CARNEGIE MELLON UNIVERSITY
BME 2020 FALL SEMINAR SERIES

Things Fall Apart: Proteolytic Networks in Tissue Destructive Diseases

PRESENTED BY

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SCHEDULE

Thursday, September 10, 2020
(10:00 AM-11:00AM)

In many tissue engineering strategies and tissue-destructive disease progression, mechanisms of proteolytic remodeling of extracellular matrix and tissue structure are implicated. This talk will discuss complex variability and non-intuitive cell behaviors and enzyme kinetics when targeting cysteine cathepsins, the most potent mammalian collagenases and elastases that has led to failure of cathepsin pharmacological inhibitors to pass human clinical trials in the United States. This is important because they are involved in diseases such as sickle cell disease, atherosclerosis, osteoporosis, metastatic cancers, and a number of others. Proteases are enzymes that hydrolyze other proteins, including other proteases, which challenges assumptions of enzyme inertness in chemical reactions, and can confound design of inhibition strategies and predictions of protease and substrate concentrations using established kinetic frameworks. During this seminar, Dr. Platt will discuss 1) experimental and computational tools he has developed to better quantify and model the proteolytic network's role in tissue destructive diseases, 2) fundamental insights and consequences of the underlying enzymology, and 3) potential applications for improved pharmacological targeting.

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