

Leila Najd Hassan Bonab

Ph.D. in Molecular Genetics, Shahid Beheshti University of Medical Science

Cell Phone: +989102006467

Email: Leila_nhb26@yahoo.com



Background

Over several years of research, I have conducted various projects in humans aimed at identifying genes and genetic variants involved in the development of specific traits or diseases. I am passionate about deciphering genomes, particularly the human genome, using both experimental and computational approaches to discover effective genes and novel prognostic biomarkers. I hold an MSc in Cellular and Molecular Biology, during which I designed a molecular kit for genotyping Apolipoprotein E polymorphisms. In recent years, genetics has seen remarkable progress in tackling complex diseases, with Genome-Wide Association Studies (GWAS) emerging as a powerful tool for unraveling the genetic basis of various conditions. Against this backdrop, my thesis focuses on the intricate relationship between GWAS and coronary heart disease, aiming to shed light on the underlying genetic factors that contribute to this condition.

Technical Skills and Genetics Laboratory

Kariminejad - Najmabadi Pathology & Genetics Center

Research Institute for Endocrine Sciences Shahid Beheshti University of Medical Sciences

Tehran, Iran

- Expert technician in the genetic lab with whole experience in DNA extraction discovered banking, PCR-based tests, and Electrophoresis of nucleic acids
- Designing of primers for different PCR-based methods, such as tetra-ARMS PCR primers
- Performing qualitative Polymerase Chain Reaction (PCR) techniques

- Providing PCR troubleshooting protocols
- Teaching the laboratory techniques and principles of working with laboratory equipment to new researchers
- Troubleshooting researchers' technical issues
- Analyzing the research outputs
- Familiar with data extraction of ONLINE DATABASES and SITES:
- Experience in annotation and analysis of Whole Exome Sequencing, Whole Exome Sequencing, and genomic Chip data by SAM tools, BAM tools, VCF tools, Plink, IGV
- Conducted genome-wide association studies on large-scale datasets to identify genetic variants associated with complex traits
- Developed and maintained custom scripts and pipelines for data processing and analysis

Teaching Experience

- **Teaching PCR (Polymerase Chain Reaction):**
 - Delivered lectures and practical sessions on PCR techniques.
 - Trained students in DNA amplification and troubleshooting.
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- **Teaching Meta-Analysis:**
 - Instructed students on systematic review and meta-analysis methodologies.
 - Guided data collection, statistical analysis, and interpretation using software tools.
- **Teaching Primer Design:**
 - Taught principles of primer design for PCR applications.
 - Supervised students in designing and optimizing primers.
- **Teaching Gel Electrophoresis:**
 - Conducted hands-on training for DNA/RNA separation and analysis.
 - Explained principles and interpretation of gel electrophoresis results.

Ph.D. Thesis Title:

Genome-wide association study for coronary heart disease in the Iranian Adult: The Tehran Cardiometabolic Genetics Study (TCGS)

MSc. Thesis Title:

Designing a molecular kit for genotyping Apolipoprotein E polymorphisms by Tetra-ARMS PCR

Publications

1. **Najd-Hassan-Bonab L**, Motafeghi F, Saei Ghare Naz M, Chegeni S, Azizi F, Daneshpour MS, Ramezani Tehrani F. A genome-wide association study identifies GNPAT1 as a candidate risk locus for endometriosis in the Tehran Cardio-metabolic genetic study. Middle East Fertility Society Journal. **2026** May 6;31(1):37.
- 2.
3. Moazzam-Jazi M, Jafarinejad-Farsangi S, **Najd-Hassan-Bonab L**, Daneshpour M, Liu Z, Gupta MK, Vadde R. Interplay between obesity-associated insulin resistance and immune system through the lens of evolutionary medicine. Molecular Metabolism. **2026** Feb 13:102335.
4. **Leila Najd-Hassan-Bonab L**, Motafeghi F, Moazzam-jazi M, Farahmand M, Azizi F, Daneshpour MS, Tehrani FR, Elucidating the genetic architecture of early menopause in the Tehran cardiometabolic genetic study, Maturitas. **2025**
5. Lanjanian H, Fateh ST, Akbarzadeh M, **Najd-Hassan-Bonab L**, Asgarian S, Moghaddas MR, Guity K, Within-family analysis of PRS313: insights into breast cancer risk prediction, Genetic Engineering and Biotechnology. **2025**
6. Jafarinejad-Farsangi S, Asgarian S, Ghahari S, **Najd-Hassan-Bonab L**, Moazzam-Jazi M. Ancestry- and Age-Dependent Effects of NOS3 Polymorphisms on Coronary Heart Disease Risk: A Meta-analysis. Cardiovascular Toxicology. **2025**
7. Moazzam-Jazi M, Asgarian S, Hadaegh F, **Najd Hassan-Bonab L**, Masjoudi S, Zahedi A, Lanjanian H, Akbarzadeh M, Hedayati M, Utility of type 1 diabetes genetic risk score in a non-European population: insights from an Iranian cohort, Diabetology & Metabolic Syndrome. **2025**
8. Hedayati M, Nezhadali M, Karimi H, Daneshpour MS, **Najd-Hassan-Bonab L**, Sayyar N. Association of resistin rs1862513, rs10401670 and rs3745367 polymorphisms with resistin level and insulin resistance in an Iranian type 2 diabetic population. Journal of Diabetes & Metabolic Disorders. **2025 Jan** 8;24(1):38.

9. **Najd-Hassan-Bonab L**, Daneshpour MS, Jafarina M, Akbarzadeh M, Moazzam-Jazi M, Asgarian S, Khalili D. Exploring sex-specific genetic architecture of coronary artery disease in Tehran: a cardiometabolic genetic study. *Expert Review of Molecular Diagnostics*. **2024 Dec** 1;24(12):1171-80.
10. Amiri Roudbar M, Vahedi SM, Jin J, Jahangiri M, Lanjanian H, Habibi D, Masjoudi S, Riahi P, Zahedi AS, **Najd-Hassan-Bonab L**, The effect of family structure on the still-missing heritability and genomic prediction accuracy of type 2 diabetes. *Human genomics*. **2024 Sep** 11;18(1):98.
11. Asgarian S, Lanjanian H, Rahimipour S, Hadaegh F, Moazzam-Jazi M, **Najd-Hassan-Bonab L**, Masjoudi S, Zahedi AS, Zarkesh M, Shalbafan B, Akbarzadeh M. Examining the clinical and genetic spectrum of maturity-onset diabetes of the young (MODY) in Iran. *Scientific Reports*. **2024 Aug** 27;14(1):19860.
12. Torki S, Nezhadali M, Hedayati M, Karimi H, Razavi SA, **Najd Hassan Bonab L**. The role of rs2236242 at SERPINA12 gene and vaspin level on papillary thyroid carcinoma. *Nucleosides, Nucleotides & Nucleic Acids*. **2024 May** 12:1-2.
13. Habibi D, Teymoori F, Ebrahimi N, Fateh ST, **Najd-Hassan-Bonab L**, Saeidian AH, Taloubaghi AS, Asgarian S, Hosseinpanah F, Hakonarson H, Azizi F. Causal effect of serum 25 hydroxyvitamin D concentration on cardioembolic stroke: Evidence from two-sample Mendelian randomization. *Nutrition, Metabolism and Cardiovascular Diseases*. **2024 May** 1;34(5):1305-13.
14. **Najd-Hassan-Bonab L**, Hedayati M, Fazeli SA, Daneshpour MS. An optimized method for PCR-based genotyping to detect human APOE polymorphisms. *Heliyon*. 2023 Nov 1;9(11).
15. Asghari G, Yuzbashian E, **Najd-Hassan-Bonab L**, Mirmiran P, Daneshpour MS, Azizi F. Association of rs2282679 polymorphism in vitamin D binding protein gene (GC) with the risk of vitamin D deficiency in an iranian population: season-specific vitamin D status. *BMC Endocrine Disorders*. 2023 Oct 10;23(1):217.
16. Zadeh-Vakili A, **Najd-Hassan-Bonab L**, Akbarzadeh M, Abdi H, Zahedi AS, Azizi F, Daneshpour MS. Three candidate SNPs show associations with thyroid-stimulating hormone in euthyroid subjects: Tehran thyroid study. *Journal of Diabetes & Metabolic Disorders*. 2024 Jan 23:1-9.
17. **Najd-Hassan-Bonab L**, Givi NJ, Moazzam-Jazi M, Masjoudi S, Ghafari N, Daneshpour MS. Sex-specific association of FABP2 polymorphisms with the risk of obesity in the Tehran Cardio-Metabolic Genetic Study (TCGS). *Gene*. 2023 Aug 5;876:147519.
18. Daneshpour, Maryam S., Mahdi Akbarzadeh, Hossein Lanjanian, Bahar Sedaghati-khayat, Kamran Guity, Sajedeh Masjoudi, Asieh Sadat Zahedi, **Leila Najd Hassan Bonab** et al. "Cohort profile update: Tehran Cardiometabolic Genetic Study, a path toward precision medicine." (2022).
19. **Najd-Hassan-Bonab, Leila**, Mahdi Safarpour, Maryam Moazzam-Jazi, Fereidoun Azizi, and Maryam S. Daneshpour. "The role of FTO variant rs1421085 in the relationship with obesity: a systematic review and meta-analysis." *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity* (2022): 1-10.

20. Moazzam-Jazi, Maryam, **Leila Najd-Hassan-Bonab**, Sajedeh Masjouidi, Maryam Tohidi, Mehdi Hedayati, Fereidoun Azizi, and Maryam S. Daneshpour. "Risk of type 2 diabetes and KCNJ11 gene polymorphisms: a nested case–control study and meta-analysis." *Scientific Reports* 12, no. 1 (2022): 20709.
21. Pashapour, Sanaz, Sahar Saki, Elham Afraz, Yeganeh Hamidi, and **Leila Najd Hassan Bonab**. "Associations Between the TNF-Alpha-238 Gene (rs361625) Polymorphisms and Lung Cancer: A Meta-analysis." *Jentashapir Journal of Cellular and Molecular Biology* 14, no. 1 (2023).
22. Asghari, Golaleh, Emad Yuzbashian, Ali Nikparast, **Leila Najd Hassan Bonab**, Maryam Mahdavi, Maryam S. Daneshpour, Farhad Hosseinpanah, and Parvin Mirmiran. "Impact of daily vitamin D3 supplementation on the risk of vitamin D deficiency with the interaction of rs2282679 in vitamin D binding protein gene (GC) among overweight and obese children and adolescents: A one-year randomized controlled trial." *Frontiers in Nutrition* 9 (2022).
23. Lanjanian, H., **Najd Hassan Bonab, L.**, Akbarzadeh, M. et al. Sex, age, and ethnic dependency of lipoprotein variants as the risk factors of ischemic heart disease: a detailed study on the different age-classes and genders in Tehran Cardiometabolic Genetic Study (TCGS). *Biol Sex Differ* 13, 4 (2022). <https://doi.org/10.1186/s13293-022-00413-7>
24. Akbarzadeh, Mahdi, Parisa Riahi, Nadia Alipour, **Leila Najd Hassan Bonab**, Mohammad Reza Moghadas, Siamak Sabour, Fereidoun Azizi, and Maryam S. Daneshpour. "The AGT epistasis pattern proposed a novel role for ZBED9 in regulating blood pressure: Tehran Cardiometabolic Genetic Study (TCGS)." *Gene* 831 (2022): 146560.
25. Nezhadali, M., Mesbah-Namin, S.A., Hedayati, M. **Najd Hassan Bonab, L.** Serum adiponectin and cortisol levels are not affected by studied ADIPOQ gene variants: Tehran lipid and glucose study. *BMC Endocr Disord* 22, 104 (2022). <https://doi.org/10.1186/s12902-022-01020-8>
26. Masjouidi S, Sedaghati-Khayat B, Givi NJ, **Najd Hassan Bonab Leila**, Azizi F, Daneshpour MS. Kernel machine SNP set analysis finds the association of BUD13, ZPR1, and APOA5 variants with metabolic syndrome in Tehran Cardio-metabolic Genetics Study. *Scientific Reports*. 2021 May 13;11(1):1-1.
27. Safarpour M, Sedaghati-khayat B, **Bonab LN**, Fallah MS, Ebrahimi A, Azizi F, Daneshpour MS. Association of Apolipoprotein E Polymorphism With Risk of Metabolic Syndrome: A Case-Control Study And Meta-Analysis.
28. **Najd Hassan Bonab, Leila**, Maryam Moazzam-Jazi, Reyhaneh-Sadat Miri Moosavi, Mohammad-Sadegh Fallah, Hossein Lanjanian, Sajedeh Masjouidi, and Maryam S. Daneshpour. "Low HDL concentration in rs2048327-G carriers can predispose men to develop coronary heart disease: Tehran Cardiometabolic genetic study (TCGS)." *Gene* 778 (2021): 145485.
29. Javanrouh Givi, N., **Najd Hassan Bonab, Leila.**, Barzin, M. et al. The joint effect of PPARG upstream genetic variation in association with long-term persistent obesity: Tehran cardio-metabolic genetic study (TCGS). *Eat Weight Disord* (2021). <https://doi.org/10.1007/s40519-020-01063-7>
30. Moazzam-Jazi, M., **Najd Hassan Bonab, Leila**, Zahedi, A.S. et al. High genetic burden of type 2 diabetes can promote the high prevalence of disease: a longitudinal cohort study in Iran. *Sci Rep* 10, 14006 (2020). <https://doi.org/10.1038/s41598-020-70725-4>

31. Yari M, **Najd Hassan Bonab Leila**, Ahmadi R. Study of the effects of orchietomy and testosterone and estradiol administration on lipids profile in male rats. J Shahid Sadoughi Uni Med Sci 2019; 27(4): 1415-25

Presentation and Conference Proceeding

Oral

"Testosterone, K_{ATP} Channels Openers or Blocker and Insulin Sensitivity"

(Istanbul, Turkey, 27-28 Sep 2019)

National Patent:

Designing a molecular kit for genotyping Apolipoprotein E polymorphisms by Tetra-ARMS PCR

Books:

- Cultivating Cell & Tissue
- Cell Culture Basics

Honors:

- Best paper of the International Conference of Chemical, Environmental and Biomedical Sciences (ICCEBS20)-Turkey
- Selected as the top graduated student (M.Sc.), University of Science and Culture
- Second rank in the Startup Biology Competition (Al-Zahra University)

Conferences:

- 17th C-HPP Symposium, Royan Research Institute
- 3rd International Congress of Iranian Personal Medicine
- Systematic Review / Meta-Analysis Articles

Education Courses:

- Genetic counseling
- Application of Next-generation Sequencing in Clinical Diagnosis
- Concept of genome-wide association studies and their importance

- Introduction to DNA and Protein Databases (summer school)
- Bioinformatics, Linux, and shell script
- clinical genomics and NGS • ESHG
- Preliminary and Advanced Research Methodology
- Article writing
- Programming with R
- Peer review for scientific articles

Computer skills

Statistical Software

- Competent with most Microsoft Office programmers; good knowledge of HTML, Windows, and Linux.
- Programming: AWK and Bash (Advance)
- Some software for NGS study like Samtools, Bam tools...
- R/RStudio
- SPSS
- Stata: for meta-analysis of genetic association
- Experience with GWAS analysis using various software packages such as PLINK, GCTA
- Knowledge of bioinformatics tools and databases such as NCBI, UCSC Genome Browser, and ENSEMBL

Genetic Software

- PLINK
- PROGENY
- GeneRunner
- Haploview
- SNPAnalyzer
- R genetic packages

Other

- Endnote
- Mendeley reference manager
- Office (word, excel, PowerPoint, Access, Visio)

Projects

1. Sex-specific association of FABP2 polymorphisms with the risk of obesity in the Tehran Cardio-Metabolic Genetic Study (TCGS).
2. The role of FTO variant rs1421085 in the relationship with obesity: a systematic review and meta-analysis
3. Cohort profile update: Tehran cardiometabolic genetic study
4. An association study of KCNJ11 common polymorphisms with risk of type 2 diabetes: A systematic review and meta-analysis study
5. Impact of daily vitamin D3 supplementation on the risk of vitamin D deficiency with the interaction of rs2282679 in vitamin D binding protein gene (GC) among overweight and obese children and adolescents: A one-year randomized controlled trial
6. Three SNPs are associated with Thyroid-stimulating Hormone levels in euthyroid Iranians: Tehran thyroid study The AGT epistasis pattern proposed a novel role for ZBED9 in regulating blood pressure: Tehran Cardiometabolic genetic study (TCGS)
7. Associations Between the TNF-Alpha-238 Gene (rs361625) Polymorphisms and Lung Cancer: A Meta-analysis
8. Identifying genetic differences in genes related to the immune system and inflammation and investigating their relationship with the occurrence of obesity in the Iranian population: Cardiometabolic genetic study in Tehran
9. Sex, age, and ethnic dependency of lipoprotein variants as the risk factors of ischemic heart disease: a detailed study on the different age-classes and genders in Tehran Cardiometabolic Genetic Study (TCGS).
10. ICD11 coding for the personal complication and the outcome finding in TLGS participant
11. Assessment of rs139407567, rs4930195 and rs641081 polymorphisms frequency in AIP gene in acromegaly patients: A descriptive-analytic study
12. Determining the association of 31 SNP from genome-wide association studies with serum levels of free thyroxin and thyroid-stimulating hormone in Tehran Thyroid Study population
13. Identification of variants in genes related to the immune system and inflammation and their association with obesity incidence in an Iranian population: Tehran Cardio-Metabolic Genetic Study (TCGS)
14. Using model-based multifactor dimensionality reduction to detect gene-gene interaction in blood pressure trait in participants of Tehran cardio-metabolic genetic study
15. Discovery of structural variations (SV) of type insertion within the genomic region involved in cardiovascular disease in Tehran cardiometabolic genetic study
16. Discovery of structural variations (SV) of type inversion within the genomic region involved in cardiovascular disease in Tehran cardiometabolic genetic study
17. The association of rs2282679 polymorphism in GC gene with serum 25-hydroxyvitamin D concentration in adults: Tehran Cardio metabolic Genetic Study
18. Calculating the type 2 diabetes genetic risk score for individuals over 20 years old in the Tehran Cardiometabolic Genetic Study (TCGS) data
19. Interaction between air particulate matter (PM2.5-PM10) and polymorphisms of genes of ARAP1, DUSP8, KCNJ11, MTNR1B and KCNQ1 on the risk of type 2 diabetes in the adult population of the Tehran Lipid and Glucose Study (TLGS)

Language

- English (fluent)
- Turkish (fluent)
- Germany

Conferences:

- 17th C-HPP Symposium, Royan Research Institute
- 3rd International Congress of Iranian Personal Medicine
- Systematic Review / Meta-Analysis Articles