Penn Engineering | Chemical and Biomolecular Engineering
University of Pennsylvania

Fall 2022 CBE Seminar Series

CLIFF BRANGWYNNE

BRITTON CHANCE DISTINGUISHED LECTURE IN ENGINEERING AND MEDICINE

"A Fluid Paradigm for Biological Organization"

Wednesday
October 26, 2022
3:30 PM
Wu and Chen Auditorium
Levine Hall
Reception to Follow

June K. Wu '92
Professor of Chemical and Biological Engineering
Princeton University

ABSTRACT

Living cells are often mistakenly viewed as functioning through a clockwork-like set of interactions among their biomolecular building blocks, like machines on a factory floor. But the processes taking place within cells are vastly more wet and dynamic than many textbooks would have us believe. Over the last decade, research combining insights from materials physics and cell biology has ushered in new paradigm for understanding how this chaotic intracellular environment is brought to order, through the collective condensation of disordered of biomolecules into droplets of living information. Intracellular condensates represent viscoelastic states of biomolecular matter, which facilitate dozens of different intracellular processes, and appear to underlie various cancers and neurodegenerative diseases like Alzheimer's and ALS. In this talk, I will discuss some of our early and more recent adventures in this new field, and highlight the challenges and opportunities for the next decade.

BIO

Cliff Brangwynne is the June K. Wu '92 Professor of Chemical and Biological Engineering at Princeton University, a Howard Hughes Medical Institute Investigator, and Director of the Princeton Bioengineering Initiative. He obtained a B.S. in Materials Science from Carnegie Mellon University in 2001, and PhD in Applied Physics in 2007 from Harvard University. He was a visiting fellow at the Max Planck Institute for the Physics of Complex Systems in Dresden, and was a Helen Hay Whitney Postdoctoral Fellow at the Max Planck Institute for Molecular Cell Biology and Genetics in Dresden. Since 2011 he has been a faculty member in the Department of Chemical and Biological Engineering at Princeton University. His primary research interests are in biological self-assembly, particularly in the role of intracellular liquid-liquid phase separation. Dr. Brangwynne is the recipient of numerous awards including a Searle Scholar Award, a Macarthur Fellowship, Wiley Prize, HFSP Nakasone Award, and most recently a Breakthrough Prize.