Department of Biomedical Engineering
UNIVERSITY OF WISCONSIN–MADISON

Spring 2023 Seminar Series

Personalized Models of Heterogeneous Ovarian Cancer: Advancing Understanding and Treatment

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Ovarian cancer is a highly lethal gynecologic cancer, responsible for 140,000 deaths globally each year. One of the reasons for the poor outcomes is the heterogeneous and complex nature of the primary and metastatic tumor microenvironments. The progression of ovarian cancer is influenced by various environmental factors, including non-cancerous cells, mechanical stimuli, and extracellular matrix. Therefore, personalized 3D models that mimic the in vivo tumor microenvironments are essential for investigating and interpreting ovarian cancers. Our laboratory has developed multiple personalized heterogeneous tumor models to study cellular- and extracellular matrix-heterogeneity and to evaluate potent compounds to treat ovarian cancer. In this seminar, I will discuss our latest findings and progress on personalized heterogeneous models of ovarian cancer. I will present two of our model platforms, one investigating the role of fluidic shear stress in cancer progression and the other predicting therapy responses using patient-derived cells. Our ultimate goal is to develop effective and targeted treatments for all ovarian cancers, regardless of histotypes, to improve overall survival and cure rates. Additionally, our models can be used for fundamental cancer biology and translational studies. Importantly, these approaches can be extended to other carcinomas, facilitating the discovery of new therapeutics that effectively target the unique aspects of each patient's heterogeneous disease.

ABOUT the SPEAKER

Geeta Mehta is an Associate Professor in the departments of Materials Science & Engineering, Biomedical Engineering and Macromolecular Science and Engineering, at the University of Michigan. She earned a PhD in Biomedical Engineering from University of Michigan working with Drs. Shu Takayama and Jennifer Linderman. She was trained as a postdoctoral fellow in the labs of Drs. Linda Griffith and Roger Kamm at MIT.

Her lab, Engineered Cellular Microenvironments Lab (ECM Lab) specializes in developing heterogeneous tumor platforms that use 3D in vitro experimental and mathematical models, to create a multi-dimensional understanding of the structure, organization, and complex relationships in ovarian and breast cancers. The lab's ultimate objective is to develop innovative therapeutics and delivery methods that can increase cancer cure rates and reduce patient suffering.

She has been awarded with multiple honors, notably the Early Career Investigator award from the Ovarian Cancer Research Program of the DoD CDMRP, Cancer Stem Cell Young Investigator award, and Elizabeth Caroline Crosby award. As a professor, she particularly enjoys engaging and training current and future scientists and engineers, both in her lab and in other research labs.

Monday, April 24 at Noon
1003 Engineering Centers (Tong Auditorium)