Curriculum Vitae

Name: Mehdi Sadeghi

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Education

PhD Biophysics (2011-2017), Department of Biophysics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

- Supervisor: Dr. Bijan Ranjbar
- Advisor: Dr. Mohamad Reza Ganjalikhany
- Thesis: "Gene regulatory network analysis of prostate cancer using high throughput data integration approaches"

M.Sc. Biophysics (2009-2011), Department of Biophysics, Faculty of Biological Sciences, Tarbiat Modares University, Tehran, Iran

- Supervisor: Dr. Bijan Ranjbar
- Research Project: "Investigation on the structure and function of restriction DNAzyme"

B.Sc. Animal Biology (2005-2009)

- Department of Biology, Faculty of Biological Sciences, Urmia University, Urmia, Iran

Work experience

Assistant professor (2019-present)

- Department of Cell and Molecular Biology, Faculty of Science, University of Semnan, Semnan, Iran

Postdoctoral fellowship (2018-2019)

- Research Institute for Fundamental Sciences, Tabriz University, Iran
- Research project: "Genomic network design based on personalized medicine to detect therapeutic gene targets for gastric cancer"
- Supervisor: Dr. Abolfazl Barzegar
- Advisor: Prof. Olaf Wolkenhauer

Research assistant (September 2016 – December 2017)

- Research Institute for Fundamental Sciences, Tabriz University, Iran
- Research project: "Analysis of gene expression heterogeneity in primary prostate cancer to explore and classify patient using microarray data"
- Supervisor: Dr. Abolfazl Barzegar

Research assistant and visiting fellow (March-September 2015)

- Department of Systems Biology and Bioinformatics, University of Rostock, Rostock, Germany
- Research project: "Integrative systems medicine approach to investigate molecular signatures/ events responsible for switching duties of E2F1 in tumor metastasis"
- Supervisor: Prof. Olaf Wolkenhauer

Teaching Experience

Bachelor's Degree:

- Lecturer of biophysics, systems biology, bioinformatics, physical biochemistry and radiation biology in Semnan University, Semnan Farzanegan University and Guilan University.

Master's Degree

- Lecturer of biological systems modeling, bioinformatics and protein biotechnology in Tabriz University and Semnan University.

Supervisory experience

- Nafiseh Ghorbanpour, Master's degree, Research Institute for Fundamental Sciences, Tabriz University, Iran. Thesis title: "Gastric cancer patient's diseases stage prediction by decision tree algorithm and network based methods".
- Ilia Rafiei, Master's degree, Research Institute for Fundamental Sciences, Tabriz University, Iran. Thesis title: "RNA-seq and miRNA-seq integrated data analysis of breast cancer cell lines treated in acidosis".

Computational skills

- **High throughput data analysis:** NGS data analysis (RNA-Seq, small RNA-Seq and whole exome-sequencing), microarray data analysis, miRNA data analysis, functional enrichment analysis.
- **Clustering analysis of expression data**: Weighted Gene Correlation Network Analysis, Principal component analysis, Support Vector Machine, Decision tree algorithm, K-means clustering.
- **Systems biology and biological networks analysis:** Cytoscape.
- **Databases and repositories**: Ensembl, GenBank, DDBJ, ENA, UCSC, cBio-portal, Reactome, GO, KEGG, PANTHER, Uniprot, GEO, Miranda, TargetScan, TRANSFAC.

- **R Libraries and tools:** Bioconductor, Aroma.affymetrix, Oligo, FIRMA, LIMMA, Siggenes, BiomaRt, WGCNA, Survival.
- **Structural bioinformatics**: molecular docking, homology modeling, sequence alignment.
- **Molecular Dynamics:** Amber and Gromacs.

Programming skills

- **Languages:** R, Python
- **Scientific computing and libraries**: R programming, Matlab.

Experimental skills

- Circular dichroism spectropolarimetry
- Fluorescence spectrophotometry
- Differential scanning calorimetry
- PAGE and D-PAGE
- PCR
- ELISA

Publications

Journal articles

- Sadeghi M, Ranjbar B, Ganjalikhany MR. **Restriction Deoxyribozyme Spectroscopy Study: Structure and Activity Survey.** Biotechnology Tarbiat Modares University journal 2016; 7: 40-50.
- Sadeghi M, Ranjbar B, Ganjalikhany MR. **Co-expression and microRNA regulatory network integration in metastatic prostate tumor using microarray expression data analysis.** Qom Univ Med Sci J 2017; 11: 98-116.
- Sadeghi M, Ranjbar B, Ganjalikhany MR, Khan FM, Schmitz U, Wolkenhauer O, Gupta SHK. **MicroRNA and transcription factor gene regulatory network analysis reveals key regulatory elements associated with prostate cancer progression.** PLoS One 2016; 11:e0168760
- Barzegar A, Jafari Mousavi S, Hamidi H, Sadeghi M. **2D-QSAR study of fullerene nanostructure derivatives as potent HIV-1 protease inhibitors.** Physica E 2017; 93: 324–331.
- N Hadian, F Mohamadi Farsani, MR Ganjalikhany, H Sazegar, M Sadeghi. **Molecular basis of Bicalutamide response alteration of androgen receptor caused by single nucleotide polymorphisms: an in silico investigation.** Critical Reviews™ in Eukaryotic Gene Expression.
- P Malekzadeh, A Zarei, M Sadeghi. **Meta-Analysis of Cervical Cancer Transcriptome with a Network Approach to Identify Key Genes in the Disease.** Qom Univ Med Sci J 2019, 13(10):53-71
- M Sadeghi, B Ordway, I Rafiei, P Borad, B Fang, JL Koomen, C Zhang, S Yoder, J Johnson, M Damaghi. **Integrative Analysis of Breast Cancer Cells Reveals an**

Epithelial-Mesenchymal Transition Role in Adaptation to Acidic Microenvironment. Frontiers in Oncology 2020, 10:304, doi:10.3389/fonc.2020.00304.

Book chapters

- Khan FM, Sadeghi M, Gupta SHK, Wolkenhauer O. **A network-based integrative systems biology workflow to unravel mechanisms in the progression of complex diseases.** Springer 2018; 247-276.

Posters

- **Spectroscopic methods to accurate and fast study of kinetic parameters of DNA cleavage DNAzyme**, Mehdi. Sadeghi, Bijan. Ranjbar, poster presentation in the first International Conference on Biophysical Chemistry (ICBC), 2012, Ardabil, Iran.
- **Structural and Activity Study of the Restriction DNAzyme by Spectroscopic Methods**, Mehdi. Sadeghi, Bijan. Ranjbar, poster presentation in the 1st Tabriz International Life Science Conference and 12th Iran Biophysical Chemistry Conference (TILSC & IBCC), 2013, Tabriz, Iran.
- **Adaptation to Extracellular Acidosis Promotes Cancer Cell Plasticity,** Iliya rafiei, Bryce Ordway, Mehdi Sadeghi, Mehdi Damaghi, oral presentation in 26th cancer genomics congress: new era for cancer prevention, 2019, Abu Dhabi, UAE.
- **Evaluation of endolysin activity effect on Pseudomonasaeruginosa,** Ashkan Abbasifarda, Shakiba Darvish Alipour Astaneha, Shamsozoha Abolmaalib, Mehdi Sadeghi, poster presentation in 3rd international and 11th national biotechnology congress of Islamic Republic of Iran, National Institute of Genetic Engineering and Biotechnology, 2019, Tehran, Iran.

Research Interests

- Computational systems biology
- Computational systems medicine
- Cancer systems biology
- Personalized medicine
- Data integration
- Biostatistics
- Biological network construction using computational methods and multi omics data
- Complex biological network analysis
- Genome scale data visualization
- Machine learning and data mining

Language:

- English: fluent
- Persian: native language

- Azerbaijani: mother tongue

Core Qualifications

- Team player
- Good communication skills
- Hard working
- Autodidact