The extracellular matrix (ECM) is a fundamental component of multicellular organisms that provides mechanical and chemical cues that orchestrate cellular and tissue organization and functions. Degradation, hyper-production or alteration of the composition of the ECM cause or accompany numerous pathologies including musculo-skeletal and cardio-vascular diseases, cancers, and fibrosis. Thus, a better characterization of ECM composition, metabolism, and biology can lead to the identification of novel prognostic and diagnostic markers and therapeutic opportunities. In this talk, I will describe our latest advances in bioinformatics and mass-spectrometry-based proteomics to define the in-silico and in-vivo “matrisome” of normal and diseased tissues. I will then discuss our efforts aimed at building an ECM protein knowledge database, MatrisomeDB, that compiles proteomic data on the ECM of normal and diseased tissues, with an emphasis on data from studies on the ECM of cancers and fibrosis.

ABOUT the SPEAKER

Alexandra Naba is an Assistant Professor in the Department of Physiology and Biophysics at University of Illinois at Chicago. Alexandra obtained her Ph.D from the Curie Institute (Paris, France) and completed her postdoctoral training at MIT under the mentorship of Richard Hynes. There, she pioneered the use of proteomics to study the composition of the extracellular matrix through the development of the Matrisome Project. Established in 2016 at UIC, the Naba lab focuses on deciphering the roles of the novel ECM glycoprotein, SNED1, in breast cancer metastasis and embryonic development. Alexandra and her team also continue to develop bioinformatic and proteomic methods to further our understanding of the multi-faceted role of the ECM in health and disease. Alexandra published over 30 peer-reviewed publications and owns two patents. She serves as an associate editor for Matrix Biology and Matrix Biology Plus and sits on the councils of the American Society for Matrix Biology and of the International Society for Matrix Biology. Alexandra has received numerous invitations to speak at national and international conferences and prestigious prizes including the 2018 Rupert Timpl award from the International Society for Matrix Biology and the 2018 Junior Investigator award from the American Society for Matrix Biology, recognizing her contributions to the field of extracellular matrix research.