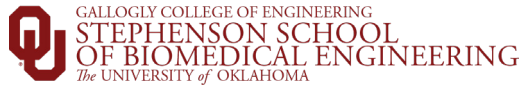


## 2025-2026 Seminar Series



### DECODING CELLULAR INTELLIGENCE: AI-DRIVEN SINGLE CELL GENOMICS IN CANCER AND IMMUNOLOGY



#### ***Marmar Moussa, Ph.D.***

Assistant Professor of Computer Science and Biomedical Eng.  
University of Oklahoma

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Friday, Sept 26, 2025 | 11:00 a.m.

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Gallogly Hall, Room 126



#### **ABSTRACT**

Recent advances in Artificial intelligence (AI) and machine learning (ML) are reshaping many areas of biomedical research including bioinformatics, especially in the realms of single-cell genomics and cancer immunology. In this talk I hope to demystify key concepts of AI/ML and survey its broader applications in genomics. Drawing on case studies from our recent work I will highlight the use of both classical and deep learning approaches, including transformer-based models such as large language models (LLMs) in single cell genomics, illustrating how AI and algorithmic innovation can be leveraged to deeper understanding of the tumor microenvironment, immune responses, and cell state dynamics.

#### **BIO**

Marmar Moussa, PhD, is an Assistant Professor in the School of Computer Science and Stephenson School of Biomedical Engineering at the Gallogly College of Engineering, University of Oklahoma, where she joined in July 2023 and leads the Moussa Lab focused on cancer research through single cell sequencing approaches. Dr. Moussa received her Ph.D. in Computer Science and Engineering in 2019 with a focus on Computational Genomics from the University of Connecticut, where she also received the prestigious CSE Taylor Booth Fellowship. Prior to her current position, Dr. Moussa served as Assistant Professor of Medicine at the University of Connecticut (2021–2023) where she was a postdoctoral fellow in Cancer Immunology (2019–2021). Dr. Moussa's research passion includes the design of advanced algorithms and AI/ML methods for single cell genomics applied to Cancer Immunology. Her work includes publications in Science Immunology, Nature, Journal of Clinical Investigations, Nature Communications, Cancer Prevention Research, BMC Genomics, Journal of Computational Biology, Genes and other top journals. She has been recognized with significant funding including the NIH-NCI K25 Career Development award and the prestigious NSF CAREER award for projects studying tumor progression and evolution, and the tumor microenvironment using spatial transcriptomics in single cell resolution.