HSCI RESEARCH SEMINAR SERIES
SCHOOL OF HEALTH SCIENCES

This week’s seminar will be held in person at WALC 2007 and presented synchronously through simulcast. The following link can be used for the live stream. Authentication is not required.
WALC 2007 Livestream

“Distribution of Lead (Pb) and Selenium (Se) in Mouse Brain Following Subchronic Pb Exposure by Using Synchrotron X-ray Fluorescence”

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Tuesday, February 9, 2021
WALC 2007
4:30-5:30 PM Eastern Time (US and Canada)

Abstract: Lead (Pb) is a well-known neurotoxicant and environmental hazard. Recent experimental evidence has linked Pb exposure with neurological deterioration leading to neurodegenerative diseases such as Alzheimer’s disease (AD). To understand brain regional distribution of Pb and its interaction with other metal ions, we used synchrotron micro-X-ray fluorescence (µ-XRF) technique to map the metal distribution pattern and to quantify metal concentrations in lead exposed and control mouse brains. The results showed that: a) Pb deposited in localized spots in the scanned regions of both the exposed and unexposed samples, with more of these spots in exposed samples; b) selenium (Se) co-deposited with Pb and was significantly correlated with Pb in these spots for exposed mice; c) the total Pb signals in Pb-exposed brain slices were much greater than those in control brain slices. These results suggest that Pb ions are not evenly distributed throughout the entire brain structure, but rather tend to accumulate excessively in some localized spots in brain regions such as cortex and hippocampus. Se appears to co-exist with Pb. While the structural and chemical relationships between Se and Pb in localized spots remain unknown, Se seems likely to play a crucial role in Pb-induced neurotoxicity. Our findings call for further studies to investigate the relationship between Pb exposure and ensuring Se detoxification responses, and the implication in the etiology of AD.