural stem cell and pluripotency markers and Accelerates Myelin Repair in Demyelinated Optic Chiasm in mice
6. **2015**, Invited Speaker for 6<sup>th</sup> international conference of cognitive sciences, Tehran, Iran, an overview to NIH allocated grant in the joint field of stem cell technology and cognitive sciences.
7. **2015**, Oral Presentation, Kashan, Iran, 1<sup>st</sup> international and 22<sup>th</sup> Iranian congress of physiology and pharmacology.
8. **2014**, Oral presentation, Japan, Yokohama, the 37<sup>th</sup> Annual Meeting of the Japan Neuroscience Society (JNS), Enhancing brain repair potential in kainic acid-degenerated hippocampus by pluripotency inducers.
9. **2013**, Oral presentation, Iran, Tabriz, 21<sup>st</sup> International conger of Physiology and pharmacology, Enhancing Brain Repair Potential in Kainic Acid Degenerated Hippocampus by Pluripotency Inducers.

10. **2011**, Oral presentation, Iran, Tehran, 1<sup>st</sup> annual conference on neural stem cells, I.C.V injection of Oct4 vector can increase pluripotency markers' expression in lateral ventricle cells.

### **Poster Presentation:**

1. **2018**, Achucarro international glial school, Bilbao, Spain, Trans-differentiation of glial scar toward Oligodendrocyte progenitor cells.
2. **2016**, USA, Berkeley, CA, in vivo forced expression of Sox2 transcription factor in an animal model of demyelination transdifferentiate reactive astrocytes into OPCs, Cell symposia, 10 years of iPSCs.
3. **2014**, USA, Washington DC, Society for neuroscience (SFN), Neuroprotective effects of levetiracetam in a murine model of periventricular leukomalacia.
4. **2013**, USA, San Diego, Society for neuroscience (SFN), Human iPSC-derived astrocytes protect against white matter injury and promote remyelination in a mouse model of periventricular leukomalacia.
5. **2012**, Hong Kong, Joint Annual Scientific Meeting of the Hong Kong Society of Neurosciences and the Biophysical Society of Hong Kong, Oct4 viral vector delivery to mouse brain can increase pluripotency markers' expression and valproic acid enhances its effect.
6. **2012**, Italy, Florence, IBRO world congress, FGF-2 potentiates myelin repair in mouse optic chiasm and nerves by recruiting oligodendrocytes progenitor cells.
7. **2012**, Italy, Florence, IBRO world congress, PKC inhibits myelin repair in the context of local demyelination induced in mice optic chiasm.
8. **2009**, France, Paris, 9<sup>th</sup> European meeting on glia cells in health and disease, PKC mediates inhibitory effects of myelin on axonal regeneration on local model of demyelination in mouse's optic nerve and chiasma.
9. **2009**, Iran, Babol, First National Conference on New cell - molecular in the treatment of non-communicable diseases, Electro physiologically assessment of optic nerve and chiasm demyelination and remyelination following local administration of lysolecithin.
10. **2009**, Iran, Tehran, 19<sup>th</sup> Iranian congress of physiology and pharmacology, Assessing the effect of FGF-2 on myelin repair in mouse optic nerve and chiasm using visual evoked potential recording.

### **Research interests:**

- 1) Translational medicine
- 2) cell therapy
- 3) Neurodegenerative disease modeling
- 4) In vivo and in Vitro Cellular reprogramming and trans-differentiation
- 5) Retinal pigmented epithelium
- 6) Optic nerve disease and degeneration
- 7) Adult stem cells
- 8) CNS repair
- 9) Demyelination and Remyelination
- 10) Adult neural stem cell behavior including their proliferation, migration, survival, and differentiation in response to CNS injuries.

**Book:**

- 2013: “Real-Time PCR”, In Techniques in neuroscience Research, Tarbiat Modares University, Tehran, Iran.
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**Workshop and Schools:**

- 1) 2022. **Teacher** at graphical abstract workshop, Tehran, Iran.
  - 2) 2018, **Teacher** at techniques for investigation of optic nerve (functionally and histologically), physiology and pharmacology association, Tehran, Iran.
  - 3) 2018, **Teacher** at techniques for study demyelination and remyelination, physiology and pharmacology association, Tehran, Iran
  - 4) 2018, First international neuroscience Achucarro international glial school, Bilbao, Spain
  - 5) 2017, **Teacher** at IBRO –APRC Tehran advanced School of neuroscience, Tehran, Iran
  - 6) 2016, **Teacher** at 5<sup>th</sup> IBRO school of neuroscience, Tehran, Iran
  - 7) 2015, **Teacher** at 1<sup>st</sup> Neuroscience Summer School of student committee of Iranian Neuroscience society, Tehran, Iran.
  - 8) 2014, **Teacher** at 4<sup>th</sup> IBRO school of neuroscience, Tehran, Iran,
  - 9) 2012, **Teacher assistance** at 2<sup>th</sup> IBRO School of neuroscience, Tehran, Iran.
  - 10) 2011, **Teacher** at satellite workshop of 19<sup>th</sup> physiology and pharmacology congress, Tehran, Iran
  - 11) 2010, 1<sup>th</sup> congress on reproductive biomedicine & 6<sup>th</sup> congress on stem cell biology & Technology, Tehran, Iran
  - 12) 2009, Molecular neuroscience workshop in Tarbiat Modares University, Tehran, Iran
  - 13) 2008, 9<sup>th</sup> congress on reproductive biomedicine & 4<sup>th</sup> congress on stem cell biology & technology, Tehran, Iran
  - 14) 2008, Cell therapy congress in medical science of Iran University, Tehran, Iran
  - 15) 2007, 18<sup>th</sup> congress of physiology and pharmacology, Mashhad, Iran
  - 16) 2007, Learning and memory workshop in medical science of Mashhad University, Mashhad, Iran
  - 17) 2014, Neuroscience meeting (SFN), San Diego, USA
  - 18) 2014, Stem cell meeting, MIND Institute, Sacramento California
  - 19) 2013, Neuroscience meeting in UC Davis, California, USA
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