The Determination of Metal-Induced Toxicity in Mice Models Using In Vivo Exposure to Disposable Pod E-Cigarette Aerosols

Disposable pod e-cigarettes (d-PODs) have become the most popular e-cigarettes on the market in the last five years, yet research on metal exposure from e-cigarettes has solely been conducted on older, less relevant e-cigarette devices (3rd generation MODs and 4th generation cartridge pods). With my research, I aim to investigate d-POD mainstream and secondhand aerosol exposure for the purpose of determining metal exposure and health risk implications. I propose conducting whole-body exposure experiments with C57BL/6 mice using aerosol exposure chambers at high and low doses using three brands of d-PODs to mimic mainstream and secondhand exposure, respectively. With these specimens, I will quantify metal concentrations in the lungs and other distal tissue such as the brain, liver, and kidneys to determine potential organ specific toxicological risk and will measure lung inflammation as a mechanism of toxicity. These findings will provide insight into the effects of mainstream and secondhand exposure which will serve as a benchmark for future in vivo and in vitro studies on metal exposure.