

**Talk Title:** Evaluating *terroir* – revealing the chemical basis of organoleptic properties of a Cabernet Sauvignon wine with untargeted LC and GC/QTOF workflows

**Synopsis:** While the use of proprietary EI flavor databases has been used in wineries for many years, few labs have applied metabolomic protocols to fully characterize secondary grape and yeast metabolites. At the same time we see that the use of multivariate software is becoming more prevalent in food and flavor laboratories as scientists work to understand how individual compounds combine to create a specific odor or taste. As we work towards a better understanding of these interactions it becomes increasingly important to use rigorous approaches that allow us to build statistical models that are capable of differential analysis.

To this aim we have applied metabolic workflows to processed Cabernet Sauvignon grapes. This includes constructing a small accurate mass GC/Q-TOF library that currently contains about 400 flavor compounds. The core of the library is comprised of the wine volatiles with added pyrazines, furanones, and lactones to give characterize volatile and nonvolatile yeast and grape metabolites. We also applied a metabolic LC/QTOF accurate mass and analytical retention times (AMRT) library to correctly identify known components and characterize unknown non-volatile components. We then used multivariate statistics to correlate both volatile and non-volatile secondary metabolites with their organoleptic properties and *terroir*.