

CURRICULUM VITAE

Bahman Panahi, Ph.D

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RESEARCH INTERESTS

- Systems Biology
- Network Biology
- Machine Learning
- Transcriptomics
- Genomics
- Metagenomics
- Biological Data Mining

PROJECTS

- Screening and characterization of lutein production in *dunaliella* strains
- Simulation & Modelling of open pond cultivation systems for *Dunaliella* microalgae
- Essential gene selection by quality and quantity algorithms in cyanobacteria
- Analysis of phage resistance mechanisms in *lactobacillus* strains
- Identification and characterization of late spring frost tolerant walnut genotypes
- Expression analysis of vascular transporters in monocot halophyte *Leptochloa fusca*
- Diversity analysis of *carthamus tinctorius* germplasms using AFLP markers
- Genetic diversity analysis of black cumin accessions with RAPD markers
- Three dimensional structural modeling of pathogens related proteins in *hordeum vulgare*

EDUCATIONAL BACKGROUND

2012-2016	Ph.D.	Plant Biotechnology , Tabriz University. Iran. Thesis: Genome wide analysis of Alternative Splicing in <i>Hordeum Vulgare</i>
2009-2011	M.Sc.	Agricultural Biotechnology , Ferdowsi University of Mashhad, Iran. Thesis: Sequence and expression analysis of NHX antiporter in monocot halophyte <i>leptochloa fusca</i>
2005-2009	B.Sc.	Plant Protection , Mohagheg Ardabili University, Iran.

DISTINCTIONS, HONORS & AWARDS

- Distinguished researcher, Agricultural Biotechnology Research Institute of Iran, (2022)
- Distinguished researcher, Agricultural Biotechnology Research Institute of Iran, (2019)
- Awarded as Outstanding Student at University of Tabriz (2015)
- Awarded as Outstanding Student at Young research and Elites club (2014)
- Ranked number 9 among 1773 applicants in the Nationwide M.Sc. Entrance Exam for State Universities, 2009.
- Free education at governmental universities in B.Sc., M.Sc. and Ph.D.
- Election for Exceptional talents High School Exam

LANGUAGE SKILLS

- English (good)
- Azerbaijani (native)
- Persian (native)

ACADEMIC POSITIONS

- Assistant Professor, Agricultural Biotechnology Research Institute of Iran (ABRII), Karaj, Iran.

BIOINFORMATIC SKILLS

- Next generation sequencing data analysis (RNA seq and Dna seq)
- Whole genome sequence analysis
- Genome mining
- Transcriptome data mining

- Microarray data analysis
- Analysis of regulatory elements (In silico promoter analysis and Transcription factors)
- Expressed Sequence Tags (EST) Analysis
- MicroRNA bioinformatics and data analysis
- SNP analysis
- Alternative Splicing prediction and isoform analysis
- Construction of Gene Networks (PPI and Weighted gene-co Expression networks)
- Regulatory network construction and analysis
- Protein Bioinformatics specially Structural Modelling
- Modelling with Machine learning algorithms (Feature Selection, classification and clustering)
- Meta-analysis of transcriptomics data
- Integration of biological data with ML approach
- High performance computing systems
- R programming
- Python
- Linux packages

Editorial and Review Activities for

- Editor of Frontiers in Genetics
- Review Activities for BMC Genomics, PLOSE ONE, Molecular Genetics and Genomics, Frontiers in Genetics, Renewable Energy, Microbial Genomics, Briefings in Bioinformatics, Molecular Biology Reports, Journal of Genetic Engineering and Biotechnology, Biomass Conversion and Biorefinery, JAST, Frontiers in Microbiology, Iranian Journal of Biotechnology.

LIST OF PEER REVIEWED PUBLICATIONS

1. **Panahi, B***, Shahi, A., Transcriptome data mining in combination with co-expression network analysis identifies the functional modules and critical regulators in *Hordeum vulgare* L. in response to cold stress. *Biochemistry and Biophysics Reports* (BB Reports). 2024
2. **Panahi, B.**, Dehgan, E, Nami, Y. 2023. CRISPR-Cas systems feature and targeting phages diversity in *Lactocaseibacillus rhamnosus* strains. *Frontiers in Microbiology*.
3. Mahmoodi Chalbatani, G., Gharagouzloo, E., Malekraeisi, M., Azizi, P., Ebrahimi, A., Hamblin, Mi.R., Mahmoodzadeh, H., Elkord, E., Miri, S., and Sanati, M, **Panahi, B.** 2023. The integrative multi-omics approach identifies the novel competing endogenous RNA (ceRNA) network in colorectal cancer. *Scientific Reports*.
4. Nami, Y., Roustampour, M., **Panahi, B***. 2023. CRISPR-Cas systems and diversity of targeting phages in *Lactobacillus johnsonii* strains; insights from genome mining approach. *Infection, Genetics and Evolution*.
5. Ghaffarian, S., & **Panahi, B.** 2023. Investigating the diversity of phage and plasmid targets of the CRISPR/Cas systems in the *Leuconostoc* genus using the insilico approach. *Journal of Biosafety*, 16(1), 0-0.
6. Soleimani, H., Shokri, R., Khandaghi, J., Nami, Y., **Panahi, B.** 2023. Potential probiotic characterization of lactic acid bacteria isolated from Duimaj, an Iranian traditional snack food, using biochemical, molecular and computational approaches. *LWT*
7. Daneshafrooz, N., Bagherzadeh Cham, M., Majidi, M., **Panahi, B***. 2022. Identification of potentially functional modules and diagnostic genes related to amyotrophic lateral sclerosis based on the WGCNA and LASSO algorithms. *Scientific Reports*.
8. Abbasi holasou, H., Mohammadzadeh Jalaly, H., Mohammadi, R., **Panahi, B***. 2022. Genetic diversity and structure of superior spring frost tolerant genotypes of Persian walnut (*Juglans regia* L.) in East Azerbaijan province of Iran, characterized using Inter Simple Sequence Repeat (ISSR) markers. *Genetic Resources and Crop Evolution*.
9. Roustampour, M., Massomi, R., Nami, Y., **Panahai, B***. 2022. A review of anti-phage systems in lactic acid bacteria. *Journal of Biosafety*. 15 (2)
10. **Panahi B***, Majidi M, Hejazi MA. 2022. Genome mining approach reveals the occurrence and diversity pattern of CRISPR-Cas systems in *Lactobacillus brevis* strains. *Frontiers in Microbiology*.
11. **Panahi, B***, Farhadian, M., & Mohammadi, S. A. 2022. Transcriptome meta-analysis of microalga *Dunaliella tertiolecta* under stress condition. *bioRxiv*.
12. Abbasi H, Nami Y, **Panahi, B***. Supervised Machine Learning Models in combination with Microsatellite: Effective approach for World Wild and Cultivated Grapevine germplasm Characterization. *submitted*.
13. Mazlumi, A., **Panahi, B.**, Hejazi, M.A., Nami Y. 2022. Probiotic potential characterization and clustering using unsupervised algorithms of lactic acid bacteria from saltwater fish samples. *Scientific Reports*.
14. Sadeghi, M., **Panahi, B.**, Mazlomi, A., Hejazi, M. A., & Nami, Y. 2022. Screening of potential probiotic lactic acid bacteria with antimicrobial properties and selection of superior bacteria for application as biocontrol using machine learning models. *LWT*, 113471.
15. Daneshafrooz N, Joghataei MT, Mehdizadeh M, Alavi A, Barati M, **Panahi B**, Teimourian S, Zamani B. 2022. Identification of let-7f and miR-338 as plasma-based biomarkers for sporadic amyotrophic lateral sclerosis using meta-analysis and empirical validation. *Scientific Reports*.
16. Taghavi D, Majidi M, Mollaei S, **Panahi B.** 2021. Effect of methyl jasmonate on expression of some genes related to shikonin biosynthetic pathway in *Lithospermum officinale*. *Journal of Plant Molecular Breeding*.

17. Razeghi J, Pishtab PA, Fathi P, **Panahi B**, MA Hejazi. 2021. The Feasibility of Microalgae *Dunaliella* Identification Based on Conserved Regions of Mitochondrial Cytochrome b and Cytochrome Oxidase Genes. *Cytology and Genetics*. <https://doi.org/10.3103/S009545272106013X>
18. Gharamani N, Shojdja J, Rafaat A, **Panahi B**, K Hasanpour.2021. Integrative Systems Biology Analysis Elucidates Mastitis Disease Underlying Functional Modules in Dairy Cattle. *Frontiers in Genetics*. <https://doi.org/10.3389/fgene.2021.712306>.
19. **Panahi B***, Tajjadod S, Mohammadzadeh H, Hejazi MA, Zeinolabedini M. 2021. Variability and association among some pomological and physiochemical traits in spring frost tolerant genotypes of Persian walnut and selection of genotypes with superior traits based on machine learning algorithms. *Genetic Resources and Crop Evolution*.
20. Nami, Y., Imeni, N., **Panahi, B***. 2021. Application of machine learning in bacteriophage research. *BMC microbiology*.
21. Farhadian, M., Rafat, SA, **Panahi, B.**, Mayack, Ch. 2021. Weighted gene co-expression network analysis identifies modules and functionally enriched pathways in the lactation process. *Scientific Reports*.
22. **Panahi, B***, Hejazi, MA, 2021. Weighted gene co-expression network analysis of the salt-responsive transcriptomes reveals novel hub genes in green halophytic microalgae *Dunaliella salina*. *Scientific Reports* 11 (1607)
23. Amiri, S., Fotovat, R., **Panahi, B***, Tarinezhad, A., Mohammadi, SA. 2020. Abiotic and biotic elicitors' effects on secondary metabolites biosynthesis of periwinkle (*Catharanthus roseus* (Linn.) G. Don). *J. Med. Plants* . 19(74): 1-24
24. Farhadian, M., Rafat, A., **Panahi, B.**, Ebrahimie,E. 2020. Transcriptome signature of the two lactation Stages in Ghezel sheep identifies using RNA-Sequencing. *Animal Biotechnology*. <https://doi.org/10.1080/10495398.2020.1784185>
25. **Panahi, B.**,* Hejazi MA., 2020. Integrative analysis of gene expression and alternative splicing in microalgae grown under heterotrophic condition. *PLoS ONE*. 15(6). <https://doi.org/10.1371/journal.pone.0234710>
26. Mohammadi, R., **Panahi, B.**, Amiri,S. 2020. ISSR Based Study of Fine Fescue (*Festuca ovina* L.) Highlighted the Genetic Diversity of Iranian Accessions. *Cytology and Genetics*. 54 (3): 257–263
27. **Panahi, B.**,* Farhadian, M., & Hejazi, M. 2020. Systems biology approach identifies functional modules and regulatory hubs related to secondary metabolites accumulation after the transition from autotrophic to heterotrophic growth condition in the microalga. *PLoS ONE*, 10.1371/journal.pone.0225677
28. Nami, Y., **Panahi, B.**, Jalaly, H. M., Bakhshayesh, R. V., & Hejazi, M. A. 2020. Application of unsupervised clustering algorithm and heat-map analysis for selection of lactic acid bacteria isolated from dairy samples based on desired probiotic properties. *LWT*, 118, 108839.
29. Dehdar, B., Amiri, S., **Panahi, B.**, Mohammadi, R. 2020. Combining ability analysis of tuber yield and related traits. *GENETIKA-belgrad*, 52: 215-228.
30. Farhadian, M., Rafat, S. A., **Panahi, B.**, & Ebrahimie, E. 2019. Transcriptome signature of the lactation process in a fat-tailed sheep identifies with integrative approach of RNA-Seq and Supervised Machine Learning models.
31. Amiri, S., Fotovat, R., Tarinejad, A. R., **Panahi, B.**, & Mohammadi, S. A. 2019. In vitro regeneration of periwinkle (*Catharanthus roseus* L.) and fidelity analysis of regenerated plants with ISSR Markers. *Journal of Plant Physiology & Breeding*, 9(1), 129-135. 10.22034/jppb.2019.10389
32. **Panahi B*** Frahadian M, Dums J T. and Hejazi MA, 2019. Integration of Cross Species RNAseq Meta-Analysis and Machine Learning Models Identifies the Most Important Salt Stress–Responsive Pathways in Microalga *Dunaliella*. *Frontiers in Genetics*. 10:725.
33. **Panahi, B.**,* Mohammadi, S. A., & Doulati-Baneh, H. 2019. Characterization of Iranian grapevine cultivars using machine learning models. *Proceedings of the National Academy of Sciences, India Section B: Biological Sciences*, 1-7. <https://doi.org/10.1007/s40011-019-01131-8>
34. **Panahi B***, Mohammadi SA, Abbasi H and Ebrahimie E, 2019. Identification and co-expression network analysis of Nuclear Factor Y in barley revealed potential functions in salt stress, *Physiol Mol Biol Plants*. 25: 485. 10.1007/s12298-018-00637-1
35. Amiri S, **Panahi B***, Mohammadi R, Fattahi F. 2019. Effects of plant growth regulators combination on Persian lilac (*Melia azedarach* L.) direct in vitro regeneration. *Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.*
36. Amiri S, Fotovat R, Tarinejad A, **Panahi B**, Mohammadi SA. 2019. Optimization of Hormonal Combinations for In Vitro Regeneration of Lesser Periwinkle (*Vinca minor* L.) and Assessment of Genetic Homogeneity. *Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci.* <https://doi.org/10.1007/s40011-019-01141-6>.
37. **Panahi B***, Mohammadi SA, Ebrahimie khaksefidi R, Ebrahimie E.2015. Genome-Wide analysis of Alternative Splicing Events in *Hordeum vulgare*: highlighting retention of intron-based splicing and its possible function through network analysis. *FEBS Letter*, 589:3564–3575. doi:10.1016/j.febslet.2015.09.023
38. **Panahi B***, Mohammadi SA. 2018. Function of Alternative Splicing in plants (In farsi). *Modern Genetics Journal*. 13:1-9
39. **Panahi B***, Abbaszadeh B, Taghizadeghan M, Ebrahimie E, 2014. Genome-wide survey of Alternative splicing in sorghum bicolor. *Physiology and Molecular Biology of Plant*. 20(3):323–329. doi 10.1007/s12298-014-0245-3
40. **Panahi B***, Shahriari Ahmadi F, Marashi H, Zare M, Moshtaghi N. 2013. Molecular cloning and expression analysis of Na⁺/H⁺ antiporter in monocot halophyte *Leptochloa fusca* L. *NJAS-Wageningen journal of life science*, (65) 87– 93. doi: 10.1016/j.njas.2013.05.002

41. Shahriari Ahmadi F, **Panahi B**,* Marashi H, Moshtaghi N, Mirshamsi Kakhki A. 2013. Coordinate up-regulation of vacuolar Na⁺/H⁺ antiporter and V-PPase to early time salt stress in monocot halophyte *Leptochloa fusca* roots. *Journal of Agricultural Science and Technology*, 15: 369-376. 20.1001.1.16807073.2013.15.2.13.2
42. **Panahi B**,* Mohammadi SA, Ebrahimie E. 2013. Identification of miRNAs and their potential targets in halophyte plant *Thellungiella halophila*, *Biotechnologia*, 94(3). 285-290
43. **Panahi B**,* Ghorbanzadeh M. Genetic characterization of Iranian safflower using inter simple sequence repeat (ISSR) markers. *Physiology and Molecular Biology of Plant*, 2013, 19(2):239–243 doi: 10.1007/s12298-012-0155-1
44. **Panahi B**,* Afzal R, Ghorbanzadeh M, Mahmoodnia M. Relationships among AFLP, RAPD marker diversity and agromorphology traits, in Safflower (*Carthamus tinctorius* L.). *Progress in Biological Science*, 2013, 3(1)90-99
45. Mahmoudi B, **Panahi B**.* Mohammadi SA, Daliri M, Babayev Sh M. Microsatellites based phylogeny and bottleneck studies of Iranian indigenous goat populations. *Animal Biotechnology*. 2014, 25 (3), 210-222. doi:10.1080/10495398.2013.850431
46. Ghorbanzadeh Negab M, **Panahi B**.* Molecular Characterization of Iranian accessions of black cumin with RAPD marker. *Biotechnologia*, 2017, 98(2) pp. 97-102
47. **Panahi B**,* Moshtaghi N, Torktaz I, Panahi A, Sudeep R. 2012. Homology modeling and structural analysis of NHX antiporter of *Leptochloa fusca* (L.) *Journal of Proteomics and Bioinformatics*. 5: 214-216. doi:10.4172/jpb.1000238.

PRESENTATIONS

1. **Panahi, B**. 2022. Application of integrative systems biology approach in complex biological systems. Agricultural Biotechnology Research Institute of Iran (ABRII), Iran.
2. **Panahi, B**. 2021. Anti-phage systems in lactic acid bacteria and harnessing of genome mining approach for characterization of these systems. Agricultural Biotechnology Research Institute of Iran (ABRII), Iran.

CONFERENCE

1. Nami, Y., Same,S, **Panahi B**, 2023. Identification and phylogeny analysis anti-phage related systems in bacteria belonging to *Bifidobacterium longum* species. Proceeding of the 5th international and 17th national genetics congress. Tehran, Iran.
2. Nami, Y., Azizi,S, **Panahi B**, 2023. In silico identification and phylogeny analysis of *Lactobacillus ineres* bacterial based on Cas proteins in strains. Proceedin of the 5th international and 17th national genetics congress. Tehran, Iran.
3. Roustampour, M., **Panahi, B**, Masoumi R., 2022. Identification and phylogeny relationships of cas proteins in *L. plantarum*. Proceeding of the first regional conference on modern achievements and knowledge-based advances in microbiology and biotechnology.Tehran, Iran.
4. Abbaszadeh B, Mahmoudi B., **Panahi B**. 2018. Three dimensional modeling of nitrate reductase in *oryza sativa*. Proceeding of the 7th National Conference on Sustainable Agriculture and Natural Resources. Tehran, Iran
5. **Panahi B** and Mohammadi SA. Dynamic interaction network of Alternative splicing genes in different physiological condition (In Farsi). Proceeding of 3rd International Conference on Agricultural Engineering and Natural Resources, Jul 2017, Iran.
6. **Panahi B**, Ebrahimi R, Afzal R, Mohammadi SA, Ebrahimie E, Gene Ontology of Alternative Splicing affected genes in *Arabidopsis thaliana*, Proceeding of first international and 12th Iranian genetics congress. May 24th -28th, 2014, Tehran, Iran.
7. **Panahi B**, Mohammadi SA, Ebrahimie E, Identification of miRNAs and their potential targets in halophyte plant *Thellungiella halophila*, Proceeding of 1st Tabriz International Life Science Conference, May 22th -24th, 2013, Tabriz, Iran
8. **Panahi B**, Aslanzadeh V, Panahi A, Homology modeling and structural analysis of PR-proteins of *Hordeum Vulgare*, Proceeding of 4th Iranian Conference on Bioinformatics, November 6th-7th , 2012, NIGEB, Tehran, Iran
9. **Panahi B**, Ghorbanzadeh M, Mahmoodnia M, Genetic diversity analysis of (*Carthamus tinctorius* L.) by AFLP markers. Proceeding of 3th Iranian Conference on Agri Biotechnology, septamber 3th-6th, 2012, Mashhad, Iran.
10. **Panahi B**, Ghorbanzadeh M, Genetic characterization of Iranian safflowers using ISSR markers, Proceeding of 3th Iranian Conference on Agri Biotechnology, septamber 3th-6th , 2012, Mashhad, Iran.
11. **Panahi B**, Moshtagi N, Torktaz I, Homology modeling of NHX antiporter of *Leptochloa fusca*, Proceeding of 3th Iranian Conference on Agri Biotechnology, septamber 3th-6th , 2012, Mashhad, Iran.
12. **Panahi B**, Shahriary F, Marashi H, Expression analysis of V PPase of *Leptochloa fusca* by Real -time PCR, Proceeding of 3th Iranian Conference on Agri Biotechnology, septamber 3th-6th , 2012, Mashhad, Iran.
13. Mahmoodi B, Daliri M, **Panahi B**, microsatellite and genetic Bottleneck analysis of Iranian goats, Proceeding of 3th Iranian Conference on Agri Biotechnology, septamber 3th-6th , 2012, Mashhad, Iran.

SUPERVISOR/ADVISOR OF THESIS

1. **Advisor of Ph.D thesis**. Saleh Amiri. 2020. Micropropagation, assessment of abiotic elicitors and analysis of the involved genes in methabolic pathways with RNA-seq technology in *Periwinkle*. University of Zanjan.

2. **Advisor of Ph.D thesis.** Nooshin Gahramani, 2022. The Study of Genes Affecting Mastitis Disease Using Transcriptome Data. University of Tabriz.
3. **Advisor of M.Sc thesis.** Dariush Taghavi. 2022. Effect of methyl jasmonate on expression of shikonin biosynthesis related genes in *Lithospermum officinale* L. University of Shahid Madani.
4. **Advisor of M.Sc thesis.** Mohadeseh Roustampour. 2022. Identification, diversity and evolution of antiphage systems in *Lactiplantibacillus plantarum* strains using genome mining approach. University of Maragheh

WEB PRESENCE

Website: <http://www.abrii.ac.ir/en/ShowMember/81/Bahman-Panahi>

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