Curriculum Vitae

Personal information

Name: **Kazem**

Surname: **Mashayekhi**

Gender: **Male**

Languages: **English, Persian**

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Qualifications

PhD of Medical Immunology *2015-2020*

- *Mashhad University of Medical Sciences* *Mashhad, Iran*

(Department of Immunology, Faculty of Medicine)
(Immunology Research Center, Avicenna Research Institute)
Thesis: Production and isolation of anti-human TNF-α DNA aptamer and evaluation of its performance.
Supervisor: Dr. Mojtaba Sankian (PhD), *Email: sankianm@mums.ac.ir*

Master of Medical Immunology *2012-2015*

- *Shahid Beheshti University of Medical Sciences* *Tehran, Iran*

(Department of Immunology, Faculty of Medicine)
(Research Institute for Gastroenterology & Liver Diseases at Taleghani Hospital)
Thesis: Setup and evaluation of the efficacy of SYBR® Green Real-time PCR technique to detect the HLA-DQ2 and HLA-DQ8 alleles in patients with celiac disease.
Supervisors: Dr. Davar Amani (PhD), *Email: amanid@sbmu.ac.ir*

Bachelor of Medical Laboratory Sciences *2008-2012*

- *Rafsanjan University of Medical Science* *Rafsanjan, Iran*

(Department of Laboratory Sciences, Faculty of Paramedicine)

Skills and Work Experiences

1) Research laboratory techniques (2012-now)

- **Cell cultures and animals:** Cell culture (Primary, Cell lines, Mesenchymal stem cell), Apoptosis assays; PBMC separation; Handling and anatomy of laboratory animals such as mice, rabbit, and rat; Allergic and Brest cancer mice model; Lymphocyte isolation from mice spleen, lymph nodes, BAL and NAL; Cell isolation from mice bone marrow; Animal anesthesia; Types of injections in laboratory animals (e.g., IP, IV); Blood sampling from mice and rat; Laboratory animal care.
- **Molecular:** PCR; Real-time PCR; HLA typing.
- **Bioinformatics:** Fundamental R programming language; Single cell RNA sequencing analysis; Bulk RNA sequencing analysis; Microarray data analysis; Primer design and oligo analysis; Multiple sequence alignment; Protein structure analysis.
- **Protein expression:** Protein cloning and expression in bacteria; Protein purification; SDS-PAGE and Western blot analysis.
- **Immunology techniques:** Immune cell handling; Lymphocyte's proliferation tests; Immuno-precipitation test; Complement assay; Serologic tests; Phagocytosis assays; Polyclonal antibody production in mice; ELISA; Flow cytometry; Immunofluorescence assays; Lymphocyte migration.
- **Nanotechnology:** SELEX process; Nano-Gold synthesis; PLGA nanoparticle synthesis; Protein and aptamer attachment on Nano-Gold and PLGA nanoparticle surface.

2) Teaching experiences

2020-now Rafsanjan University of Medical Sciences, Iran

- **Course 1:** Immunology courses for undergraduate students (Medical Laboratory Science, Nursing, Midwifery, Operative Room, and Anesthetic students).
- **Course 2:** Immunology courses for master of immunology students.
- **Course 3:** Immunology courses for Medical and Dental students.

2016-2020 Islamic Azad University, Mashhad Branch, Iran

- **Course 4:** Immunology courses for undergraduate students (Medical laboratory science, Nursing, Midwifery, Operative room, Anesthetic, Biology, Genetic, Chemistry and Microbiology students).
- **Course 5:** Practical courses of immunology for medical students.

2015-2016 Mashhad University of Medical Sciences, Iran

- **Course 6:** Practical courses of immunology for Medical, Dental, and Pharmacy students.

3) Clinical laboratory work experiences (2010-2020)

- Clinical Laboratory Supervisor, Specialist and responsible for quality control.
- Expert in sampling: blood sampling, drug Injection, collection of fungal and bacterial samples from patients.
- Expert in clinical section and performing tests: Immunology and Serology, Hematology, Biochemistry, Microbiology, Parasitology, Blood bank, Genetics.

4) Laboratory devices (2010-now)

- Molecular devices
  (Different PCR thermocyclers and gel electrophoresis system)
- Real-time PCR devices
  (Corbett rotor gene, ABI 7500, MIC)
- Flow cytometry
  (BD FACSCalibur, PARTEC CyFlow space)
- SDS-PAGE and Western-blotting
  (Bio-Rad gel electrophoresis system, SynGene and Bio-Rad1000 Gel Doc)
- Hematology and Biochemistry Auto-analyzer.
  (Mini Nephelometry System, Coagulation analyzer Coatron M2, Cell counter Celltac E, Alfa Auto analyzer, ESR Analyzer)
- Hemoglobin Analyzer.
  (Capillary 2 flex piercing Sebia, Cera- Stat 2000 Analyzer, Interlab G26)
- Automated Immunoassays analyzer.
  (VIDAS, Chorus, ELISA Reader BioTek, Cobas, RIA Gama counter)

5) Computer skills

- **Software:** Office Package, Statistical Software (SPSS, Graph-Pad Prism), Flow cytometry analysis (FlowJo, FloMax), EndNote, Medical Laboratory software, Internet and scientific search.
- **Bioinformatic tools**: Multiple sequence alignment software (MEGA-X, BioEdit, R programming language), Primer design and oligo analyzer software (Beacon Designer, GeneRunner, Oligo 7, Oligo Analyzer), Protein structure software (Swiss-PDB Viewer), and density analyzer software (ImageJ).
- **Biology database:** NCBI, UniProt, Expasy, and Ensembl.

6) Courses

2015-2020 During PhD education

- Different immunology courses: **About 290 hours**
- Bioinformatic course: **About 51 hours**
- Laboratory methods in immunology (clinical and research methods) courses: **85 hours**
- Clinical Infectious diseases Internship at educational hospitals: **1.5 months**
- Clinical Immunodeficiencies and allergic diseases Internship at educational hospitals: **1.5 months**
- Clinical Rheumatology diseases Internship at educational hospitals: **1.5 months**
- Clinical Dermatology diseases Internship at educational hospitals: **1.5 months**

2012-2015 During Master education

- Different immunology courses: **About 238 hours**
- Laboratory animal use and care course: **26 hours**
- Biostatistics course: **About 77 hours**
- Laboratory methods in immunology (clinical and research methods) courses: **About 119 hours**

2008-2012 During Bachelor education

- Different theoretical basic medical courses: **About 826 hours**
- Different practical basic medical courses: **About 1000 hours**
- Technical principle of medical equipment maintenance course: **17 hours**
- Principle of management and laboratory rules course: **17 hours**
- Qualitative control methods in clinical laboratories course: **17 hours**
- Clinical laboratory internship at educational hospitals: **About 6 months**

Approved Projects and Grants

2020-now Funding: Rafsanjan University of Medical Science, Iran

- **Co-PI:** Evaluation of the relationship between the pattern of Toll-like receptors (TLRs) expression, gene expression of intracellular nucleic acid sensors, and inflammasome activation pathway with neutralizing antibody levels in response to COVID-19-vaccines (**Grant No: 400072. Status: Finished**).
- **Co-PI:** Evaluation of the association between vitamin D and neutralizing antibodies serum levels in response to COVID-19-vaccines in individuals with unresponsive or low antibodies titer (**Grant No: 400073. Status: Finished**)
- **Co-PI:** Assessment of relationship between improvement or induction of allergic diseases after treatment with classical and biological Disease-modifying antirheumatic drugs (DMARDs) in patients with rheumatoid arthritis (**Grant No: 400104. Status: Finished**)
- **Co-PI:** The effect of opium on clinical symptoms and laboratory tests of referred patients with rheumatoid arthritis to Rheumatology clinic (**Grant No: 400304. Status: Ongoing**)
- **Co-PI:** Fabrication and evaluation of silica mesoporous nanoparticles containing Doxorubicin and Apigenin on induction of apoptosis and inhibition of invasion in MDA-MB-231 breast cancer cells (**Grant No: 400583, Status: Ongoing**)
- **Co-PI:** Atmospheric Cold Plasma surface modification of Zein and Poly caprolactone nanofibers for tissue engineering applications (**Grant No: 400183, Status: Ongoing**)
- **Co-PI:** Synthesis and characterization of Zein nanofiber scaffold containing 58S bioactive glass for bone tissue engineering (**Grant No: 400101, Status: Ongoing**)
- **Co-PI:** Investigation of expression of miR-16, miR-126, miR-195 and miR-584 in dental pulp stem cells (DPSCs) before and after Mineral trioxide aggregate treatment (**Grant No: 400214, Status: Ongoing**)

2017-now Funding: Mashhad University of Medical Sciences, Iran

- **Co-PI:** Development of anti-human interleukin-23 DNA aptamer and its efficacy analysis in vitro (**Grant No: 991668. Status: Ongoing**)
- **Co-PI:** Production of anti-aptamer DNA production of anti-Human Interleukin-17A DNA aptamer for future use in the treatment of psoriasis (**Grant No: 951684. Status: Finished**)
- **PhD thesis:** Production and isolation of anti-human TNF-α DNA Aptamer and its performance evaluation (**Grant No: 941456. Status: Finished**)
- **Co-PI:** Immune response investigation of epicutaneous immunotherapy with Nanogold particle conjugated with recombinant profiling allergen and dendritic cell specific-Aptamer in experimental model of allergy (**Grant No: 931684. Status: Finished**)
- **Co-PI:** Immune response investigation of sublingual immunotherapy with entrapped ovalbumin in PLGA nanoparticle conjugated with dendritic cell specific-Aptamer in experimental model of allergy (**Grant No: 941467. Status: Finished**)
- **Co-PI:** Evaluation of the effects of sublingual immunotherapy of PLGA nanoparticles containing allergens and curcumin on the immune response of the animal model (**Grant No: 960438. Status: Finished**)
- **Co-PI:** Assessment of sublingual immunotherapy by DC-aptamer targeted nanogold coated ovalbumin in mice (**Grant No: 961240. Status: Finished**)

2013-2015 Funding: Shahid Beheshti University of Medical Sciences, Iran

- **Master thesis:** A one-step real-time PCR assay for detection of HLA-DQ2 and HLA-DQ8 to aid diagnosis of celiac disease, using SYBR® Green (**Grant No: 745. Status: Finished**)
- **Co-PI:** Design and application of a quantitative Real-time PCR method for mitochondrial heteroplasmy level and determine its association with patient susceptibility to IBD (**Grant No: 741. Status: Finished**)
- **Co-PI:** Assessment of JAK2 gene polymorphism and expression in patients with IBD (**Grant No: 963301. Status: Finished**)
- **Co-PI:** Assessment of gastrointestinal cancer-related genes in the Iranian population (**Grant No: 963301. Status: Finished**)

Publications (Google Scholar link: *Click here*)

1- Original: Shobeiri. S.S., **Mashayekhi. K.**, Khorrami. M., Moghadam. M., Sankian. M. Selection and characterization of new human Interleukin-17A blocking DNA aptamer using protein-SELEX. Biomedical and Biophysical Research Communications. **2022**, Nov 2 **(IF: 3.322)**

2- Original; Sattari M, Masoudnia M, **Mashayekhi K**, Hashemi SM, Khannazer N, Sattari S, Haftcheshmeh SM, Momtazi-Borojeni AA. Evaluating the effect of LPS from periodontal pathogenic bacteria on the expression of senescence-related genes in human dental pulp stem cells. Journal of Cellular and Molecular Medicine. **2022** Oct 19. **(IF: 5.295)**

3- Original: Momeni M, **Mashayekhi K**, Navashenaq JG, Sankian M. Identification of G-quadruplex anti-Interleukin-2 aptamer with high specificity through SELEX stringency. Heliyon. **2022** Jun 15:e09721. **(IF: 3.776)**

4- Original: Armstrong-Fisher S, Koushki K, **Mashayekhi K**, Urbaniak SJ, van Der Schoot E, Varzi AM. Confirmed non-invasive prenatal testing for foetal Rh blood group genotyping along with bi-allelic short insertion/deletion polymorphisms as a positive internal control. Transfusion Medicine. **2022** Mar 9. **(IF: 2.057)**

5- Review: Haftcheshmeh SM, Abedi M, **Mashayekhi K**, Mousavi MJ, Navashenaq JG, Mohammadi A, Momtazi-Borojeni AA. Berberine as a natural modulator of inflammatory signaling pathways in the immune system: Focus on NF-κB, JAK/STAT, and MAPK signaling pathways. Phytotherapy Research. **2022** Mar;36(3):1216-30. **(IF: 6.388)**

6- Review: Mohammadi A, **Mashayekhi K**, Navashenaq JG, Haftcheshmeh SM. Curcumin as a Natural Modulator of B Lymphocytes: Evidence from In Vitro and In Vivo Studies. Mini Reviews in Medicinal Chemistry. **2022** Mar 4. **(IF: 3.737)**

7- Review: Shabgah AG, Al-Obaidi ZM, Rahman HS, Abdelbasset WK, Suksatan W, Bokov DO, Thangavelu L, Jalil AT, Jadidi-Niaragh F, Mohammadi H, **Mashayekhi K**. Does CCL19 act as a double-edged sword in cancer development? Clinical and Experimental Immunology. **2022** Apr 4;20:1-2. **(IF: 5.732)**

8- Original: Mashayekhi K, Sankian M, Haftcheshmeh SM, Taheri RA, Hassanpour K, Farnoosh G. A cross-linked anti-TNF-α aptamer for neutralization of TNF-α-induced cutaneous Shwartzman phenomenon: A simple and novel approach for improving aptamers' affinity and efficiency. Biotechnology Progress. **2021** Jul 4:e3191 **(IF: 2.909)**

9- Original: Koushki K, Varasteh AR, Shahbaz SK, Sadeghi M, **Mashayekhi K**, Ayati SH, Moghadam M, Sankian M. Dc-specific aptamer decorated gold nanoparticles: A new attractive insight into the nanocarriers for allergy epicutaneous immunotherapy. International Journal of Pharmaceutics. **2020** May 5:119403. **(IF: 6.510)**

10- Review: Koushki K, Shahbaz SK, **Mashayekhi K**, Sadeghi M, Zayeri ZD, Taba MY, Banach M, Al-Rasadi K, Johnston TP, Sahebkar A. Anti-inflammatory Action of Statins in Cardiovascular Disease: The Role of Inflammasome and Toll-Like Receptor Pathways. Clinical reviews in allergy & immunology. **2020** May 6. **(IF: 10.817)**

11- Original: Sadeghi M, Koushki K, **Mashayekhi K**, Ayati SH, Shahbaz SK, Moghadam M, Sankian M. DC-targeted gold nanoparticles as an efficient and biocompatible carrier for modulating allergic responses in sublingual immunotherapy. International Immunopharmacology. **2020** Sep 1;86:106690. **(IF: 5.714)**

12- Original: Shahgordi S, Sankian M, Yazdani Y, **Mashayekhi K**, Ayati SH, Sadeghi M, Saeidi M, Hashemi M. Immune responses modulation by curcumin and allergen encapsulated into PLGA nanoparticles in mice model of rhinitis allergic through sublingual immunotherapy. International Immunopharmacology. **2020** Jul 1;84:106525. **(IF: 5.714)**

13- Original: Mashayekhi K, Ganji A, Sankian M. Designing a new dimerized anti-human TNF-α aptamer with blocking activity. Biotechnology Progress. **2020** Jan 28:e2969. **(IF: 2.909)**

14- Original: Shahbaz SK, Varasteh AR, Koushki K, Ayati SH, **Mashayekhi K**, Sadeghi M, Moghadam M, Sankian M. Sublingual dendritic cells targeting by aptamer: Possible approach for improvement of sublingual immunotherapy efficacy. International Immunopharmacology. **2020** Aug 1;85:106603. **(IF: 5.714)**

15- Review: Soleimani A, Farshchi HK, Mirzavi F, Zamani P, Ghaderi A, Amini Y, Khorrami S, **Mashayekhi K**, Jaafari MR. The therapeutic potential of targeting CD73 and CD73-derived adenosine in melanoma. Biochimie. **2020** Sep 1;176:21-30. **(IF: 4.372)**

16- Original: Asadzadeh-Aghdaei H, **Mashayekhi K**, Koushki K, Azimzadeh P, Rostami-Nejad M, Amani D, Chaleshi V, Haftcheshmeh SM, Sahebkar A, Zali MR. V617F-independent upregulation of JAK2 gene expression in patients with inflammatory bowel disease. Journal of cellular biochemistry. **2019** Sep;120(9):15746-55. **(IF: 4.480)**

17- Review: Soleimani A, Taghizadeh E, Shahsavari S, Amini Y, Rashidpour H, Azadian E, Jafari A, Parizadeh MR, **Mashayekhi K**, Soukhtanloo M, Jaafari MR. CD73; a key ectonucleotidase in the development of breast cancer: Recent advances and perspectives. Journal of Cellular Physiology. **2019** Sep;234(9):14622-32. **(IF: 6.513)**

18- Original: Hosseinpour M, **Mashayekhi K**, Falak R, Jamalzehi S, Haftcheshmeh SM, Mousavi MJ, Soleimani A, Koushki K, Sankian M, Soukhtanloo M. Production and Characterization of Monoclonal Antibody against Vit v1: A Grape Allergen Belonging to Lipid Transfer Protein Family. Iranian Journal of Allergy, Asthma and Immunology. **2019**:1-0. **(IF: 1.570)**

19- Original: Mashayekhi K, Rostami-Nejad M, Amani D, Rezaei-Tavirani M, Mohaghegh-Shalmani H, Zali MR. A rapid and sensitive assay to identify HLA-DQ2/8 risk alleles for celiac disease using real-time PCR method. Gastroenterology and hepatology from bed to bench. **2018**;11(3):250. **(PubMed and Scopus indexing)**

20- Original: Kashfi SM, Farahbakhsh FB, Mojarad EN, **Mashayekhi K**, Azimzadeh P, Romani S, Derakhshani S, Malekpour H, Aghdaei HA, Zali MR. Interleukin-16 polymorphisms as new promising biomarkers for risk of gastric cancer. Tumor Biology. **2016** Feb 1;37(2):2119-26. **(IF: 3.650)**

21- Original: Mashayekhi K, Rostami-Nejad M, Azimzadeh P, Amani D, Kazemian S, Derakhshani S, et al. Setup of SYBR green real-time PCR method to detect the HLA-DQ alleles in patients with celiac disease. Koomesh. 2015; 16 (4):527-35. **(Scopus and EMBASE Indexing)**

Presented & Published Abstracts in Congresses

1- Allele Frequency of HLA-DQ2 and HLA-DQ8 in celiac disease with new simple method of Real-time PCR in Iranian population, 13th International Congress of Immunology & Allergy of Iran (**2016**), Tabriz, Iran, **Poster**.

2- The association between HLA-DQ2.5 and severity of clinical symptoms in patients with celiac disease, 13th International Congress of Immunology & Allergy of Iran (**2016**), Tabriz, Iran, **Oral**.

3- Determine Association of HLA-DQ2 and HLA-D8 with Intestinal and Extra-Intestinal Manifestation in Patients with Celiac Disease, 3th International Congress of Immunology, Asthma and Allergy the First Symposium of Food and Drug Allergy (**2016**), Mashhad, Iran, **Poster**.

4- Development and validation of simple method for the detection of HLA-DQ haplotypes associated with celiac disease, 7th International Congress of Laboratory and Clinic (Infectious Diseases) and 1st Conference of Clinical Virology (**2015**), Tehran, Iran, **Oral**.

Honors

- 6th Rank, Nationwide PhD entrance exam in Medical Immunology
- Former Secretary of the Red Crescent Student Association in Rafsanjan University of Medical Science

Membership of Scientific Societies

- Head of Student Research Committee
- Member of Iranian Society of Immunology and Allergy (ID No.: 97/A/1095)
- Member of Iran's National Elites Foundation
- Member of medical council of I.R. IRAN (M.C. No.: L-4666)

Research Background and Interests

- Design modified Aptamer and SELEX process (Diagnostic or Therapeutic)
- Immunoregulation and Immunotherapies
- Understanding of the immune system mechanisms
- Inflammation
- Autoimmune disease
- Vaccine research
- Single cell analysis