REZA KHAYAMI

Genomics and Cancer Researcher

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HIGHLIGHTS

- **Top Student Recognition:** Recognized as the top student in human genetics at Mashhad University of Medical Sciences in 2021.
- **Research Contributions:** Made significant contributions to multiple research projects, including implementing machine learning algorithms for cancer detection, conducting statistical analysis, and collaborating on cancer research.
- **Technical Proficiency:** Proficient in programming languages such as R. Skilled in bioinformatics analysis, including RNA-seq, whole exome sequencing, and methylation array analysis. Experienced in machine learning algorithms and data visualization tools.

RESEARCH INTERESTS

- Genomics
- Genome editing
- Bioinformatics
- Cancer

EDUCATION

Mashhad University of Medical Sciences
Mashhad, Iran
2018-2021

M.Sc. of Human Genetics

- GPA: 18.67/20 (3.92/4)
- Thesis:
  - • Thesis: The Role of *SLC30A10* and *SLC30A3* Overexpression in Colorectal Cancer Cells
  - Supervisor: Dr Mohammad Amin Kerachian

Mashhad University of Medical Sciences
Mashhad, Iran
2014-2018

B.Sc. of Laboratory Medicine

- GPA: 16.99/20 (3.62/4)

LANGUAGE TESTS

- TOEFL: 112 (S: 28, W: 28, R: 27, L: 29)

PUBLICATIONS

Journal Articles

- Abavisani, M., **Khayami, R.**, Hoseinzadeh, M., Kodori, M., Kesharwani, P., & Sahebkar, A. (2023). CRISPR-cas system as a promising player against bacterial infection and antibiotic resistance. *Drug Resistance Updates*, 100948.

- Abavisani, M., Hoseinzadeh, M., **Khayami, R.**, Kodori, M., Soleimanpour, S., & Sahebkar, A. (2023). Statins, allies against antibiotic resistance? *Current Medicinal Chemistry*.

- Hashemi, S. R., Matin, M. M., Avan, A., Farrokhi, S., Rigi, F., **Khayami, R.**, Azghandi, M., Esmaeilnia, M., & Kerachian, M. A. (2023). The significant role of a functional polymorphism rs9637231 in long non-coding RNA, LINC02892 in colorectal cancer: Evidence from an Iranian cohort. *Human Gene*, 201226.

- Toroghian, Y., **Khayami, R.**, Hassanian, S. M., Nassiri, M., Ferns, G. A., Khazaei, M., & Avan, A. (2022). The therapeutic potential of targeting the toll-like receptor pathway in breast cancer. *Current Pharmaceutical Design*, 28(27), 2203—2210.

- Abavisani, M., Rahimian, K., Kodori, M., **Khayami, R.**, Sisakht, M. M., Mahmanzar, M., & Meshkat, Z. (2022). *In silico* analysis of the substitution mutations and evolutionary trends of the SARS-CoV-2 structural proteins in Asia. *Iranian Journal of Basic Medical Sciences*, 25(11), 1299.

- **Khayami, R.**, Goltzman, D., Rabbani, S. A., & Kerachian, M. A. (2022). Epigenomic effects of vitamin d in colorectal cancer. *Epigenomics*, 14(19), 1213—1228.

- Ghorbani, M., Azghandi, M., **Khayami, R.**, Baharara, J., & Kerachian, M. A. (2021). Association of MTHFR C677T variant genotype with serum folate and vit B12 in Iranian patients with colorectal cancer or adenomatous polyps. *BMC Medical Genomics*, 14, 1—8.

- Mirinezhad, M. R., Khosroabadi, N., Rahpeyma, M., **Khayami, R.**, Hashemi, S. R., Ghazizadeh, H., Ferns, G. A., Pasdar, A., Ghayour Mobarhan, M., & Hamzehloei, T. (2021). Genetic determinants of premature menopause in a mashhad population cohort. *International Journal of Fertility & Sterility*, 15(1), 26.

- Bahreyni, A., Samani, S. S., Ghorbani, E., Rahmani, F., **Khayami, R.**, Toroghian, Y., Behnam-Rassouli, R., Khazaei, M., Ryzhikov, M., Parizadeh, M. R., et al. (2018). Adenosine: An endogenous mediator in the pathogenesis of gynecological cancer. *Journal of Cellular Physiology*, 233(4), 2715—2722.

- **Khayami, R.**, Toroghian, Y., Bahreyni, A., Bahrami, A., Khazaei, M., Ferns, G. A., Ebrahimi, S., Soleimani, A., Fiuji, H., Avan, A., et al. (2018). Role of adenosine signaling in the pathogenesis of head and neck cancer. *Journal of Cellular Biochemistry*, 119(10), 7905—7912.

Book Chapter

- Taghizadieh, M., Modiri, N., Salmaninejad, A., **Khayami, R.**, Taheri, F., Moghoofei, M., Khatami, A., Azhdari, S., Bayat, M., Samadi khouzani, A., & Sadri Nahand, J. (2023). Chapter 6 - neuroprotective effects of flavonoids. In H. Khan, M. Aschner, & H. Mirzaei (Eds.), *Phytonutrients and neurological disorders* (pp. 133--200). Academic Press. https://doi.org/10.1016/B978-0-12-824467-8.00016-4.

Congress Presentation

- Hashemi, S. R., **Khayami, R.**, Mousavi Bazzaz, F., Azghandi, M., & Kerachian, M. A. (2020). Association of rs9637231 polymorphism as a risk factor with colorectal cancer. *The Fourth International and 16th National Genetics Congress, Tehran*. https://civilica.com/doc/1195526.

RESEARCH EXPERIENCE

Mashhad University of Medical Sciences
2022-2023

Cancer Research Center

- Implemented machine learning algorithms on DNA methylation data to distinguish malignant from normal tissue, improving early cancer diagnosis.
- Conducted statistical analyses for multiple research projects, contributing data-driven insights.
- Collaborated on a CRISPR research project, assisting with synthesis and illustration.
- Assisted students with theses, enabling successful completion under Dr. Kerachian's supervision.

Mashhad University of Medical Sciences
2018-2022

Departement of Medical Genetics and Molecular Medicine

- Contributed text and images to a review on vitamin D's epigenetic role in colorectal cancer under supervision of professor David Goltzman and Dr. Mohammad Amin Kerachian.
- Implemented machine learning algorithms (Logistic Regression, SVM) to improve early colorectal cancer detection. Created a Shiny app to handle patient data and algorithm results.
- Established a workflow for variant detection in whole exome sequencing data in Dr. Kerachian's lab.
- Conducted statistical analyses for multiple research projects, contributing data-driven insights.
- Performed wet lab and dry lab work for thesis research under Dr. Kerachian's supervision. Assisted other students with theses under Dr. Kerachian, enabling successful completion.
- Handled nude mice in animal lab for a project under Dr. Kerachian.

Mashhad University of Medical Sciences
2016-2018

Undergraduate Researcher

- Advanced research projects by assisting PhD students under Dr. Pasdar's supervision.
- Helped synthesize text and illustrate images for review articles on the role of adenosine in various cancers under the supervision of Dr. Seyed Mehdi Hassanian to enhance understanding of adenosine's role in cancer.

HONORS AND AWARDS

- Ranked 1st in my graduating class of 2021 for the human genetics master's degree program, which I started in 2018.
- Received the Faculty of Medicine Top Student Researcher Award.

SKILLS

- **Programming:** R, Python (familier), Linux (bash)
- **Bioinformatics:** RNA-seq analysis, NGS data analysis, microarray data analysis, methylation array data analysis, multi-omics data integration, bioinformatics databases, Cytoscape, FlowJo
- **Machine Learning**: supervised and unsupervised learning algorithms
- **Illustration**: Adobe Photoshop, Adobe Illustrator, BioRender, ImageJ, PyMOL
- **Wet lab:** PCR, qPCR, gel electrophoresis, nucleic acid extraction, molecular cloning, general cell culture, wound healing assay, MTT assay, cell proliferation assay, Western blot (familiar)

SELECTED COURSES

- Ai for Medical Diagnosis
- Comprehensive Gene Therapy Course (Genetic Engineering, Genome Engineering, Treatment, and Commercialization) held by The Union of Iranian Biology in Corporation with Iranian Genetics Academy
- Principles of Working With Laboratory Animals Online Course
- High Throughput Genomics Analysis
- How to Write and Publish a Scientific Paper
- Statistics And R
- Human Genetics
- Cancer Genetics

REFERENCES

Dr. Mohammad Amin Kerachian

- Department of Medical Genetics and Molecular Medicine, Mashhad, Iran
- amin.kerachian@torontomu.ca

Prof. David Goltzman

- Department of Medicine, McGill University Health Center, Montreal, Canada
- david.goltzman@mcgill.ca

Dr. Majid Mojarrad

- Department of Medical Genetics and Molecular Medicine, Mashhad, Iran
- mojaradm@mums.ac.ir