



WPI

CHEMISTRY & BIOCHEMISTRY



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

Wednesday, February 25th, 2026

12:00 PM

Gateway Park 1002

Dr. Sarah Delaney

**The Vernon K. Kriebel Professor of Chemistry and Chair of the
Department of Chemistry at Brown University**

“Obstacles and Opportunities for DNA Repair in Nucleosome Core Particles.”

At the most fundamental level of chromatin organization, eukaryotic DNA is packaged as a string of nucleosome core particles (NCPs) where DNA is wound around a core of histone proteins. This ubiquitous sequestration of DNA within NCPs presents a conundrum for DNA repair enzymes, which must interact intimately with DNA. Our laboratory has developed techniques to study DNA repair in NCPs and to define an enzyme’s “repair fingerprint”. The application of these techniques to study base excision repair, the pathway responsible for rectifying small base lesion such as oxidation, alkylation, and deamination, will be discussed. In addition to defining the extent to which lesions can be repaired depending on their geometric orientation, the ability of histones to both positively and negatively impact DNA repair will be described. Finally, the results will be discussed in terms of structural features and the dynamics of NCPs and well as in the context of known mutational hotspots.

Host: Ronald Grimm