ASRC - City College of New York

Seminar in Biochemistry, Biophysics & Biodesign

SEMINAR LOCATION:

ASRC Main Auditorium
85 St. Nicholas Terrace

For non-CUNY attendees, advance registration is required; please contact Hyacinth Camillieri at hcamillieri@gc.cuny.edu

THE SEMINAR WILL ALSO BE AVAILABLE VIA ZOOM:

Click here for Zoom link
Meeting ID: 966 7763 1144
Passcode: asrc-ccny

HOST:
Ruth Stark
rstark@ccny.cuny.edu

FOR MORE INFORMATION, CONTACT:
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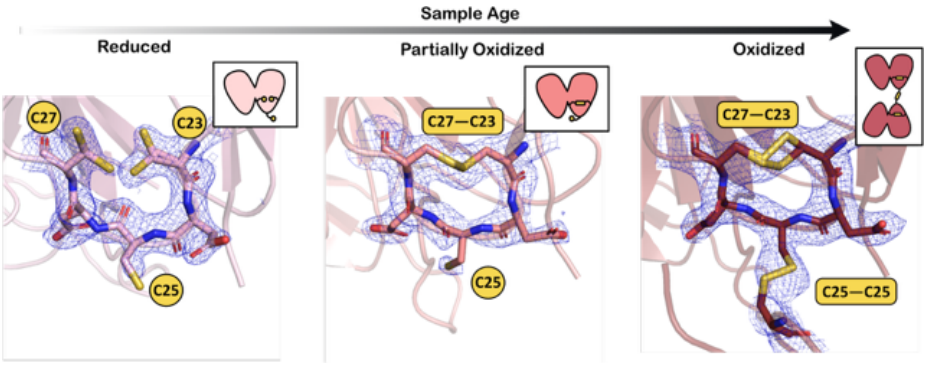

Wednesday, Oct. 11, 2023

Coffee & tea 11:30 AM
Seminar 12:00 – 1:00 PM

Rachel Martin

Professor, Department of Chemistry
University of California, Irvine

Protein aging and cataract: Biophysical methods to see it clearly

ABSTRACT The optical power of the vertebrate eye lens is generated by the crystallins, exceptionally soluble proteins that are packed in at very high concentration (up to about 50% protein in humans, and even higher in fish). The extraordinary solubility of these proteins is even more remarkable given that the lens has almost no protein turnover: crystallin proteins have to last for a lifetime. When crystallins do aggregate, the result is cataract, a major cause of blindness worldwide. Understanding both the transparent hydrogel of the healthy lens and the aggregates of the disease state is a long-term research direction for my group. The NMR instrumentation we have developed to study semi-solid protein systems of this type that are not amenable to either standard solid-state or solution techniques is integral to this work. I will present our recent structural and biophysical work on mutations involved in hereditary cataract, the impact of oxidative damage, and the complex relationship among different types of post-translational modifications. I will also discuss the evolutionary relationships between human crystallins and those of aquatic organisms, which must satisfy much more stringent demands in terms of both solubility and refractivity.