

Mehdi Mirzaie (Curriculum Vitae)

### Address:

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### Education

**Ph.D.:** Sep 2004-Aug 2009, Mathematics (Bioinformatics), Shahid Beheshti University, Tehran, Iran

**PhD Thesis title:** Discrimination of native structure from decoys of protein based on strategic form games. Supervisors: Prof. Changiz Eslahchi, Prof. Mehdi sadeghi; Advisor: Prof. Hamid Pezeshk

**M.Sc.:** Sep 2002-Aug 2004, M.Sc.: Mathematics, Shahid Beheshti University, Tehran, Iran

**B.Sc.:** Sep 1998-Aug 2002, B.Sc.: Mathematics, Shahid Beheshti University, Tehran, Iran

### Professional Positions

1. 2014-Present: Assistant Professor, Department of Applied Mathematics, Faculty of Mathematical Sciences, Tarbiat Modares University, Tehran, Iran
2. 2010-2014: Assistant Professor, Department of Basic Sciences, Faculty of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran.
3. 2011-Present: Non Resident Researcher, School of Biological Science, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran

### PUBLICATIONS:

1. Jafari R, Sadeghi M, **Mirzaie M**, Investigating the importance of Delaunay-based definition of atomicinteractions in scoring of protein–protein docking results, *Journal of Molecular Graphics and Modelling*, 2016;66: 108–114
2. Jafari M, **Mirzaie M**, Khodabandeh M, Rezadoost A, Ghassempour A, Aboul-Enein HY, Polarity-based fractionation in proteomics:hydrophilic interaction vs reversed-phase liquid chromatography, 2016;30(7):1036-41
3. Barneh F, Jafari M, **Mirzaie M**, “Updated on Drug-Target Network; Facilitating polypharmacology and data integration by growth of DrugBank Database”,**Briefing in Bioinformatics**, 2016,17(6):1070-1080.

4. **Mirzaie M**, Kheradmand F, “Bioactive Lipids in Emphysema:Decoding Fat to Reveal COPD Phenotypes” **Am J Respir Crit Care Med**, 2015(191), Iss 3, 241–254.
5. Azimzadeh S, **Mirzaie M**, Jafari M, Mehrani H, Shariati P, Khodabande M, “Signaling network of lipids as a comprehensive scaffold for omics data integration in sputum of COPD patients” **Molecular and cell biology of lipids**, 2015,1851,1383-1393.
6. Jafari M, **Mirzaie M**, Sadeghi M, “Interlog Protein Network: An Evolutionary Ground Truth for Protein Interaction Networks”, **BMC Bioinformatics**, 2015, 16:319
7. **Mirzaie M**, Sadeghi M., “Delaunay-Based Non-local Interactions Are Sufficient and Accurate in Protein Fold Recognition”, **Proteins**, 2014,82(3),415–423.
8. Jafari M, Rezadoost H, Karimi M, **Mirzaie M**, Rezaie-Tavirani M, Khodabandeh M, Kordafshari Gh, Gilany K, Abbasian N, Nickchi P, Ghassempour A “Proteomics and traditional medicine: new aspect in explanation of temperaments”, **Forschende Komplementärmedizin Research in Complementary Medicine**, 2014;21(4):250-253.
9. Mirazie K, **Mirzaie M**, “Relationship between B-factor and average shortest path in the protein structure” **JPS**, 2014(5);46-49.
10. **Mirzaie M**, Sadeghi M, “Discrimination of Native Protein Structure from Decoys Using Nonlocal Interactions Based on Delaunay Tessellation”. The 5<sup>th</sup> Iranian Conference on Bioinformatics, 2014.
11. Jafari M, Sadeghi M, **Mirzaie M**, Marashi SA , Rezaei-Tavirani M., “Evolutionarily conserved motifs and modules in mitochondrial protein-protein interaction networks”, **Mitochondrion**, 2013;13, 668-675.
12. Jafari M, **Mirzaie M**, Sadeghi M, Marashi SA, Rezaei-Tavirani M. Exploring biological processes involved in embryonic stem cell differentiation by analyzing proteomic data. **Biochimica et Biophysica Acta (BBA): Proteins and Proteomics** 2013;1834:1063–1069.
13. Razavi Zadegan SM, **Mirzaie M**, Sadoughi F, “Ranked k-medoids: A fast and accurate rank-based partitioning algorithm for clustering large datasets”, **Knowledge-Based Systems** 2013; 39:133–143.
14. Rezaei-Tavirani M, Rahmati-Roodsari M ,**Mirzaie M**, Amini Geram P,Sobhi S. “Cell Survival Entropy and Cellular Resistance Activation Dose: Effect of Calprotectin on Gastric Adenocarcinoma Cell Line”, **Iranian Journal of Cancer Prevention** 2012.
15. **Mirzaie M**, Sadeghi M, “Distance Dependent Atomic Knowledge Based Force in Protein Fold Recognition”, **Proteins** 2011;80(3):683-90.
16. **Mirzaie M**, Sadeghi M, “Knowledge-based potentials in protein fold recognition”, **J Paramed Sci** 2010;1(4):65-75.

17. **Mirzaie M**, Eslahchi Ch, Pezeshk H, Sadeghi M, “a distance dependent atomic knowledge based potential and force for discrimination of native structures from decoys”, **Proteins** 2009;77(2):454-463.

## TEACHING EXPERIENCE

Assistant Professor, 2010-present

- Graduate (for PhD students of Applied Proteomics and Medical Biotechnology)
  - Biostatistics
  - Bioinformatics
  - Systems Biology
  - Statistical bioinformatics (high throughput data analysis and Biological Network Analysis)
  - Programming with MATLAB, R, C++ and python
- Graduate (for PhD students of Medical informatics)
  - Data structure and Programming with C++
  - Algorithms: Design and Analysis
  - Complex Networks
- Under graduate
  - Elementary Mathematics
  - Differential equations
  - Calculus

Ph.D. student, 2004-2009

- Under graduate
  - Elementary Mathematics
  - Differential equations
  - Calculus

## Academic Honors

1. Honor M.Sc. student of university of Shahid Beheshti, Tehran, Iran, 2004.
2. As outstanding elected teacher of Shahid Beheshti University of Medical Sciences in 2011.

## CONFERENCE AND WORKSHOP ORGANIZATION

1. Oral presentation “R for Omics data analysis” in “*Structural Bioinformatics workshop*”, Institute Pasteur Iran, Sep 2015
2. Oral presentation “Network Analysis in Protein Structure” in “*Structural Bioinformatics workshop*”, Institute for Research in Fundamental Sciences (IPM), Sep 2014
3. Oral presentation “Gene Ontology”, “*Systems Biology workshop*”, Institute Pasteur Iran, Jun 2014
4. Oral presentation “Introduction to Graph Theory”, “*Systems Biology workshop*”, Institute Pasteur Iran, Jun 2014

5. Oral presentation “Discrimination of Native Protein Structure from Decoys Using Nonlocal Interactions Based on Delaunay Tessellation”, Fifth Iranian Conference on Bioinformatics, May 2014
6. Oral presentation “Protein Structure Prediction”, Statistical Bioinformatics workshop, Statistical Research and Training Center, Jan 2014
7. The scientific secretary, organizer and lecturer of the '*Biomedical Informatics Workshop*' at Shahid Beheshti University of Medical Sciences in Dec 2012
8. Oral presentation “A new scoring function in discrimination native structure from decoys”, Third Iranian Conference on Bioinformatics Jan 2010.
9. Oral presentation “Physical and statistical force fields”, computational biology workshop, Institute for Research in Fundamental Sciences (IPM), 2010

## STUDENT SUPERVISION:

Advisor for three PhD students

1. **Dr Sadegh Azimzadeh**  
Title: “cell signaling network analysis in COPD”, 2015, National Institute of Genetic Engineering and Biotechnology, Tehran, Iran.
2. **Dr. Mohieddin Jafari**  
Title: “*Mitochondrial Protein-protein Interaction Network Analysis and Comparison between Multicellular Eukaryotic Selected Organisms: Mouse, Drosophila Melanogaster, C.elegance and Human*”, 2013, Shahid Beheshti University of Medical Sciences, Faculty of Paramedical Sciences, Department of Basic Sciences, Tehran, Iran
3. **Dr. Rahim Jafari**  
Title: “*Performance evaluation of a scoring function based on force function in discrimination of native protein complex structures from decoys*”, 2012, Tarbiat Modares University, Faculty of Biological Sciences, Department of Nano Biotechnology, Tehran, Iran

MSc students:

1. **Ali ghafari**  
Title: “*An Algorithmic Approach Based on Knowledge-based Force Function for Prediction of Protein Structure*” 2014, University of Tehran, Faculty of Engineering, Department of algorithm and computation, Tehran, Iran
2. **Seyed Mohammad Razavi Zadegan Jahromy**  
Title: “*Identifying Co-Regulated Genes of New Vancomycin Resistant Strains of Staphylococcus Aureus Using Clustering Analysis of Expression Data*”, 2012, Tehran University of Medical Sciences, School of Health Management and Information Sciences, Tehran, Iran

## RESEACH INTEREST

1. Protein structure analysis
2. Mathematical systems biology
3. Evolutionary game theory
4. Biological Networks and High throughput data analysis