Vahid Jajarmi

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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	**Associate Professor** Medical Biotechnology Department, School of Advanced Technologies in Medicine, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Supervision of Ph.D. Theses

- Evaluation of biomimetic cell membrane-derived nanoparticles for CRISPR/Cas9-mediated inhibition of PLK1 gene expression and assessment of their antitumor effects in glioblastoma under in vitro (U87-GM) and in vivo (BALB/c mice) models.

- Investigation of the anticancer effects of YBX1 gene knockout on the U87 Glioblastoma cell line in vitro.

- Designing and Characterization of a Nanocomposite Based on Exosome, Chitosan and Chloroquine and Investigating Its Performance as a Carrier of the CRISPR Editing System in Vitro.
- Investigating the Genistein Effect on Enhancing the Efficiency of CRISPR/Cas9-Mediated Knock-In.
- Selection of Appropriate Spacer Length in Design of Nanobody-Based CAR NK Cell against PSMA Antigen in Prostate.
- 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

- Investigating the Anti-Cancer Effects of Exosomes Enriched with 7SK Non-Coding RNA on Human Glioblastoma Cancer In Vitro.
- 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 Using CRISPR-Cas9 System in Germline Cells in Patients Affected By X-Linked Allport Syndrome by ZIF-8-SMGT Technique.
- 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)

- Investigating the Effect of Genistein-Induced G2 Arrest on Frequency of CRISPR/Cas9-Medaited HDR in HEK293T Cells.
- Designing and characterization of a nanocomposite based on exosome, chitosan and Chloroquine and investigating its performance as a carrier of the CRISPR editing system in vitro.

- Evaluation of the Synergystic Effect(s) of CRISPR/Cas9 and PPRH Systems on Efficiency of HDR-mediated Gene Editing.
- Evaluation of the Curcumin Effect on HDR (Homomlogy Directed Repair) in CRISPR/Cas9.
- Evaluation the therapeutic effects of CT26 cells, Lactobacillus casei and Bacillus coagulance heated and alpha galactosyl ceramide in a mouse model of colon cancer.
- Design, synthesis, and characterization of nanocomposites based on metal-organic frameworks and porphyrins with the aim of in vitro optimizing in smart and targeted drug delivery of doxorubicin.
- Fabrication and formulation of Niosomal drug delivery system for the controlled release of apremilast and study of its physicochemical properties.
- Selection of appropriate Spacer length in design of nanobody-based CAR NK cell against PSMA antigen in prostate cancer.
- In silico study for the humanization of camelid nanobodies against PSMA and investigation of their characteristics for modification and synthesis of the humanized nanobody nucleotide sequence.
- In silico study for the humanization of camelid nanobodies against CD3ε and investigation of their characteristics for modification and synthesis of the humanized nanobody nucleotide sequence.
- Evaluation of decreased expression of PDCD4 gene in granulosa cells on oocyte maturation and embryo development in mouse model of polycystic ovary syndrome (PCOS).
- Gene editing using CRISPR-Cas9 system in germline cells in patients affected by X-linked Allport Syndrome by ZIF-8-SMGT technique.
- 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

- Ali Miri, et al. Combination therapy using heat-killed Lactobacillus casei and Bacillus coagulans along with alpha-galactosyl ceramide in a mouse model of colorectal cancer . Iranian Journal of Biotechnology. 2025; 1;23(4):e4100.
- Taherian Z, Khosravimelal S, Ajamian F, Eftekhari S, Alizadeh S, Adel B, et al. Optimizing of an antibacterial silk suture covered with synergistic antibiotics-loaded thermo-responsive chitosan hydrogel against resistant clinical isolates. International Journal of Biological Macromolecules. 2025; 315:144638.
- Saberi F, Yousefi-Najafabadi Z, Shams F, Dehghan Z, Ahmadi S, Pilehchi T, et al. CRISPR/Cas System: A Powerful Strategy to Improve Monogenic Human Diseases as Therapeutic Delivery; Current Applications and Challenges. Current gene therapy. 2025.
- Sangani GS, Hosseini Farash BR, Khamesipour A, Bandehpour M, Sangani PS, Jajarmi V*, et al. Production of exosomal nanoparticles containing antigenic peptides LACK, KMP11, TSA and LmSTI1 of L. major and evaluation of their immunoprophylactic effect against L. major infection in a murine infection model. Microbial Pathogenesis. 2025;200:107316.
- Ebrahimi Z, Kazemi B, Salehi M, Jajarmi V*. Successful CRISPR/Cas9-mediated HDR at individual DNA breakpoints using TFO-based targeted template design. Electronic Journal of Biotechnology. 2024;68:41-6.

- Abdi Ghavidel A, Aghamiri S, Raee P, Mohammadi-Yeganeh S, Noori E, Bandehpour M, et al. Recent Advances in CRISPR/Cas9-Mediated Genome Editing in Leishmania Strains. Acta Parasitol. 2024;69(1):121-34.
- Miri A, Esmaeili Gouvarchinghaleh H, Ghorbani Alvanegh A, Jajarmi V*. Investigating the Effects of Peiminine and Hyperthermia Therapy on the Induction of Apoptosis in MCF-7 Cell Line. J-Mazand-Univ-Med-Sci. 2023;33(225):84-93.
- Miri A, Gharechahi J, Samiei Mosleh I, Sharifi K, Jajarmi V*. Identification of co-regulated genes associated with doxorubicin resistance in the MCF-7/ADR cancer cell line. 2023;13.
- Heydarian P, Mamaghani AJ, Hajialilo E, Bozorgomid A, Mohaghegh MA, Aryaeipour M, et al. Identification and differentiation of Fasciola hepatica and F. gigantica using multiplex PCR technique. Annals of Parasitology. 2024;69(2):67–74.
- Shiralipour A, Khorsand B, Jafari L, Salehi M, Kazemi M, Zahiri J, et al. Identifying Key Lysosome-Related Genes Associated with Drug-Resistant Breast Cancer Using Computational and Systems Biology Approach. Iranian journal of pharmaceutical research : IJPR. 2022;21(1):e130342.
- Ahmadi S, Jajarmi V*, Ashrafizadeh M, Zarrabi A, Haponiuk JT, Saeb MR, et al. Mission impossible for cellular internalization: When porphyrin alliance with UiO-66-NH2 MOF gives the cell lines a ride. Journal of Hazardous Materials. 2022;436:129259.
- Najafi S, Tan SC, Aghamiri S, Raee P, Ebrahimi Z, Jahromi ZK, et al. Therapeutic potentials of CRISPR-Cas genome editing technology in human viral infections. Biomedicine & Pharmacotherapy. 2022; 148:112743.
- 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.
- Bazgiri m, Fayazi J, salehi m, jajarmi v. Knockout of myostatin (MSTN) gene using CRISPR/Cas9 technology in order to produce knockout Varamini sheep embryos. Journal of Animal Production, Print ISSN: 2008-6776, Online ISSN: 2382-994X. 2024;26(2):99-110.

- Afshin Abdi G, Mojgan B, Effat N, Vahid J, Bahram K. Comparing the Yield of Recombinant Human Factor VII Protein Expressed by the rDNA-Promoter with the CMV-Promoter in Iranian Lizard Leishmania. Iranian journal of parasitology. 2024;19(2).
- Sameni M, Moradbeigi P, Hosseini S, Ghaderian SMH, Jajarmi V, Miladipour AH, et al. ZIF-8 Nanoparticle: A Valuable Tool for Improving Gene Delivery in Sperm-Mediated Gene Transfer. Biological Procedures Online. 2024;26(1):4.
- Goudarzi F, Jajarmi V, Shojaee S, Mohebali M, Keshavarz H. Formulation and evaluation of atovaquone-loaded macrophage-derived exosomes against Toxoplasma gondii: in vitro and in vivo assessment. Microbiology Spectrum. 2023;12(1):e03080-23.
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- Heydarian P, Jajarmi V, Spotin A, Ashrafi K, Mohebali M, Aryaeipour M, et al. Molecular Characterization of Animal Fasciola Spp. Isolates from Lorestan Province, Western Iran. Iranian journal of public health. 2022;51(8):1847-56.
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- 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.
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- 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.
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- 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.
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- 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.