CHEMISTRY DEPARTMENT SEMINAR

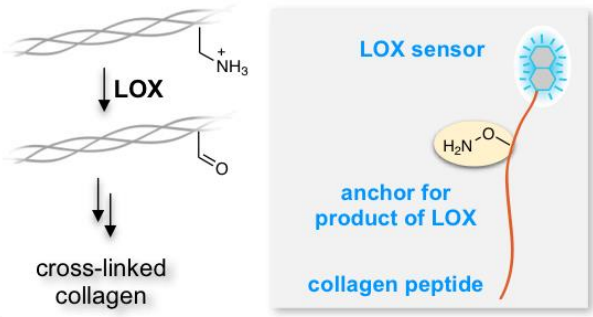
Exploring Post-translational Modifications of the Extracellular Matrix with Chemical Biology

Dr. Matthew Aronoff

Department of Chemistry and Chemical Biology, University of New Mexico

Collagen is an essential protein in skin and other tissues. Many of the macroscopic structural qualities of tissue arise from the cross-linking of collagen, which occurs post-translationally during collagen fibril formation when lysyl oxidase (LOX) catalyzes the oxidative deamination of the epsilon-amine of lysine to an aldehyde that can react with adjacent strands and form cross-links. Collagen cross-linking is a normal maturation during tissue development, however excessive LOX activity occurs in a number of diseases and disorders including fibrosis and tumor metastasis.

To better understand the process, we developed a chemical reporter system to monitor collagen remodeling and cross-linking using synthetic collagen model peptides (CMPs). This system combines a reactive fluorescent probe for LOX with synthetic peptides that recognize collagen in tissue and then "click" to aldehydes in areas where crosslinking is occurring. This enables visualization of regions of high LOX activity, such as the boundary of tumors and other areas of disease. We envision this system will facilitate study of collagen remodeling while simultaneously providing a useful tool for clinical applications.



November 18th @12 pm – Lopez 106

Meeting ID: 951 3765 0274 https://zoom.us/j/95137650274