WestVirginiaUniversity.

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Eavesdropping on Tumors with Nano-Engineered Microfluidics

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Liquid biopsy is extremely appealing in early diagnosis, prognosis, and precision treatment of cancer, as tissue biopsy is highly invasive, costly, and often infeasible to repeat. Extracellular vesicles (EVs), including exosomes, are emerging as a new paradigm of liquid biopsy for cancer diagnosis and monitoring response to therapy. However, it remains challenging to isolate and measure these diverse nanosized vesicles in biological samples. Microfluidics has evolved from initially a scale-dependent technology towards a versatile platform that may enable development of paradigm shifting bioanalytical technologies and approaches for precision biology and medicine. I will discuss new microfluidic and nanotechnology-based biomedical platforms that enable high-performance analysis of circulating exosomes for non-invasive cancer diagnosis and monitoring. Compared to the conventional methods, the new technologies provide unmatched sensitivity, accuracy, and speed with minute sample consumption, opens new opportunities to promoting basic biology and applied applications to healthcare. The feasibility of translating these systems into biomedical research and clinical utilities will be demonstrated. Overall, these micro/nanosystems would provide transformative capabilities of quantitative bioanalysis to promote precision biology and medicine.

Date: Feb. 26, 2020
Time: 4:30-5:30 pm
Location: 208 Clark Hall

Students, meet the speaker over coffee and cookies in the Bennett Conference room at 3:30 pm