

CURRICULUM VITAE



EHSAN RAOUFI

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Educational Background

- **Ph.D.** In the field of **Medical Biotechnology**, Iran University of Medical Sciences (IUMS), Tehran, Iran. **Thesis Title:** “Scale-up Production and Immunological Assessment of Recombinant SARS-CoV-2 Spike RBD in *Pichia pastoris*”. From 2018 to 2023.
- **M.Sc.** In the field of Biology (Major: **Cellular- Molecular Sciences**), with Cumulative G.P.A of 16.43 (out of 20.00) on 19/10/2014 at the Razi University in Kermanshah, Iran.
- **B.Sc.** In the field of **Biotechnology**, with a Cumulative G.P.A of 15.47 (out of 20.00) on 22/02/2011 at the University of Tabriz in Tabriz, Iran.

Professional work history

- **Academic Researcher** at the **Vaccine Research Center**, Iran University of Medical Sciences (IUMS), Tehran, Iran. From 2023 to present.
- **Senior Researcher** in the Department of Biotechnology at Rad Behin Danesh Company in Tehran, Iran. From 2022 to 2023.
- COVID-19 Vaccine **Research Fellow** in the Division of Research and Development at the Bonda Faravar Company in Tehran, Iran. From 2019 to 2021.

Research Interests

Medical Biotechnology, Recombinant Protein Production and Characterization, Cellular and Molecular Immunology, Immunotherapy, Vaccine Design and Development, Cancer Therapeutic Vaccines, Bioinformatics, Immunoinformatics, Cancer Biology, Proteomics, and Cellular and Molecular Medicine.

Key Skills

Cellular Biology:

- Cell culture: *Pichia pastoris* cultivation (Microscale cultivation in 96-deep well plates, Shake flask cultivation, Bioreactor cultivation), HEK-293, primary cultures of rat and mouse, liquid and solid culture of bacteria.

Molecular biology:

- Vector design: primers design, digestions, ligations, cloning. Cloning: transformation, RNA extraction, reverse transcription, PCR, DNA purification. Recombinant protein production: *E.Coli* expression system, *Pichia pastoris* expression system. Protein purification, SDS-PAGE, Two Dimensional Electrophoresis.

Immunology:

- Western blot, (co-)immunoprecipitation, ELISA, enzymatic assays, Flow cytometry.

Bioinformatics and Statistical Analysis:

- Immunoinformatics: Epitope mapping, B and T-Cells epitope prediction (IEDB Analysis Resource, Discotope, IgPred Software, ElliPro, BepiPred, CTLPred Software). Peptide designing, Gene expression analysis. Molecular Docking: Autodock vina, autodock 4. GraphPad Prism.

Analytical methods:

- ION-exchange chromatography, HPLC

➤ Papers from PhD Thesis

- **Ehsan Raoufi**, Fatemeh Hosseini, Bahman Onagh, Mohammad Salehi-Shadkami, Marjan Mehrali, Monireh Mohsenzadegan, Jim Q. Ho, Banafsheh Bigdelou, Mohammad Reza Sepand, Thomas J. Webster, Steven Zanganeh, Mohammad M. Farajollahi. Designing and developing a sensitive and specific SARS-CoV-2 RBD IgG detection kit for identifying positive human samples, **Clinica Chimica Acta**, Volume 542, **2023**, <https://doi.org/10.1016/j.cca.2023.117279>.
- Aziz, B.; Aziz, I.; Khurshid, A.; **Raoufi, E.**; Esfahani, F.N.; Jalilian, Z.; Mozafari, M.R.; Taghavi, E.; Ikram, M. An Overview of Potential Natural Photosensitizers in Cancer Photodynamic Therapy. **Biomedicines** **2023**, *11*, 224. <https://doi.org/10.3390/biomedicines11010224>.
- Zahra Zandieh, Azam Govahi, Azin Aghamajidi, **Ehsan Raoufi**, Fatemehsadat Amjadi, Samaneh Aghajanpour, Masoomeh Golestan, Reza Aflatoonian. TLR-1, TLR-2, and TLR-6 MYD88-dependent signaling pathway: A potential factor in the interaction of high-DNA fragmentation human sperm with fallopian tube epithelial cells. **Clin Exp Reprod Med** **2023**;50(1):44-52. <https://doi.org/10.5653/cerm.2022.05610>.

Papers

- **Ehsan Raoufi**, Marjan Mehrali, Mohammad Salehi-Shadkami, Jake Y. Chen, In Silico Approach to Develop A Library of Maximally Aligned Antigenic Fragments Regions (MAFRs) of MAGE-A Antigens as Epitopes of B cells, **Under Review** in the journal of **PLOS One**.
- Amjadi F, Zandieh Z, Mehdizadeh M, Ajdary M, Aghamajidi A, **Raoufi E**, Aflatoonian R. Molecular signature of immunological mechanism behind impaired endometrial receptivity in polycystic ovarian syndrome. *Arch Endocrinol Metab.* **2022** May 12:2359-3997000000476. doi: 10.20945/2359-3997000000476. Epub ahead of print. PMID: 35551681.
- Govahi, A., Amjadi, F., Nasr-Esfahani, MH., **Raoufi, E.** et al. Accompaniment of Time-Lapse Parameters and Cumulus Cell RNA-Sequencing in Embryo Evaluation. *Reprod. Sci.* (**2021**). <https://doi.org/10.1007/s43032-021-00748-3>.
- **Raoufi, Ehsan**; Bahramimeimandi, Bahar; Salehi-Shadkami, M.; Chaosri, Patcharida; Mozafari, M. R. **2021**. "Methodical Design of Viral Vaccines Based on Avant-Garde Nanocarriers: A Multi-Domain Narrative Review" **Biomedicines** *9*, no. 5: 520. <https://doi.org/10.3390/biomedicines9050520>.

Papers

- **Ehsan Raoufi**, Bahar Bahramimeimandi, Mahsa Darestanifarhahi, Fatemeh Hosseini, Mohammad Salehi-Shadkami, Hossein Raoufi and Reza Afzalipour (April 16th **2021**). Docking-Based Screening of Cell-Penetrating Peptides with Antiviral Features and Ebola Virus Proteins as a Drug Discovery Approach to Develop a Treatment for Ebola Virus Disease, IntechOpen, DOI: 10.5772/intechopen.97222.
- Hosseini F, Bahramimeimandi B, **Raoufi E**, Mozafari MR. Prevention of SARS-CoV-2 infection: A liposomal functional food approach. Int J Prev Med **2021**;12:26.
- Aghamajidi A, **Raoufi E**, Parsamanesh G, et al. The attentive focus on T cell-mediated autoimmune pathogenesis of psoriasis, lichen planus and vitiligo. Scand J Immunol. **2020**; 00:e13000. <https://doi.org/10.1111/sji.13000>.
- Fatemeh sadat Amjadi, Zahra Zandieh, Mehdi Mehdizadeh, Samaneh Aghajanpour, **Ehsan Raoufi**, Azin Aghamajidi, Reza Aflatoonian. The Uterine Immunological Changes may be responsible for Repeated Implantation Failure, Journal of Reproductive Immunology, 23 Jan **2020**, DOI: 10.1016/j.jri.2020.103080.
- **Ehsan Raoufi**, Maryam Hemmati, Samane Eftekhari, Kamal Khaksaran, Zahra Mahmodi, Mohammad M. Farajollahi, Monireh Mohsenzadegan, Epitope Prediction by Novel Immunoinformatics Approach: A State-of-the-art Review, International Journal of Peptide Research and Therapeutics, Springer Nature B.V. **2019**, DOI: 10.1007/s10989-019-09918-z
- Malihe Hallaji, Maryam Parhamfar, **Ehsan Raoufi**, Hamid Abtahi, Cloning and High-Level Expression of the Enzymatic Region of Phytase in *E. coli*, International Journal of Peptide Research and Therapeutics, Springer Nature B.V. **2019**, DOI:10.1007/s10989-018-9788-4
- Maryam Hemmati, **Ehsan Raoufi*** and Hossein Fallahi (April 26th **2018**). Predicting Candidate Epitopes on Ebola Virus for Possible Vaccine Development, Advances in Ebola Control Samuel Ikwaras Okware, IntechOpen, DOI: 10.5772/intechopen.72413.
- **Ehsan Raoufi**, Hassan Akrami, Behzad Khansarinejad, Hamid Abtahi, Expression and Antigenic Evaluation of *Helicobacter pylori* *UreB* Fragment, Jundishapur Journal of Microbiology, Accepted **2017** January 31, DOI: 10.5812/jjm.41645
- **Ehsan Raoufi**, Hassan Akrami, Behzad Khansarinejad, Hamid Abtahi, Epitope mapping and antigenic evaluation of Helicobacter pylori Urease subunit beta fragment, IEEE/ACM International Symposium on Network Enabled Health Informatics, Biomedicine and Bioinformatics, ASONAM15, Paris, France, August 26-27, **2015**, ISBN: 978-1-4503-3854-7 , DOI: 10.1145/2808797.2809365
- **Ehsan Raoufi**, Maryam Hemmati, Hossein EinAbadi, Hossein Fallahi, Predicting candidate epitopes on Ebolaviruse for possible vaccine development, 2015 IEEE/ACM International Symposium on Network Enabled Health Informatics, Biomedicine and Bioinformatics, ASONAM15, Paris, France, August 26-27, **2015**, ISBN: 978-1-4503-3854-7, DOI:10.1145/2808797.2809370.

Patent

- Iranian Patent: “Fusion construct of HPV16 E6-E7 as a vaccine candidate”, April 7, 2019. International classification: A61K 39/00;C12N 15/00;C12N 15/62.

Research Experience

- I'm involved in **three** projects under the supervision of **Dr. Steve Zanganeh** (Assistant Professor of Bioengineering, University of Massachusetts Dartmouth, USA) including **Immunomodulatory Effects of Nanoparticles**, and **COVID-19**, From February **2022** to **Present**.
- **Epitope Mapping project** entitled “In Silico Approach to Develop A Library of Maximally Aligned Antigenic Fragments Regions (MAFRs) of MAGE-A Antigens as Epitopes of B cells”, and Immunogenomics project under the supervision of **Prof. Jake Chen** (Professor of Genetics, Computer Science, and Biomedical Engineering at the University of Alabama at Birmingham). From **2020- Present**.
- **Advisor of Master's thesis research** project in Molecular and Medical Research Center, Arak University of Medical Sciences (since 2015 to 2017):
 - Title: Cloning and expression of the enzymatic region of recombinant Phytase and evaluation its enzyme activity, (Supervisor: Dr.Hamid Abtahi).
 - Title: Evaluation of Immunogenicity of HPV-16, E6, E7 proteins In Balb/C Mice, (Supervisors: Dr.Hamid Abtahi, Dr.Ghasem Mosayebi).
 - Title: Cloning, expression, purification and antigenicity of MOMP antigenic fragments of Chlamydia trachomatis, (Supervisor: Dr.Hamid Abtahi).

University Lecturer

- **Bioinformatics and Molecular Biology**, IRAN University of Medical Sciences (IUMS), February 2018 – Present.
- **Bioinformatics, Molecular Genetics and Biotechnology Laboratory**, Islamic Azad University of Arak, since 2015 to 2018.
- **Epitope Prediction for T & B Cells** in the theoretical and practical workshop of “Epitope Mapping”, Immunology Research Center, IRAN University of Medical Sciences (IUMS), 2 January 2019.
- **Epitope Prediction for T & B Cells** in the theoretical and practical workshop of “Epitope Mapping”, Bioinformatics laboratory, National Institute of Genetic Engineering and Biotechnology (NIGEB), 12 December 2018.
- **The Mini-preparation of Plasmid DNA Workshop**, Islamic Azad University of Arak, 22 and 23 November 2016.
- **DNA Extraction Workshop**, Islamic Azad University of Arak, 26 and 27 December 2016.
- **Epitope Prediction Workshop**, Arak University of Medical Sciences, 21 May 2014

Executive Activities

- **Organizing Committee Member** of the “World Summit on Internal Medicine (INTERNALMEDICINE2024)”, is going to be held during March 11-13, 2024 in Austin, TX, USA.
- **Scientific Committee Member** in the 24th IRAN’S INTERNATIONAL CONGRESS OF MICROBIOLOGY, SEPTEMBER 18-20 TEHRAN, IRAN.
- **The Editorial Board Member** of Journal of Networking and Telecommunications by PiscoMed Publishing, July 2020- Present.
- **Member of IRAN University of Medical Sciences (IUMS) Research Council**, September 2019- Present.
- **Member of Central Council of Young Counselors of Presidency (MAJD)** of IRAN University of Medical Sciences (IUMS), September 2018- Present.
- **Secretary and member of Volleyball Association**, IRAN University of Medical Sciences (IUMS), Tehran, Iran. January 2019- Present.
- **Scientific Committee Member** in the 2nd International Personalized Medicine Congress of Iran at the Razi International conference hall on 13-15 January 2018.

Honors

- Certificate of Completion is hereby granted to **Ehsan Raoufi** to certify satisfactory completion of the **IEDB Virtual User Workshop** Presented via Zoom by the **La Jolla Institute for Immunology** San Diego, California, USA November 5-6, 2020.
- The third place (**bronze medal**) in volleyball at the **13th Olympics** in Iran's Medical Universities on August 2018.
- **Volleyball Coach**, 2015 – Present.
- Favorite in **6th Cultural Festival** of Students University of Medical Sciences in Iran, 14 June 2014.

Poster and Oral Presentation

- SCIENTEX cordially invited me to participate in the “**World Congress on Primary Healthcare and Medicare Summit**” for **Oral Presentation**, entitled “Developing Library of Maximum Aligned Antigenic Fragments Regions (MAFRs) of MAGE A Antigens as epitopes of B cells Towards Cancer Vaccine Design” during November 08-09, 2021 at Vienna, Austria.
- **Poster Presentation** at the **14th Vaccine Congress** on 28-29 September, 2020 for ELSEVIER, entitled "Overlapping-truncated library of B-cell continuous epitopes using MAGE-a family: a promising approach in development of cancer vaccine".

References

- **Prof. Dr. Mohammadmorad Farajollahi**
Professor, Department of Medical Biotechnology, School of Allied medicine, IRAN University of Medical Sciences (IUMS), Tehran, Iran. Tel: +98-21-8670-4647. E-mail: mahdiy@yahoo.com
- **Prof. Dr. Jake Chen**
Professor of Genetics, Computer Science, and Biomedical Engineering at the University of Alabama at Birmingham. Chief Bioinformatics Officer of the UAB Informatics Institute. E-mail: jakechen@gmail.com
- **Dr. Steve Zanganeh**
Assistant Professor, Department of Bioengineering, University of Massachusetts Dartmouth, Dartmouth, MA, USA. E-mail: steven.zanganeh@umassd.edu
- **Prof. Dr. Nosratollah Zarghami**
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