

# Hunter College of the City University of New York

## Department of Biological Sciences

### Spring 2023 Inga Richter Seminar Series

This seminar will be held **IN PERSON (Room 926 Hunter North)** and by **ZOOM**  
ZOOM link: <https://us02web.zoom.us/j/89384714151>  
Passcode:157314

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#### DNA Damage Responses Regulate Innate Immune Signaling During Bacterial Infection

##### Summary:

My laboratory's research focuses on the interplay between innate immune signaling that is elicited during infection with bacterial pathogens and mammalian DNA damage responses. Recent work established that upon exposure to bacterial stimuli, macrophages—a critical white blood cell subset that respond immediately to pathogenic threats—sustain DNA double-strand breaks (DSBs) in their genomic DNA. These DNA DSBs are primarily sustained as a consequence of host production of reactive nitrogen intermediates (RNI), which are produced by macrophages in order to kill or disable invading bacterial pathogens. The DNA DSBs activate a canonical DNA damage response (DDR) in macrophages that regulates pro-inflammatory transcriptional responses and also broadly impacts their functionality in the immune response to the infection. Though both of the principal DDR kinases—ATM and DNA-PKcs—appear to have a role in regulating macrophage responses, the mechanisms by which each regulates transcriptional responses may be distinct. Currently, we are investigating the mechanism(s) by which DNA-PKcs, one of the main DDR kinases, regulates two distinct innate immune signaling pathways. As chemical inhibition of DNA-PKcs has emerged, in recent years, as a compelling therapeutic intervention in the treatment of certain types of cancer, understanding its role in regulating innate immune signaling during bacterial infection is paramount.

**Monday, March 6, 2023**  
**12:30pm**  
**Hunter College, Room 926 Hunter North**  
**69<sup>th</sup> Street between Park and Lexington**  
**In person and by ZOOM**  
**Host: Maria Figueiredo-Pereira, PhD**