

Seminar #9

October 9, 2020, 3:00 pm

Quantitative Studies of Cell Signaling to Engineer Combination Therapy for Cancer

Matthew J. Lazzara

Department of Chemical Engineering, University of Virginia



Cells are signaled to proliferate, migrate, differentiate, and die through the action of receptors, membrane-spanning proteins that translate extracellular ligand binding events into cellular decisions by initiating networks of intracellular biochemical reactions. The complexity of these problems is ideal for, and often requires, application of computational modeling approaches to interpret data, predict system performance, and generate new hypotheses. However, the specific modeling approach must be tailored to the type and scope of problem at hand. While some problems are sufficiently circumscribed for use of familiar mechanistic governing equations, others are more easily tackled by first seeking statistical inferences from large data sets for which mechanistic governing equations are unknown. This seminar will primarily cover examples of the second type, where data-driven modeling approaches are used to dissect the complexity of large signaling networks in order to design combination therapy approaches for cancer. The talk will also cover the development of new reagents and tools for measuring or targeting specific signaling processes *in vivo*.



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