



Department of
Biomedical Engineering
UNIVERSITY OF WISCONSIN-MADISON

Fall 2019 Seminar Series

Picosecond optical responses of hemes: towards label-free redox contrast of the mitochondrial respiratory chain

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The mitochondrial respiratory chain mediates the flow of electrons from NADH and FADH₂ to oxygen in order to sustain efficient ATP production. Key electron transport proteins, the cytochromes, have unique optical absorption spectra and picosecond responses to light that report on their redox state. Our goal is to build an optical pump-probe experiment that can measure redox of each of the mitochondrial cytochromes and infer electron flow rates within individual mitochondria in live cells and tissues. Potential applications include characterizing metabolic heterogeneity within the tumor microenvironment and diagnostics for mitochondrial disease.

Jesse Wilson is a Boettcher Young Investigator, Rhoden Professor, and Assistant Professor of Electrical & Computer Engineering at Colorado State University. Prior to joining CSU's faculty, Jesse trained as a postdoc at Duke University, working on in-vivo transient absorption microscopy of melanoma. He earned his PhD in Randy Bartels' lab at Colorado State University, developing techniques in ultrafast pulse shaping and impulsive Raman spectroscopy.



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12 PM in Tong Auditorium (1003 Engineering Centers)