

Narjes Rohani

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Work Experience

Postdoctoral Research Associate (NIH, Simons Foundation, and MRC-funded) Oct., 2024 – Oct. 2026
Sanders and Rinaldi Labs,
Institute of Developmental and Regenerative Medicine, University of Oxford.

Research Focus: Advancing the understanding of the molecular mechanism of brain disorders through integrative multi-omics analyses and computational modeling to find personalised therapeutic candidates.

Key Contributions:

- Leading the **BrainVar** project—an international, collaboration with over 20 partners—focused on integrating snRNA-seq, snATAC-seq, and WGS data from human brain tissue across developmental periods to investigate the genetic, epigenetic, and transcriptomic mechanisms underlying brain disorders.
- Identifying regulatory enhancers for severe neurodevelopmental conditions as candidate targets for CRISPRa/i-based therapy.
- Collaborating with wet-lab biologists and clinical geneticists on multidisciplinary projects, including RNA editing analysis in Huntington’s disease and SBMA, isoform discovery in Friedrich’s ataxia using long-read sequencing, and enhancer/super-enhancer mapping in SBMA via CUT&RUN and ChIP-seq technologies.
- Supervising and mentoring graduate students and junior researchers in computational genomics and bioinformatics.
- Coordinating with family-advocacy organisations, such as FamilieSCN2A to produce accessible educational animations for carers and non-specialist audiences.

Research Visitor

May, 2023 - Aug. 2023

Bioinformatics Group, Breast Cancer Research, Institute of Cancer Research, London, UK.

Responsibilities:

- Analysing CDK4/6 inhibitors resistance mechanisms in ER+ breast cancer,
- Analysing single-cell data, DNA-seq, and Collecta barcoding data,
- Working in a highly interdisciplinary environment and communicating effectively with biologists.

Research Assistant

Sep. 2017 - Sep. 2021

Eslahchi Lab, School of Biological Sciences, Institute for Research in Fundamental Sciences, Iran.

Responsibilities:

- Identifying mutation - derived breast cancer subtypes by using deep clustering of TCGA data,
- Predicting drug - drug interaction by applying neural networks and manifold learning.

Teaching Assistant (Awarded HEA Teaching Fellowship)

Sep. 2021 - Oct. 2024

Informatics 2 - Foundations of Data Science, University of Edinburgh.

Responsibilities:

- Designing and delivering lectures to large groups of students (~ 200).
- Designing coursework assessments and marking students’ coursework and projects.
- Providing feedback to students to enhance their scientific writing and data science knowledge.

Education

PhD (Integrated studies) in Precision Medicine,

Sep. 2021 - Jan. 2025

University of Edinburgh & University of Glasgow, United Kingdom,

- Year1 taught courses: **98/100**
- Thesis Title: “Supporting Health Data Science Education with Learning Analytics and Artificial Intelligence”
- Supervisors: Dr. Areti Manataki, Dr. Kobi Gal, Dr. Michael Gallagher

MSc in Computer Science, Bioinformatics,

Sep. 2017 - Sep. 2019

Shahid Beheshti University, Tehran, Iran,

- GPA: **4/4**
- Thesis Title: “Classifying Cancer Molecular Subtypes by Using a Machine Learning Approach”
- Supervisor: Prof. Changiz Eslahchi

Publications (Number of Citations: 294):

1. Mavrommati, Ioanna, Fatemeh Ahmadi Moughari, Shefali Thakur, Narjes Rohani, Yu Zhang, Lesley-Ann Martin, Syed Haider, and Rachael Natrajan. “CDK4/6 inhibitor resistance mechanisms in ER+ breast cancer.” (To be submitted to *Nature Genetics*).
2. Rohani, Narjes, Fatemeh Ahmadi Moughari, and Changiz Eslahchi. “DisCoVering potential candidates of RNAi-based therapy for COVID-19 using computational methods.” *PeerJ* 9 (2021): e10505.
3. Rohani, Narjes, Changiz Eslahchi, and Ali Katanforoush. “ISCMF: Integrated similarity-constrained matrix factorization for drug–drug interaction prediction.” *Network Modeling Analysis in Health Informatics and Bioinformatics* 9 (2020): 1–8.
4. Rohani, Narjes, and Changiz Eslahchi. “Classifying breast cancer molecular subtypes by using deep clustering approach.” *Frontiers in Genetics* 11 (2020): 553587.
5. Rohani, Narjes, and Changiz Eslahchi. “Drug-drug interaction prediction by neural network using integrated similarity.” *Scientific Reports* 9, no. 1 (2019): 13645.
6. Rohani, Narjes, et al. “Providing insights into health data science education through artificial intelligence.” *BMC Medical Education* 24 (2024).
7. Rohani, Narjes, Stephen Sowa, and Areti Manataki. “Identifying Learning Preferences and Strategies in Health Data Science Courses: Systematic Review.” *JMIR Medical Education* 10.1 (2024): e50667.
8. Rohani, Narjes, Behnam Rohani, and Areti Manataki. “ClickTree: A Tree-based Method for Predicting Math Students’ Performance Based on Clickstream Data.” *Journal of Educational Data Mining* 16(2) (2024): 32–57.
9. Rohani, Narjes, Michael Gallagher, Kobi Gal, Kasia Banas, and Areti Manataki. “Self-Reported Learning Strategies and Preferences in Health Informatics.” *Studies in Health Technology and Informatics* 316 (2024): 1540–1544.
10. Rohani, Narjes, Michael Gallagher, Kobi Gal, and Areti Manataki. “Education Challenges Among Early Career Researchers in Medical Informatics.” *Studies in Health Technology and Informatics* 316 (2024): 1510–1514.
11. Rohani, Narjes, Kobi Gal, Michael Gallagher, and Areti Manataki. “Insights into Health Data Science Education: A Qualitative Content Analysis.” (Under review in *BMC Medical Education*).
12. Rohani, Narjes, Kobi Gal, Michael Gallagher, and Areti Manataki. “Early prediction of student performance in a health data science MOOC.” In *Proceedings of the 16th International Conference on Educational Data Mining*. International Educational Data Mining Society (2023).
13. Rohani, Narjes, Kobi Gal, Michael Gallagher, and Areti Manataki. “Discovering students’ learning strategies in a visual programming MOOC through process mining techniques.” In *International Conference on Process Mining*, pp. 539–551. Cham: Springer Nature Switzerland, 2022.

Selected Honours & Awards

- Awarded a prize of £100 for the best oral presentation at the Precision Medicine MRC Day, University of Glasgow, 2024.
- Fully-funded Studentship Award to study PhD from Medical Research Council and University of Edinburgh, 2021-2025,
- Awarded £4k Flexible MRC Funds for doing visiting research at Institute of Cancer Research (ICR), London, UK,
- Ranked 2nd in the EDM2023 contest Kaggle competition.
- Awarded £1k EDM23 conference travel scholarship, 2023,
- Ranked 1st for GPA among Master's Students of Computer Sciences at Shahid Beheshti University,
- Recipient of Computer and Data Science Master's Scholarship from Shahid Beheshti University, 2017-2019,
- Ranked 1st for GPA among Bachelor's Students of Computer Engineering at Shariaty Technical University,
- Ranked 2nd in Provincial Computer Olympiad, 2012.

Other Experiences

- Co-supervise an undergraduate project in using data mining in analysing bioinformatics students' learning strategies,
- Invited reviewer in IEEE/ACM Transactions on Computational Biology and Bioinformatics Journal, JMIR Medical Education, and EDM24&25,

Skills

- *Programming Languages:* Python, R, C#, C++, Java, Assembly, PHP, SQL, and MATLAB.
- *Python Libraries:* NumPy, SciPy, Pandas, Keras, TensorFlow, Tslern, Matplotlib, Seaborn, Scikit-learn, and NLTK.
- *R Packages:* ggplot2, dplyr, stringr, pMineR, bupaR, seqClustR, and rpart, Seurat, and stats.
- *Computational Skills:* Statistical analysis, Machine learning, Deep learning, Bioinformatics, Computational biology, Graph modelling, AI explanation models, Association rules mining, Process mining, and Image processing.
- *Communicative Skills:* Scientific writing, Scientific presentation, Collaboration in multi-disciplinary groups, and team work skills.
- *Other Skills:* GDPR and ethics in working with health data, Qualitative analysis, Data visualisation, GitHub, Cluster computing, and Bash coding.

Reference

Prof. Stephan Sanders, University of Oxford
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Prof. Carlo Rinaldi, University of Oxford
carlo.rinaldi@idrm.ox.ac.uk