

## **PFAS in Me: Which Ones and How Much?** Holly Pagnotta<sup>1</sup>, Karl Oetjen<sup>1</sup> <sup>1</sup>SCIEX, Redwood City, CA

### Background:

Bioaccumulation of PFAS in the human body resulting from environmental exposure is a growing public health concern. Recent studies have linked PFAS exposure to adverse health outcomes including childhood health complications, reduction in kidney functions, thyroid disease, hormone suppression, decreased fertility, increased cholesterol levels, and diabetes, among others. There is a critical need to develop quantitative tools capable of accurately and precisely detecting low-levels of PFAS in biological fluids to understand the impact on the human body.

### Methods:

Approximately 30  $\mu$ L of blood were collected using Mitra device stored at -20°C until extraction. Absorptive Mitra tips were then removed from the stem and placed in polypropylene vials with isotopically labelled internal standards or IDAs and acetonitrile. The samples are sonicated and allowed to equilibrate prior to a centrifuge step to condense the precipitated protein for easier removal. The supernatant was removed, and the Mitra was washed with solvent and the centrifuge step repeated. The extracts were then combined, and SPE was performed. Internal standards were added to the SPE extract immediately prior to placing it in a new polypropylene vial for analysis.

These extracts were injected onto a C18 column at 30°C, along with a delay column. Data were collected using a SCIEX QTRAP 7500 system using ESI in negative mode. The Scheduled MRM Algorithm was used to optimize data sampling across each peak and maximize the dwell times used.

### Results:

The assay showed excellent analytical reproducibility, precision, accuracy, and linearity. The total amount of PFOA detected was 0.82 ng/mL, however, only the linear version of perfluorooctanoic acid (PFOA) was detected. This value was slightly lower than the median value of 0.9 ng/mL for Americans aged 18-49 according to the United States Environmental Protection Agency. The total amount of perfluorooctanesulfonic acid (PFOS) detected was 1.862 ng/mL, which again is lower than the median value listed by the EPA of 2.6 ng/mL. Finally, perfluorohexanesulfonic acid (PFHxS) was detected at a value of 1.558 ng/mL or 2.7 times higher than the listed median EPA value of 0.6 ng/mL.

### Conclusions:

A robust and sensitive workflow for the detection of PFAS in blood samples using the SCIEX QTRAP 7500 system was successfully developed. This low-level sampling approach means that at-home testing of these compounds is possible and can help the population understand their PFAS exposure and the implications PFAS may have on their own health. While the concentrations of PFOA and PFOS presented in this study remained under national median values, the high concentration of PFHxS likely was related to past exposure to aqueous film-forming foam (AFFF).