Neda Esfehani

Biotechnology Student at the University of Tehran

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Research Interests

- Genomics
- Transcriptomics
- Machine learning
- Molecular Biology
- Bioinformatics
- Systems Biology

Education

Bachelors of Science (B.S.) Degree in Biotechnology

School of Biology - University of Tehran

Sep 2019 – Feb 2024 Tehran, Iran

University of Tehran

- Last 3 semesters **GPA: 3.95/4**
- Overall GPA: 3.87/4

Minor Degree in Computer Science

School of Mathematics, Statistics, and Computer Science - University of Tehran

Feb 2021 – Feb 2024 Tehran, Iran

High School Diploma in Natural Sciences

Farzanegan High School, National Organization for Exceptional Talents

Sep 2014 – Jan 2018 Qazvin, Iran

- Overall GPA: 4/4

Related Coursework

Principles of Systems Biology: 19.5/20	**Bioinformatics:** 19/20	**Stem Cell Biotechnology:** 19.5/20
Metabolism Biochemistry: 19/20	**Human Genetics:** 19.75/20	**Calculus 1:** 20/20
Genetic Engineering Lab: 19/20	**Basic Genetics:** 19.6/20	**Cell and Molecular Biology:** 18.25/20
Biomaterials and Tissue Engineering: 19.5/20	**Basic Genetics Lab:** 20/20	**Cell and Tissue Culture Lab:** 18/20

Computer and Software skills

- **Programming:** Pyhton, C++, R, MATLAB
- **Software:** Cytoscape, Gene Runner, Oligo7
- **Microsoft Suit:** Powerpoint, Word, Excel
- **Other:** SPSS, Pandas, Numpy, Jupyter Notebook, LATEX

Laboratory Skills

- Gel Electrophoresis & PCR
- DNA Extraction and Purification
- Protein Extraction and Purification
- Bacterial, Plant & Animal Cell Culture
- Gene Cloning
- Spectrophotometry

Research and Industry Experience

Undergraduate Thesis Project at Laboratory of Bioinformatics and Computational Genomics(LBCG)

Sep 2023-Present
University of Tehran
LBCG Webpage

Analyzing ATAC-seq data to investigate cell reprogramming. Developing and evaluating convolutional neural network(CNN) models to predict transcription factor binding sites in DNA. Identifying optimal CNN architecture for accurate binding site prediction. Extracting features from deep learning model outputs to elucidate gene regulation mechanisms.

Internship at Laboratory of Systems Biology and Bioinformatics(LBB)

Apr 2023-Aug 2023
University of Tehran
LBB Webpage

Conducting Bulk RNA Sequencing analysis on cancer samples using R-based data analysis techniques and actively participating in lab meetings to explore cutting-edge advancements in cancer systems biology, biological networks, and computational data analysis.

Internship at Quality Control Laboratory

Aug 2022
Vista Gene Enzyme company
Vistagene Webpage

Trained in lab techniques, equipment, SOPs, and Good Laboratory Practice. Learned microbial culture, cell counting, quality control testing. Familiarized with gene sequencing, primer design, nucleic acid extraction, and biocatalyst development.

Teaching Experience

Teaching Assistantship

University of Tehran

Feb 2022 - Jul 2022
School of Biology

- **Biostatistics** (Lecturer: Dr.M.Malek)
  - Designed homework questions and graded exam papers
  - Evaluating project submissions
  - Answering student's questions

Feb 2022 - Jul 2022
School of Biology

- **Basic Genetics** (Lecturer: Dr.K.Inanlou-Rahtlou)
  - Designed homework questions and graded exam papers
  - Evaluating project submissions
  - Answering student's questions

Feb 2022 - Jul 2022
School of Biology

- **Calculus 2** (Lecturer: Dr.K.Lamei)
  - Designed homework questions and graded exam papers
  - Guided students in selecting project topics, writing proposals, and evaluating project submissions
  - Answering student's questions

Oct 2021 - Feb 2022
School of Biology

- **Calculus 1** (Lecturer: Dr.K.Lamei)
  - Taught Calculus1 topics in weekly discussion sections
  - Designed and delivered lectures to supplement course material
  - Assisted with homework assignments and graded exams
  - Answering student's questions

Oct 2020 - Feb 2021
School of Biology

- **Calculus 1** (Lecturer: Dr.G.R.Rokni)
  - Taught Calculus1 topics in weekly discussion sections
  - Designed and delivered lectures to supplement course material
  - Assisted with homework assignments and graded exams
  - Answering student's questions

Selected presentations

Predicting transcription factor binding site using convolutional neural network

Presentation on my ongoing thesis project Building a CNN model to predict TF peaks in our sample DNA sequence

December 2023 — Undergraduate thesis project

View Presentation

Analysis on the regulation of GCNF expression dataset in differentiated and undifferentiated ES cells

Conducting DEG and Enrichment Analysis, identifying Protein-Protein Interaction and gene regulatory networks

June 2023 — Principles of Systems Biology Course

View Report

Mechanical Modulation of Cell Function in Tissue Engineering

Presentation on different mechanical forces and how they regulate cell function

Jan 2023 — Tissue Engineering Course

Play

Homologous Recombination

Presentation on DNA damage repair By mechanism of Homologous Recombination

Dec 2022 — Molecular Genetics Course

Play

Recombinant Proteins

Presentation on overall process of recombinant protein production and troubleshooting

Dec 2022 — Molecular Genetic Course

play

Consanguinity and Inbreeding

Presentation on how Inbreeding and consanguinity affect genetical disorders

May 2021 — Principle of Genetics Course

Play

Genetic Algorithm Implementation using Python Programming Language

Creating initial population, Define a fitness function, Select the parents, Making crossover and Mutation

Feb 2021 — Computer Programming and Data Structure Course

Git

Honors and Awards

- Awarded University of Tehran Full scholarship for undergraduate program: tuition fully covered by the government (2019)
- Ranked top 0.01 percent of attendees of the nationwide natural sciences matriculation exam (2019)
- Ranked top 0.01 in the nationwide English language matriculation exam (2019)

Language Skills

- **English:** Advanced
  TOEFL iBT: **111** (Reading: 30 | Listening: 28 | Speaking: 25 | Writing: 28)
- **Persian:** Native

References

- **Dr. Ali Masoudi-Nejad**, Full Professor of Systems biology and Bioinformatics, Department of Bioinformatics, Institute of Biochemistry and Biophysics (IBB), University of Tehran,
  amasoudin@ut.ac.ir
  Lab Website
- **Dr. Alireza Fotuhi Siahpirani**, Assistant Professor, Department of Bioinformatics, Institute of Biochemistry and Biophysics (IBB), University of Tehran,
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  Lab Website
- **Dr. Kolsoum InanlooRahatloo**, Assistant Professor, Department of Cell and Molecular Biology (Genetic), College of Science, University of Tehran,
  inanloo@ut.ac.ir