SEMINAR SERIES

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NITRIC OXIDE DETECTION WITH SINGLE WALLED CARBON NANOTUBE SENSORS

Featuring Dr. Nicole Iverson

University of Nebraska-Lincoln

February 19th, 2021 | 12:00 - 1:00 pm

Zoom Link: https://unomaha.zoom.us/j/97533768106

ABOUT DR. IVERSON

Dr. Iverson received her doctorate degree from the Department of Biomedical Engineering at Rutgers University. She then went to the Massachusetts Institute of Technology (MIT) for her post doctorate research under the direction of a toxicologist, chemist, and chemical engineer – providing a well-rounded vision of the research possibilities. Iverson started working with carbon nanotubes while at MIT, becoming the first person to place carbon nanotube sensors into a live animal. Iverson expanded her research into the biomedical engineering arena by focusing on the use of intracellular and extracellular carbon nanotube sensors. In the past five years the Iverson Lab has developed an extracellular nitric oxide detection platform, real time in vivo sensors, and the first model that relates carbon nanotube sensor fluorescence to nitric oxide concentrations. The Iverson Lab has also expanded knowledge of extracellular nitric oxide concentrations in breast cancer cells and is the only lab that has been able to demonstrate carbon nanotube sensor detection within a large animal model. Iverson has been the co-inventor on three patents and is the author on over 25 papers, with an h-index of 16.

ABSTRACT

Nitric oxide (NO) is an important biological signaling molecule, yet little is known about how it functions. I believe that the reason we do not understand NO's function in both healthy and diseased cells/tissues/systems is because we have not previously had a sensor to provide spatial and temporal information about NO. Carbon nanotube sensors for NO can provide spatial and temporal information, but they are still not widely used to improve knowledge about NO's impact in biological settings because of their complexity. The Iverson lab is working to develop more user friendly carbon nanotube sensor platforms to enable researchers that do not have experience with nanotechnology to use these new sensors. We are also using the sensors ourselves to start elucidating NO's impact on various cell types. I will discuss carbon nanotube sensors, the advances that we have made in platform development for both in vivo and in vitro research, and the research that is currently being performed to determine NO's role in breast cancer cell proliferation and migration.

more info at **cobre.unomaha.edu**

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University of Nebraska Omaha