

# Leila Hasanzadeh

**Name:** Dr. Leila Hasanzadeh

**Date of birth:** 23.04.1988

**Place of birth:** Tehran, Iran

**Place of residence:** Tehran, Iran

**Nationality:** Iranian

**Marital status:** Single

**Phone:** +98 910 5236246

**Email:** [Hasanzadeh.leila@gmail.com](mailto:Hasanzadeh.leila@gmail.com)

**ORCID:** <https://orcid.org/0000-0001-9738-6365>

**Present professional position:** Research Assistant, Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran



## EDUCATION

### Ph.D. Medical Biotechnology

**Jan 2014 – Jan 2019**

Department of Medical Biotechnology and Nanotechnology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

- GPA: 18.05/20
- Dissertation: *"Preparation and evaluation of Polyethylenimine coated Cerium oxide nanoparticles as a novel gene delivery vector"* (19.86/20)
- Supervisors: Prof. Dr. Reza Kazemi Oskuee and Prof. Dr. Majid Darroudi

### Ph.D. Research Fellowship

**Oct 2017 – Mar 2018**

Laboratory of Macromolecular Cancer Therapeutics (MMCT), Department of Pharmaceutical Chemistry, Faculty of Life Sciences, University of Vienna, Vienna, Austria

- Research work: *"Unravel the role of the EGR1 transcription factor in chemotherapy and resulting resistance of colon cancer in established 5-FU resistant SW620 colon cancer cell line genetically marked with firefly luciferase"*
- Supervisor: Prof. Dr. Manfred Ogris

### M.Sc. Medical Biotechnology

**Sep 2010 – Feb 2013**

Department of Biotechnology and Microbiology, Faculty of Medicine, Arak University of Medical Sciences, Arak, Iran

- GPA: 17.99/20
- Thesis: *"Cloning, expression, purification, and antigenic evaluation of VacA antigenic fragments recombinant protein of Helicobacter pylori"* (20/20)
- Supervisor: Prof. Dr. Hamid Abtahi

### B.Sc. Midwifery

**Sep 2006 – Aug 2010**

Arak University of Medical Sciences, Arak, Iran

- GPA: 18.12/20

**Pre-University College**

Tehran, Iran

Sep 2005 – Jun 2006

- GPA: 19.01/20

**High School Diploma in Experimental Sciences**

Tehran, Iran

Sep 2002 – Jun 2005

- GPA: 19.58/20

**POSITIONS AND WORK EXPERIENCES****Research Assistant**

Aug 2021 – Present

Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran

**PUBLICATIONS**

**Hasanzadeh L**, Darroudi M, Ramezani N, Zamani P, Aghaee-Bakhtiari SH, Nourmohammadi E, Oskuee RK. "Polyethylenimine-associated Cerium oxide nanoparticles: A novel promising gene delivery vector." *Life Sciences*. 2019; 232: 116661. DOI: [10.1016/j.lfs.2019.116661](https://doi.org/10.1016/j.lfs.2019.116661).

Nourmohammadi E, Khoshdel-Sarkarizi H, Nedaeinia R, Sadeghnia HR, **Hasanzadeh L**, Darroudi M, Oskuee RK. "Evaluation of anticancer effects of Cerium oxide nanoparticles on mouse fibrosarcoma cell line." *Journal of Cellular Physiology*. 2019; 234(4): 4987-4996. DOI: [10.1002/jcp.27303](https://doi.org/10.1002/jcp.27303).

Saheb M, Hosseini HA, Hashemzadeh A, Elahi B, **Hasanzadeh L**, Oskuee RK, Darroudi M. "Photocatalytic and biological attributes of green synthesized Nickel oxide nanoparticles by *Rheum Turkestanicum* (RT) root extract." *ChemistrySelect*. 2019; 4(8): 2416-2420. DOI: [10.1002/slct.201803903](https://doi.org/10.1002/slct.201803903).

**Hasanzadeh L**, Oskuee RK, Sadri K, Nourmohammadi E, Mohajeri M, Mardani Z, Hashemzadeh A, Darroudi M. "Green synthesis of labeled CeO<sub>2</sub> nanoparticles with <sup>99m</sup>Tc and its biodistribution evaluation in mice." *Life Sciences*. 2018; 212: 233-240. DOI: [10.1016/j.lfs.2018.10.010](https://doi.org/10.1016/j.lfs.2018.10.010).

Kargozar S, Bairo F, Hoseini SJ, Hamzehlou S, Darroudi M, Verdi J, **Hasanzadeh L**, Kim HW, Mozafari M. "Biomedical applications of nanocerium: new roles for an old player." *Nanomedicine*. 2018; 13(23): 3051-3069. DOI: [10.2217/nnm-2018-0189](https://doi.org/10.2217/nnm-2018-0189).

Nourmohammadi E, Oskuee RK, **Hasanzadeh L**, Mohajeri M, Hashemzadeh A, Rezayi M, Darroudi M. "Cytotoxic activity of greener synthesis of Cerium oxide nanoparticles using Carrageenan towards a WEHI 164 cancer cell line." *Ceramics International*. 2018; 44(16): 19570-19575. DOI: [10.1016/j.ceramint.2018.07.201](https://doi.org/10.1016/j.ceramint.2018.07.201).

Mahdipour E, **Hasanzadeh L**. "Dicer expression is impaired in diabetic cutaneous wound healing." *International Journal of Diabetes in Developing Countries*. 2018; 38(2): 173-178. DOI: [10.1007/s13410-017-0572-3](https://doi.org/10.1007/s13410-017-0572-3).

**Hasanzadeh L**, Ghaznavi-Rad E, Soufian S, Farjadi V, Abtahi H. "Expression and antigenic evaluation of *VacA* antigenic fragment of *Helicobacter Pylori*." *Iranian Journal of Basic Medical Sciences*. 2013; 16(7): 835-840. DOI: [10.22038/ijbms.2013.1118](https://doi.org/10.22038/ijbms.2013.1118).

**Hasanzadeh L**, Abtahi H, Ghaznavi-Rad E, Soufian S, Farjadi V. "Production of antigenic region *VacA Helicobacter pylori* in *E. coli*." *Journal of Arak University of Medical Sciences*. 2013; 16(1):

34-42. Retrieved from <http://jams.arakmu.ac.ir/article-1-1923-en.html>

Farjadi V, Abtahi H, Zolfaghari MR, Soufian S, **Hasanzadeh L**. "Expression, purification and evaluation of antigenicity of *CagA* antigenic fragment of *Helicobacter pylori*." Jundishapur Journal of Microbiology. 2013; 6(9): e7367. DOI: [10.5812/jjm.7367](https://doi.org/10.5812/jjm.7367).

Farjadi V, Abtahi H, Zolfaghari MR, Soufian S, **Hasanzadeh L**. "Production of recombinant *CagA* protein of *Helicobacter pylori*." Journal of Arak University of Medical Sciences. 2013; 16(7): 35-44. Retrieved from <http://jams.arakmu.ac.ir/article-1-2336-en.html>

Khorsandi M, **Hasanzadeh L\***, Ghobadzadeh M. "Assessment of knowledge and self-efficacy in achieving osteoporosis prevention behaviors among high school female students." Procedia-Social and Behavioral Sciences. 2012; 46: 4385-4388. DOI: [10.1016/j.sbspro.2012.06.259](https://doi.org/10.1016/j.sbspro.2012.06.259).

### HONORS AND AWARDS

- Ph.D. Scholarship from Mashhad University of Medical Sciences, Iran, 2014-2019
- Sabbatical Research Fellowship Scholarship (820 Euro per month) from Ministry of Health and Medical Education, Iran, Oct 2017 - Mar 2018
- Awarded a research grant from Student Research Committee, Mashhad University of Medical Sciences, Iran, 2016
- Awarded the title of Exceptional Talent Student in Medical Biotechnology Master Program of Arak University of Medical Sciences, Iran, 2010-2013
- The 1<sup>st</sup> (Top) Ranking Master Student of Medical Biotechnology at Arak University of Medical Sciences, Iran, 2010-2013
- Awarded the title of Best Student of the Year by Arak University of Medical Sciences, Iran, 2012
- Awarded the title of Top Researcher of the Year (student section) by Arak University of Medical Sciences, Iran, 2012
- Best oral presentation award at 5<sup>th</sup> Annual Research Congress of Northern Universities of Medical Sciences of Iran, Iran, 2012
- Best oral presentation award at 1<sup>st</sup> Research Congress of Medical Sciences Students of Markazi Province, Iran, 2011
- Awarded the title of Exceptional Talent Student in Midwifery Bachelor Program of Arak University of Medical Sciences, Iran, 2006-2010
- The 1<sup>st</sup> (Top) Ranking Bachelor Student of Midwifery at Arak University of Medical Sciences, Iran, 2006-2010
- The 1<sup>st</sup> (Top) Ranking Student of Pre-University College, Iran, 2005-2006
- Outstanding student award by Regional Department of Education, Tehran, Iran, 2006
- The 1<sup>st</sup> (Top) Ranking High School Student of Experimental Sciences, Iran, 2002-2005
- Winner of the 7<sup>th</sup> Khwarizmi International Award by Regional Department of Education, Tehran, Iran, 2005
- Winner of the 8<sup>th</sup> Scientific and Research Conference on Biology by Regional Department of

Education, Tehran, Iran, 2005

- Winner of the Comprehensive Exam by Regional Department of Education, Tehran, Iran, 2004
- Winner of the Mathematical Concepts Conference by Regional Department of Education, Tehran, Iran, 2004

### **THEORETICAL TEACHING EXPERIENCES**

“Gene Therapy” to Ph.D. students of Pharmaceutical Biotechnology of Pasteur Institute of Iran, 2022

### **TEACHING IN WORKSHOPS**

“Cloning, expression, and purification of recombinant protein”, Pasteur Institute of Iran, 2023

“Real-Time PCR”, Pasteur Institute of Iran, 2022

“Peer review of article”, Mashhad University of Medical Sciences, Iran, 2016

“Peer review of papers at scientific congresses”, Mashhad University of Medical Sciences, Iran, 2015

“Primer design with primer3 software”, Mashhad University of Medical Sciences, Iran, 2014

“How to present a paper (oral and poster) at a conference”, Mashhad University of Medical Sciences, Iran, 2014

“PCR (theoretical and practical)”, Arak University of Medical Sciences, Iran, 2012

### **RESEARCH PROJECTS**

“Employing the engineered Outer Membrane Vesicles (OMVs) derived from *E. coli* for targeted delivery of an anti-cancer peptide, PNC-27, to breast cancer cells.” Funded by Pasteur Institute of Iran, grant no. 2062

“Evaluation the anti-cancer effects of PNC-27 peptide against breast cancer cells via employing the engineered Outer Membrane Vesicles (OMVs) derived from *E. coli* as nanocarrier.” Funded by Pasteur Institute of Iran, grant no. 2067

“Green synthesis of Cerium oxide nanoparticles using Chitosan and evaluation of their cytotoxicity.” Funded by Mashhad University of Medical Sciences, Iran, grant no. 950770

“Synthesis and characterization of Ceria nanoparticles labeled with Technetium ( $^{99m}\text{Tc}$ ) and biodistribution evaluation in mice.” Funded by Mashhad University of Medical Sciences, Iran, grant no. 922227

“Preparation and evaluation of Polyethylenimine coated Cerium oxide nanoparticles as a novel gene delivery vector.” Funded by Mashhad University of Medical Sciences, Iran, grant no. 940568

“Comparison the expression level of Dicer enzyme in murine diabetic cutaneous wound with non-diabetic models.” Funded by Mashhad University of Medical Sciences, Iran, grant no. 922503

### **STUDENT THESIS ADVISOR**

Title: "Development of Indocyanine green-loaded OMVs derived from *E. coli* for evaluating its uptake in the breast cancer cells." For the degree of Pharm.D., Islamic Azad University, Tehran Medical Branch, 2023

### MEMBERSHIPS

- Member of European Society of Gene and Cell Therapy, membership no. 136115, 2017-2018
- Founder and head of Research and Study Group of "Medical Nanobiotechnology", Mashhad University of Medical Sciences, Iran, 2016-2017
- Active member of Student Research Committee, Mashhad University of Medical Sciences, Iran, 2014-2017
- Member of Scientific Committee of 6<sup>th</sup> Congress of Mashhad Medical Sciences Master Students, Iran, 2016
- Member of Scientific Committee of 2<sup>nd</sup> Congress of Mashhad Medical Sciences Students, Iran, 2016
- Member of Research and Study Group of "Medical Biotechnology with New Ideas", Mashhad University of Medical Sciences, Iran, 2014-2015
- Member of Student Researchers Club of Iran, membership no. 92681, 2014-2015
- Member of Executive Committee of 2<sup>nd</sup> National Congress on Stem Cells Research and Application, Iran, 2014
- Member of Executive Committee of 1<sup>st</sup> National Congress on Molecular Medicine, Iran, 2014
- Member of Executive Committee of 5<sup>th</sup> Congress of Mashhad Medical Sciences Master Students, Iran, 2014
- Member of Executive Committee of 1<sup>st</sup> Congress of Mashhad Medical Sciences Students, Iran, 2014
- Member of Research Council of Student Research Committee, Arak University of Medical Sciences, Iran, 2012-2013
- Member of Executive Committee of 2<sup>nd</sup> Regional Congress on Medicine and Holly Quran, Iran, 2012

### CONGRESS PRESENTATIONS

**Hasanzadeh L**, Darroudi M, Ramezani N, Oskuee RK. "Preparation and evaluation of Polyethylenimine coated Cerium oxide nanoparticles as a novel gene delivery vector." 4<sup>th</sup> International Student Biotechnology Congress, Iran, 25-27 February 2019

**Hasanzadeh L**, Mahdipour E. "Dysregulation of Dicer expression in diabetic cutaneous wound healing." 3<sup>rd</sup> International Personalized Medicine Congress of Iran, Iran, 13-15 February 2019

**Hasanzadeh L**, Farjadi V, Abtahi H. "Expression of *VacA* and *CagA* antigenic fragments of *Helicobacter pylori* in *E. coli*." 12<sup>th</sup> Iranian Genetics Congress, Iran, 21-23 May 2012

**Hasanzadeh L**, Abtahi H, Soufian S, Ghaznavi-Rad E, Farjadi V. "Cloning, expression, purification, and antigenic evaluation of *VacA* antigenic fragments recombinant protein of *Helicobacter*

*pylori.*" 11<sup>th</sup> International Congress of Immunology & Allergy, Iran, 26-29 April 2012

Roobahani N, **Hasanzadeh L\***, Aryanfar Z. "Determination of effective factors on selecting withdrawal contraception method in women referring to health centers in Arak, Iran." 9<sup>th</sup> International Congress on Obstetrics and Gynecology, Iran, 8-11 November 2011

Khorsandi M, **Hasanzadeh L\***, Ghobadzadeh M. "Utilizing Health Belief Model to examine osteoporosis prevention behaviors among high school female students in Arak, Iran." 1<sup>st</sup> International & 4<sup>th</sup> National Congress on Health Education and Promotion, Iran, 16-19 May 2011

#### REVIEWER IN JOURNAL

- Iranian Journal of Physiology and Pharmacology, the annual official publication of Iranian Society of Physiology and Pharmacology, 2023-present
- Iranian Biomedical Journal (IBJ), the bimonthly publication of Pasteur Institute of Iran, 2022-2023
- Navid No Journal, the quarterly official journal of Mashhad University of Medical Sciences, Iran, 2015-2017

#### REVIEWER IN SCIENTIFIC CONGRESSES

- The 18<sup>th</sup> Annual Congress and the 1<sup>st</sup> International Congress of Pathology and Laboratory Medicine, Iran, 4-6 January 2017
- The 2<sup>nd</sup> National Congress of Quantitative Microscopic, Iran, 24-26 May 2016
- The 11<sup>th</sup> Annual Research Congress of Eastern Medical Sciences Students, Iran, 17-19 May 2016
- The 1<sup>st</sup> International Congress of Clinical Epidemiology and the 8<sup>th</sup> Iranian Epidemiology Congress, Iran, 27-29 April 2016
- The 1<sup>st</sup> Congress of Student Research Committees of Southwest of Iran, Iran, 6-7 March 2016
- The 1<sup>st</sup> National Congress of Paramedical Students, Iran, 3-4 March 2016
- The 3<sup>rd</sup> Annual Research Congress of South Khorasan Students, Iran, 18-19 February 2016
- The 1<sup>st</sup> National Health Sciences Students Congress, Iran, 24-25 December 2015
- The 17<sup>th</sup> Annual Congress of Pathology and Laboratory Medicine, Iran, 25-27 November 2015
- The 16<sup>th</sup> Annual National and the 6<sup>th</sup> International Research Congress of Iranian Medical Sciences Students, Iran, 8-11 September 2015
- The 10<sup>th</sup> Annual Research Congress of Eastern Medical Sciences Students, Iran, 6-8 May 2015
- The 1<sup>st</sup> Research Congress of Dezful Medical Sciences Students, Iran, 6 May 2015
- The 1<sup>st</sup> Congress of Student Research Committees of Northwest of Iran, Iran, 30 April - 1 May 2015
- National Specialized Congress of Medicinal Plants and Traditional Medicine for Students, Iran, 10-11 March 2015

- The 1<sup>st</sup> Annual Research Congress of Sabzevar Medical Sciences Students, Iran, 16 December 2014
- National Students Congress on Pharmaceutical Sciences, Iran, 13-14 November 2014
- The 15<sup>th</sup> Annual Research Congress of Iranian Medical Sciences Students, Iran, 2-5 September 2014
- The 5<sup>th</sup> Congress of Mashhad Medical Sciences Master Students, Iran, 6 March 2014

### **COMPUTER SKILLS**

ICDL diploma (Windows- Internet- Word- PowerPoint- Excel- IT- Access)

### **SOFTWARE SKILLS**

- GraphPad Prism
- ChemBioDraw
- FlowJo
- ImageJ
- SnapGene
- Gene Runner
- EndNote

### **LANGUAGES**

- Farsi (Persian): Native
- English: Very Good Command
- Azerbaijani Turkish: Very Good Command

### **TECHNICAL SKILLS**

- Cell culture (drug-resistant and non-resistant cell lines), taking microscopic images of cells
- Firefly luciferase assay, BCA protein assay
- Effect of chemotherapeutic drugs on promoter activity in cancer cells
- Promoter activity studies based on induction DNA demethylation
- Co-treatment of cells
- siRNA-mediated knockdown
- Fluorescent and confocal microscopy (preparation with glass coverslips and chambered cell culture slides)
- Coating nanoparticles with polymers
- Transfection, MTT assay
- Ethidium bromide exclusion assay, gel retardation assay
- TNBS assay
- Annexin V/PI apoptosis assay
- Synthesis of nanoparticles with electric muffle furnace and characterization of nanoparticles by UV-Vis spectroscopy, gravimetric analysis, crystallite size calculation using Scherrer equation, (interpretation of TGA/DTA, FE-SEM, TEM, EDX (EDS), elemental analysis (CHNS), FTIR, XRD, determination of particle size and zeta potential)
- Hemolysis assay
- Radiolabeling of nanoparticles, cell binding assay and biodistribution study of radiolabeled nanoparticles
- Instant thin layer chromatography (ITLC), sephadex gel filtration chromatography
- Working with laboratory animals

- Creating diabetic model and cutaneous wound in mouse and rat
- RNA extraction
- Genetic engineering and cloning (bacterial culture in agar and broth media, preparation of bacterial glycerol stock, chromosomal DNA isolation, plasmid extraction, digestion, ligation, preparation of competent cells, transformation, induction, expression and purification of recombinant protein, dialysis, immunization of mice with recombinant protein)
- PCR, agarose gel electrophoresis, gel extraction
- SDS-PAGE, western blot assay
- Determination of antigenic region of genes, primer design
- The Splicing by Overlap Extension (SOEing) PCR

## RESEARCH INTERESTS

- Nanocarriers
- Design and construction of nanoparticles-based novel transfer vectors
- Biological evaluation and therapeutic applications of nanomaterials
- Gene delivery, hybrid systems for gene delivery, drug delivery, targeted delivery, *in vivo* targeted diagnosis
- Gene therapy, combination therapy, cancer therapy, targeted therapy, thermal therapy, development of novel therapeutic approaches
- Synthesis and characterization of nanoparticles
- Designing multidisciplinary researches in the field of Nanobiotechnology
- siRNA-mediated knockdown
- Effect of chemotherapeutic drugs on promoter activity in cancer cells
- Promoter activity studies based on demethylation studies
- Wound healing
- Nuclear medicine
- Genetic engineering and cloning

## REFERENCES

### **Prof. Dr. Mohammad Sayyah**

Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran

Phone: +98 912 2181702

Email: [Sayyahm2@pasteur.ac.ir](mailto:Sayyahm2@pasteur.ac.ir)

### **Prof. Dr. Hamid Gholami Pourbadie**

Department of Physiology and Pharmacology, Pasteur Institute of Iran, Tehran, Iran

Phone: +98 912 3649678

Email: [h\\_gholamipour@pasteur.ac.ir](mailto:h_gholamipour@pasteur.ac.ir)

### **Prof. Dr. Reza Kazemi Oskuee**

Department of Medical Biotechnology and Nanotechnology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran

Phone: +98 915 5124927

Email: [Oskueekr@mums.ac.ir](mailto:Oskueekr@mums.ac.ir)