GEORGETOWN UNIVERSITY
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Department of Biochemistry
and Molecular & Cellular Biology

The Department of Biochemistry Presents:

BHUSSRY SEMINAR SERIES 2020-2021

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12pm - 1pm

"Biogenesis and function of membrane nanodomains"

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Membranes are a defining feature of cells and can be exploited in a variety of technological applications. While all membranes share a characteristic bilayer morphology, their lateral organization can be surprisingly complex. The mixtures of lipids and proteins found in biological membranes, for example, self-assemble laterally to generate a variety of higher order complexes and domains ranging from nanometers to microns in size. However, the underlying principles that govern the assembly and function of these structures remain enigmatic. Our group is addressing this gap in knowledge using a variety of biophysical, biochemical, and cell biological approaches through studies of two related yet distinct classes of membrane domains: membrane rafts and caveolae. Both caveolae and rafts are localized within the plasma membrane of cells, form in a cholesterol-dependent manner, regulate a variety of cellular processes, and are linked to human disease. Yet, rafts are small, dynamic, and lipid-based, whereas caveolae are long-lived, morphologically well-defined, and built from specific protein components. In this talk, I will discuss our recent efforts to understand how these intriguing nanodomains form and function at the cellular level, including how they are exploited by pathogens to gain entry into cells, the structural basis of caveolae assembly, and our search for new approaches to pharmacologically manipulate rafts.

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