Mohammad Hossein Ghanian

Building 13, Royan Institute, Bani-Hashem Square, Bani-Hashem Street, Soleimani Highway, Tehran, Iran
ghanian@ymail.com
ghanian@royan-rc.ac.ir
+982123562663 (office)
+982123562255 (lab)

RESEARCH INTERESTS

Stem cells engineering, Drug delivery systems

EDUCATION

PhD in Polymer Engineering, 2018 – Amirkabir University of Technology. Dissertation: *In situ forming tough hydrogels based on clickable Alginate/PEG*. Prof. Hamid Mirzadeh, Chair

MSc in Polymer Engineering (Biomaterials), 2012 – Iran Petrochemical and Polymer Institute

BSc in Chemical Engineering (Polymers), 2010 – Isfahan University of Technology

APPOINTMENTS

Assistant Professor: Royan Institute for Stem cells biology and Technology, Department of Cell Engineering, September 2019 to Present.
Research assistant: Royan Institute for Stem cells biology and Technology, Department of Cell Engineering, June 2012 to September 2019.

PUBLICATIONS

Book

H. Baharvand, M. Kazemi-Ashtiani. *Tissue Engineering*. Biology House Press, 2020

Peer-reviewed Journals

1. Mohammad Hossein Ghanian, Zahra Farzaneh, Jalal Barzin, Mojgan Zandi, Mohammad Kazemi-Ashtiani, Mehdi Alikhani, Morteza Ehsani, Hossein Baharvand, "Nanotopographical control of human embryonic stem cell differentiation into definitive endoderm", *J Biomed Mater Res Part A*, 103A, p3539–3553, 2015.

2. Fereshteh Esfandiari, Omid Mashinchian, Mohammad Kazemi Ashtiani, Mohammad Hossein Ghanian, Katsuhiko Hayashi, Amir Ata Saei, Morteza Mahmoudi, Hossein Baharvand, "Possibilities in Germ Cell Research: An Engineering Insight", *Trends in Biotechnology*, 33, p735–746, 2015.

3. Mohammad Kazemi Ashtiani, Mojgan Zandi, Jalal Barzin, Yaser Tahamtani, Mohammad Hossein Ghanian, Azadeh Moradmand, Morteza Ehsani, Hossein Nezari, Mehran Rezaei Larijani, Hossein Baharvand, “Substrate-mediated commitment of human embryonic stem cells for hepatic differentiation”, *J Biomed Mater Res Part A*, 104, p2861–2872, 2016.

4. Amir Mohammad Ghafari, Sareh Rajabi-Zeleti, Mohammad Naji, Mohammad Hossein Ghanian, Hossein Baharvand, "Mechanical reinforcement of urinary bladder matrix by electrospun polycaprolactone nanofibers", *Scientia Iranica*, 2017.

5. Fereshteh Esfandiari, Mohammad Kazemi Ashtiani, Mehdi Sharifi-Tabar, Maryam Saber, Hamed Daemi, Mohammad Hossein Ghanian, Abdolhossein Shahverdi, Hossein Baharvand, "Microparticle-Mediated Delivery of BMP4 for Generation of Meiosis-Competent Germ Cells from Embryonic Stem Cells", *Macromolecular Bioscience*, 2016.

6. Ibrahim Zarkesh, Mohammad Hossein Ghanian, Mahmood Azami, Fatemeh Bagheri, Hossein Baharvand, Mohammad Reza Baghban-Eslaminejad, "Facile synthesis of biphasic calcium phosphate microspheres with engineered surface topography for controlled delivery of drugs and proteins", *Colloids and surfaces B: biointerfaces*, 2017.

7. Sasan Jalili-Firoozinezhad, Mohamad Hasan Mohamadzadeh Moghadam, Mohammad Hossein Ghanian, Mohammad Kazemi Ashtiani, Hossein Alimadadi, Hossein Baharvand, Ivan Martin, Arnaud Scherberich, "Polycaprolactone-templated reduced-graphene oxide liquid crystal nanofibers towards biomedical applications", *RSC Advances*, 2017.

8. Zeinab Heidariyan, Mohammad-Hossein Ghanian, Mohsen Ashjari, Massoud Vosough, Hossein Baharvand, "Efficient and Cost-Effective Generation of Hepatocyte-like Cells Through Microparticle-mediated Delivery of Growth Factors in a 3D Suspension Culture of Human Embryonic Stem Cells", *Biomaterials*, 2018.

9. Mohammad Hossein Ghanian, Hamid Mirzadeh, Hossein Baharvand, "In Situ Forming, Cytocompatible, and Self-Recoverable Tough Hydrogels Based on Dual Ionic and Click Cross-Linked Alginate", *Biomacromolecules*, 2018.

10. Hamid Sadeghi Abandansari, Mohammad Hossein Ghanian, Fahimeh Varzideh, Elena Mahmoudi, Sarah Rajabi, Payam Taheri, Mohammad Reza Nabid, Hossein Baharvand, "In situ formation of interpenetrating polymer network using sequential thermal and click crosslinking for enhanced retention of transplanted cells", *Biomaterials*, 2018.

11. Fatemeh Abbasi, Mohammad Hossein Ghanian, Bahman Vahidi, Mohamadreza Baghaban Eslaminejad, Hossein Baharvand, "Engineering Mesenchymal Stem Cell Spheroids by Incorporation of Mechanoregulator Microparticles", *J. Mech. Behav. Biomed. Mater.*, 2018.

12. Zhila Izadi, Ensiyeh Hajizadeh-Saffar, Jamshid Hadjati, Mahdi Habibi-Anbouhi, Mohammad Hossein Ghanian, Hamid Sadeghi Abandansari, Mohammad Kazemi Ashtiani, Zakieh Samsonchi, Mohammad Raoufi, Maedeh Moazenchi, Mahmood Izadi, Anava Sadr Hashemi Nejad, Haideh Namdari, Yaser Tahamtani, Seyed Nasser Ostad, Hamid Akbari-Javar, Hossein Baharvand, "Tolerance Induction by Surface Immobilization of Jagged-1 for Immunoprotection of Pancreatic Islets", *Biomaterials*, 2018.

13. Samira Gholami, Mohammad-Masoud Mohebi, Ensiyeh Hajizadeh-Saffar, Mohammad Hossein Ghanian, Ibrahim Zarkesh, Hossein Baharvand, "Fabrication of microporous inorganic

microneedles by centrifugal casting method for transdermal extraction and delivery", *International Journal of Pharmaceutics*, 2019.

14. Amir kamali, Samaneh Hosseini, Mohammad Hossein Ghanian, Maryam Alizadeh, Mohamadreza Baghaban Eslaminejad, Hossein Baharvand, "Cannabidiol-loaded Microspheres Incorporated into Osteoconductive Scaffold Enhance Mesenchymal Stem Cell Recruitment and Regeneration of Critical-sized Bone Defects", *Materials Science & Engineering C*, 2019.

15. Mohammad Hossein Ghanian, Soura Mardpour, Hamid Sadeghi-abandansari, Saeid Mardpour, Hossein Baharvand, "Hydrogel-mediated sustained systemic delivery of mesenchymal stem cell-derived extracellular vesicles improves hepatic regeneration in chronic liver failure", *ACS Appl. Mater. Interfaces*, 2019.

16. Ibrahim Zarkesh, Mohammad Hossein Ghanian, Majid halvaei, Fatemeh bagheri, frough sayahpour Azam, Mahmoud Azami, Javad Mohammadi, Hossein Baharvand, Mohamadreza Baghaban Eslaminejad, "Scalable and Cost-effective Generation of Osteogenic Micro-tissues Through Incorporation of Inorganic Microparticles Within Mesenchymal Stem Cell Spheroids", *Biofabrication*, 2019.

17. Saman Firoozi, Sara Pahlavan, Mohammad-Hossein Ghanian, Shahram Rabbani, Shima Tavakol, Maryam Barekat, Saeed Yakhkeshi, Elena Mahmoudi, Mansoureh Soleymani, Hossein Baharvand, "A Cell-Free SDKP-Conjugated Self-Assembling Peptide Hydrogel Sufficient for Improvement of Myocardial Infarction", *Biomolecules*, 2020.

18. Saman Firoozi, Sara Pahlavan, Mohammad-Hossein Ghanian, Shahram Rabbani, Maryam Barekat, Abdoreza Nazari, Mohammad Pakzad, Faezeh Shekari, Seyedeh-Nafiseh Hassani, Fariba Moslem, Fatemeh Nobakht Lahrood, Mansoureh Soleimani, Hossein Baharvand, "Mesenchymal stem cell-derived extracellular vesicles alone or in conjunction with a SDKP-conjugated self-assembling peptide improve a rat model of myocardial infarction", *Biochemical and Biophysical Research Communications*, 2020.

19. Sara Darakhshan, Ali Bidmeshki Pour, Reza Kowsari-Esfahan, Massoud Vosough, Leila Montazeri, Mohammad Hossein Ghanian, Hossein Baharvand, Abbas Piryaei, "Generation of Scalable Hepatic Micro-Tissues as a Platform for Toxicological Studies", *Tissue Engineering and Regenerative Medicine*, 2020.

20. Negin Asgari, Fatemeh Bagheri, Mohammadreza Baghaban Eslaminejad, Mohammad Hossein Ghanian, Forogh Azam Sayahpour, Amir Mohammad Ghafari, "Dual functional construct containing kartogenin releasing microtissues and curcumin for cartilage regeneration", *Stem Cell Research & Therapy*, 2020.

21. Samira Gholami, Ibrahim Zarkesh, Mohammad-Hossein Ghanian, Ensiyeh Hajizadeh-Saffar, Mohammad-Masoud Mohebi, Hossein Baharvand, "Microneedles Doff their Caps to Blood Sugar: Smart Transdermal Insulin Delivery by Dynamically Capped Hierarchically Porous Inorganic Microneedles", *Chem. Eng. J.,* 2021.

22. Zahra Emami, Morteza Ehsani, Mojgan Zandi, Hamed Daemi, Mohammad-Hossein Ghanian, Reza Foudazi, "Modified hydroxyapatite nanoparticles reinforced nanocomposite hydrogels based on gelatin/oxidized alginate via Schiff base reaction", *Carbohydrate Polymer Technologies and Applications*, 2021.

23. Fatemeh Radmanesh, Hamid Sadeghi Abandansari, Mohammad Hossein Ghanian, Sara Pahlavan, Fahimeh Varzideh, Saeed Yakhkeshi, Mehdi Alikhani, Thomas Braun, Hossein Baharvand, "Hydrogel-mediated delivery of microRNA-92a inhibitor polyplex nanoparticles induces localized angiogenesis", *Angiogenesis*, 2021.

24. Zahra Heydari, Ibrahim Zarkesh, Mohammad-Hossein Ghanian, Mahdokht H Aghdaei, Svetlana Kotova, Ensieh Zahmatkesh, Zahra Farzaneh, Abbas Piryaei, Iman Akbarzadeh, Anastasia Shpichka, Roberto Gramignoli, Peter Timashev, Hossein Baharvand, Massoud Vosough, "Biofabrication of size-controlled liver microtissues incorporated with ECM-derived microparticles to prolong hepatocyte function", *Bio-Design and Manufacturing*, 2021.

25. Ensieh Zahmatkesh, Mohammad Hossein Ghanian, Ibrahim Zarkesh, Zahra Farzaneh, Majid Halvaei, Zahra Heydari, Farideh Moienvaziri, Amnah Othman, Marc Ruoß, Abbas Piryaei, Roberto Gramignoli, Saeed Yakhkeshi, Andreas Nüssler, Mustapha Najimi, Hossein Baharvand, Massoud Vosough, "Tissue-Specific Microparticles Improve Organoid Microenvironment for Efficient Maturation of Pluripotent Stem-Cell-Derived Hepatocytes", *Cells*, 2021.

26. Ayoub Shiravandi, Farzaneh Yari, Nahid Tofigh, Mohammad Kazemi Ashtiani, Koorosh Shahpasand, Mohammad-Hossein Ghanian*, Faezeh Shekari, Farnoush Faridbod, "Earlier Detection of Alzheimer's Disease Based on a Novel Biomarker cis P-tau by a Label-Free Electrochemical Immunosensor", *Biosensors*, 2022.

27. Roya Ganji, Shohreh Mashayekhan, Hamid Sadeghi Abandansari, Reza Aflatoonian, Mohammad-Hossein Ghanian*, Poopak Eftekhari-Yazdi, "Chemical modification of hyaluronic acid improves its supportive action on embryo implantation", *International Journal of Biological Macromolecules*, 2022.

28. Tayebeh Dahmardeh, Mohammad Hossein Ghanian, Bita Ebrahimi, "A self-gelling hydrogel based on thiolated hyaluronic acid for three-dimensional culture of ovine preantral follicles", *International Journal of Biological Macromolecules*, 2023.

29. Mahdieh Hoseinpour, Alireza Noori, Nasrin Lotfibakhshaiesh, Masoud Nafari, Zahra Pazhouhnia, Mohamadreza Baghban Eslaminejad, Mahmoud Azami, Mohammad Hossein Ghanian, "A comparative study of 3D-printed scaffolds fabricated from different hydroxyapatite sources for bone tissue engineering applications", Advanced Composite Materials, 2024.

30. Faezeh Moraveji, Saeideh Erfanian, Mohammad Hossein Ghanian, Hossein Baharvand, " Harnessing TGF-β signaling to improve testicular organoid development from dissociated testicular cells", Stem Cells Res. Ther., 2025.

CONFERENCE PRESENTATIONS (Invited speaker)

1. “Injectable tough hydrogels for engineering load-bearing soft tissues”, 14th International Congress on Stem Cell Biology and Technology, Tehran, Iran, 29-31 August, 2018.

2. “Tissue engineering”, 16th Pharmaceutical Sciences Congress, Kermanshah, Iran, 6-8 November, 2019.

3. “Bioengineering Technologies Entering Market”, 12th Royan International Summer School, Tehran, Iran, 24-27 July, 2021.

4. “Stars in The Galaxy: Microparticles as Toolkits for Engineering Cell Spheroids”, 18th International Congress on Stem Cell Biology and Technology, Tehran, Iran, 7-9 September, 2022.

5. “Engineering organoids and cell spheroids using microparticulate systems”, 5th International Congress of Physiology & Pharmacology, Semnan, Iran, October 11-13, 2023.

INTERNATIONAL PATENTS

Hossein Baharvand, Ensieh Hajizadeh Saffar, Zhila Izadi, Hamid Akbari javar, Hamid Sadeghi Abandansari, Mohammad Hossein Ghanian, “*IMMUNOPROTECTION OF PANCREATIC ISLETS*”, US20190338271A1, 2019.

TEACHING EXPERIENCE

Assistant Professor, Royan Institute

- Principles of Tissue Engineering
- Scaffold Fabrication and Characterization
- Stem cells engineering

HONORS / AWARDS

PhD fellowship as elite student, Amirkabir University of Technology, 2012

1st ranked among MSc students, IPPI, 2012

Ahmadi Roshan Research Grant, National Elite Foundation, 2022 and 2021

The Best Idea on Cancer Gamification, Institute for the Intellectual Development of Children and Young Adults, 2021

SERVICE TO THE INSTITUE/UNIVERSITY

Dean of Basic Sciences and Advanced Technologies in Biology, Science and Culture University, 2024 to present

Head of Tissue Engineering Department, Royan Institute, 2020 to present

Stem Cells Scientific Committee, Royan Institute, 2018 to present

Cell Engineering Scientific Committee, Royan Institute, 2016 to present

JOURNAL EDITORIAL BOARD

Carbohydrate Polymer Technologies and Applications, Elsevier, 2020 to present