Vahid Jajarmi

Assistant Professor of Medical Biotechnology

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Education and Qualifications

2013 **Ph.D.** in Medical Biotechnology, Shahid Beheshti University of Medical Sciences
Department of Medical Biotechnology
Thesis title: "Thermal Control on Insulin Production in Non-beta Cells Using a Heat Shock Gene Promoter"
Thesis Supervisor: Professor Bahram Kazemi
Academic achievements:
Awarded "Top university student in medical biotechnology"

2009 **MSc.** in Medical Biotechnology, Tarbiat Modarres University
Department of Medical Biotechnology
Thesis title: "Designing a Chimeric Primer-mediated Amplification Method for Isothermal Amplification of Nucleic Acids"
Thesis Supervisor: Professor Mehdi Forouzandeh Moghadam

2001 **BSc.** in Medical Laboratory Sciences, Mashhad University of Medical Sciences

Employment:

2014 - Present **Assistant Professor**
Medical Biotechnology Department, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Supervisor of Ph.D. Theses

- Evaluation of Gene Co-Expression Networks Involved in Drug Resistance in MCF-7 / ADR Cell Line Model and the Effect of Knockout Gene by CRISPR Method.
- Evaluation of Decreased Expression of PDCD4 Gene in Granulosa Cells on Oocyte Maturation and Embryo Development in Mouse Model of Polycystic Ovary Syndrome (PCOS).
- Designing a Gene Editing System Based on CRISPR/Cas9 and PPRH Called CRISPR/PPRH and Evaluation of Its Performance on Gene Correction.

- Loading of Hydroxy Naphtoquinone (Atovaquone) in Exosomes Drived from Mouse Macrophge (J774A.1) and Evaluation of Anti-Toxoplasma Effect on Acute and Chronic Forms of Toxoplasma Gondii Infection In Vitro and In Vivo Conditions.
- Evaluating the Role of Trophoblastic HLA-G1 in Regulating Human Endometrial Stromal Cell Reactions Towards Bewo Derived Spheroids Through Determining Altered Gene Expression of Wnts.
- Investigating the Role of Nogo-A Gene in Signaling Pathway of Regeneration in Central Nervous System Cells Using CRISPR / Cas9 Technology.
- Systematic Investigation of the Role of Lysosomal Genes on Breast Cancer and Generation of Knockout Cell Lines Lacking the Candidate Genes through CRISPR/Cas9 Technology to Evaluate their Effects on Cancer and Drug Resistance.
- Knockout of APP Gene Using Sperm-Mediated Gene Transfer and CRISPER-Cas9 System to Produce Model of Early-Onset Alzheimer's Disease.
- Designing and Production of Exosomal Nano-Particles Containing Antigenic Peptides Lmsti1, TSA And LACK of L. Major and Evaluation of their Immunoprophylactic Effect Against L. Major Infection in Animal Model BALB/C Mice.

Advisor of Ph.D. Theses

- Reprogramming of Cumulus Cells Using CRISPR-Dcas9 Mediated TET1 Targeted for Activation of KDM6A and KDM6B Enzymes.
- Gene Editing of CDH1 in Germ Line Cells from a Patient with Hereditary Diffuse Gastric Cancer Using CRISPR-Cas9 System.
- Gene Editing in Germ Line Cells in Patients Affected by X-Linked Alport Syndrome with CRISPR/Cas9 System.
- Generation of Mice Model Defected in Pancreatic Tissue via Germ Cell Mediated Gene Knock-Out.
- Cloning and Expression of Truncated Active Thrombin.
- Study on Epidemiological Characteristics of Fascioliasis (Human, Reservoir and Vector) and Genotyping of Fasciolla Spp in Lorestan Province.
- Evaluation of Combined Effect of Low Level Laser Irradiation and Oxytocin on Osteogenic Differentiation of Bone Marrow Mesenchymal Stem Cell in Ovariectomized Induced Osteoporosis of Rats In Vitro.
- Genomic Engineering of Iranian Creeping Leishmania Genome in Order to Generate a Proper Host Cell for Eukaryotic Recombinant Proteins Expression.
- Targeted Editing of DNA Methylation in the Promoter of Sept9 and Mir-137 Genes in Colorectal Cancer Using the Dcas9-TET1 Strategy.
- Evaluation of the Effect of Post Cryopreservation Irradiation of Low-Power Infrared Laser on Improving Functional Parameters of Human Sperm.

Technical Skills and Patents

- **Establishment of CRISPR/Cas Technology** (since 2015)

  Department of medical biotechnology, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences.
- **Routine Molecular and Cellular Techniques**
- **Human Karyotyping**

Patents;

- CMA (Chimeric primer-mediated Amplification); a Method for Isothermal Nucleic Acid Amplification.
- A Dipstick kit for Rapid Detection of CMA-based DNA Amplification.

Research projects (principal/co-investigator)

- Assessment of two three dimensional culture strategies of choriocarcinoma cell lines on functional quality of developed spheroids as an in vitro model of embryo implantation.
- Investigating the role of Nogo-A gene knock out in signaling pathway of regeneration in central nervous system cells using CRISPR / Cas9 technology.
- Design and production of exosomal nano-particles containing antigenic peptides LmSTI1, TSA and LACK of L. major and evaluation of their immunoprophylactic effect against L. major infection in animal model BALB/c mice.
- DNA demethylation of promoter Sept9 and mir-137 genes in colorectal cancer cell line by dCas9-TET1 strategy.
- Loading of hydroxy naphtoquinone (atovaquone) in exosomes drived from mouse macrophge (j774a.1) and evaluation of anti-toxoplasma effect on acute and chronic forms of toxoplasma gondii infection in vitro and in vivo conditions.
- Effect of Photobiomodulation on Functional Parameters of Human Sperm Post Cryopreservation.
- Knockout of ACRIIA and ACRIIB genes in mice to produce model mice using the CRISPR system.
- Production of active truncated human recombinant thrombin in Escherichia coli.
- Evaluation of the Effect of Post Cryopreservation Irradiation of Low-Power Infrared Laser on Improving Functional Parameters of Human Sperm.
- Gene editing of CDH1 using CRISPR-Cas9 system in embryo of patient with hereditary diffuse gastric cancer.
- Short non coding RNA-mediated SIRT1 induction to attenuate mesenchymal stem cells senescence.
- Gene editing in germline cells in patiants Affected by X-linked Allport Syndrome with CRISPR-Cas9 system.
- The role of expressed trophoblastic HLA-G1 in BeWo cell line in regulating human endometrial stromal cell migration.

- Effect of low-level laser therapy on rankl ،runx2 and osteocalcin genes in the healing of experimental partial.
- Knockout of APP gene using sperm-mediated gene transfer and CRISPR-Cas9 system to produce murine knockout blastocyst.
- Knockout of Pax4 gene in growing ovarian follicles by CRISPR system, in order to create a transgenic model.
- Production of TLR4 knockout mice.

Publications

- Kazemi M, Jajarmi V, Nazarian H, Ghaffari Novin M, Salehpour S, Piryaei A, et al. Culture strategy as a modulator of target assessments: Functionality of suspension versus hanging drop-derived choriocarcinoma spheroids as in vitro model of embryo implantation. Journal of Cellular Biochemistry. 2021.
- Aghamiri S, Talaei S, Ghavidel AA, Zandsalimi F, Masoumi S, Hafshejani NH, et al. Nanoparticles-mediated CRISPR/Cas9 delivery: Recent advances in cancer treatment. Journal of Drug Delivery Science and Technology. 2020;56:101533.
- Jajarmi V, Salehi Sangani G, Mohebali M, Khamesipour A, Bandehpour M, Mahmoodi M, et al. Immunization against Leishmania major infection in BALB/c mice using a subunit-based DNA vaccine derived from TSA, LmSTI1, KMP11, and LACK predominant antigens. Iranian Journal of Basic Medical Sciences. 2019;22(12):1493-501.
- Sangani GS, Jajarmi V, Khamesipour A, Mahmoudi M, Fata A, Mohebali M. Generation of a CRISPR/Cas9-Based Vector Specific for Gene Manipulation in Leishmania major. Iranian journal of parasitology. 2019;14(1):78.
- Jajarmi V, Bandehpour M, Kazemi B. Regulation of insulin biosynthesis in non-beta cells by a heat shock promoter. Journal of bioscience and bioengineering. 2013;116(2):147-51.
- Vahdat-Lasemi M, Hosseini S, Jajarmi V, Kazemi B, Salehi M. Intraovarian injection of miR-224 as a marker of polycystic ovarian syndrome declines oocyte competency and embryo development. Journal of cellular physiology. 2019;234(8):13858-66.
- Gholipourmalekabadi M, Khosravimelal S, Nokhbedehghan Z, Sameni M, Jajarmi V, Urbanska AM, et al. Modulation of hypertrophic scar formation using amniotic membrane/electrospun silk fibroin bilayer membrane in a rabbit ear model. ACS Biomaterials Science & Engineering. 2019;5(3):1487-96.
- Dadras S, Abdollahifar M-A, Nazarian H, Ghoreishi SK, Fallahnezhad S, Naserzadeh P, et al. Photobiomodulation improved stereological parameters and sperm analysis factors in streptozotocin-induced type 1 diabetes mellitus. Journal of Photochemistry and Photobiology B: Biology. 2018;186:81-7.
- Nasr SM, Rabiee N, Hajebi S, Ahmadi S, Fatahi Y, Hosseini M, et al. Biodegradable nanopolymers in cardiac tissue engineering: from concept towards nanomedicine. International Journal of Nanomedicine. 2020;15:4205.
- Safian F, Novin MG, Nazarian H, Mofarahe ZS, Abdollahifar M-A, Jajarmi V, et al. Photobiomodulation preconditioned human semen protects sperm cells against detrimental effects of cryopreservation. Cryobiology. 2021;98:239-44.

- Mokhberian N, Bolandi Z, Eftekhary M, Hashemi SM, Jajarmi V, Sharifi K, et al. Inhibition of miR-34a reduces cellular senescence in human adipose tissue-derived mesenchymal stem cells through the activation of SIRT1. Life Sciences. 2020;257:118055.
- Mokhberian N, Hashemi SM, Jajarmi V, Eftekhary M, Koochaki A, Ghanbarian H. Sirt1 antisense transcript is down-regulated in human tumors. Molecular biology reports. 2019;46(2):2299-305.
- Saghezchi SA, Azad N, Heidari R, Jajarmi V, Abdi S, Abaszadeh H-A, et al. The Effect of Prenatal Exposure to 2.4 GHz Radio Frequency on the Histology and Expression of the osteocalcin and RUNX2 Gene of the Forelimb in an NMRI Mouse. Journal of lasers in medical sciences. 2019;10(4):283.
- Kazemi M, Jajarmi V, Nazarian H, Novin MG, Salehpour S, Choobineh H, et al. Practical Approaches to Improve the Sensitivity of the Volume-Based Cellular Enumeration of the BeWo Cell Line-Derived Spheroids as an In Vitro Embryo Model: MTT Versus Neutral Red Uptake Assays. Crescent Journal of Medical and Biological Sciences. 2020;7(2).
- Fallahnezhad S, Jajarmi V, Shahnavaz S, Amini A, Ghoreishi SK, Kazemi M, et al. Improvement in viability and mineralization of osteoporotic bone marrow mesenchymal stem cell through combined application of photobiomodulation therapy and oxytocin. Lasers in medical science. 2020;35(3):557-66.
- Gholipourmalekabadi M, Jajarmi V, Rezvani Z, Ghaffari M, Verma KD, Shirinzadeh H, et al. Oxygen-generating nanobiomaterials for the treatment of diabetes: A tissue engineering approach. Nanobiomaterials in Soft Tissue Engineering: William Andrew Publishing; 2016. p. 331-53.
- Ahmadi S, Rabiee N, Fatahi Y, Hooshmand SE, Bagherzadeh M, Rabiee M, et al. Green chemistry and coronavirus. Sustainable Chemistry and Pharmacy. 2021:100415.
- Barkhordari A, Behzad-Behbahani A, Jajarmi V, Bandehpour M, Rafiei-Dehbidi G, Safari F, et al. Direct Cloning, Expression and Purification of Human Activated Thrombin in Prokaryotic System and CD Analysis Report of Produced Thrombin: Molecular Characterization of Recombinant Thrombin. International Journal of Peptide Research and Therapeutics. 2020:1-13.
- Kurd S, Hosseini S, Fathi F, Jajarmi V, Salehi M. Dimethyl sulphoxide and electrolyte-free medium improve exogenous DNA uptake in mouse sperm and subsequently gene expression in the embryo. Zygote. 2018;26(5):403-7.
- Ramezani K, Gheflat S, Jajarmi V, Bandehpour M, Kazemi B. The Study on Possible Gene Therapy on Diabetics Type I Using Insulin Gene under Control of Heat Shock Promoter in Laboratory Animals. Novelty in Biomedicine. 2019;7(2):45-8.