

**WPI****CHEMISTRY & BIOCHEMISTRY**

**Department of Chemistry and Biochemistry
Worcester Polytechnic Institute**

Wednesday, January 28th, 2026

12:00 PM

Gateway Park 1002

Dr. Kira Podolsky

**Postdoctoral Research Fellow
Massachusetts Institute of Technology**

“Exploring the Border Between Matter and Life: Chemical Approaches to Artificial Cells and Primitive Catalysts.”

How does chemistry become biology? The border between chemistry and biology seems small when modern life seamlessly builds and maintains itself from molecular components. But the border is unfathomably large when we attempt to reconstruct life from its building blocks.

Using synthetic and biological materials, we can mimic and dissect emergent features of life on Earth as it transitioned from abiotic precursors to modern cells. I will first describe how environmental conditions influence lipid phases and the development of a method to semi-synthesize functional transmembrane proteins in artificial phospholipid membranes, a step towards building artificial cells with defined composition. I will then discuss the discovery of a minimal peptide catalyst that can replace an essential enzyme in yeast, suggesting how short peptides could have served as evolutionary precursors to modern protein enzymes.

Host: CBC Department

