

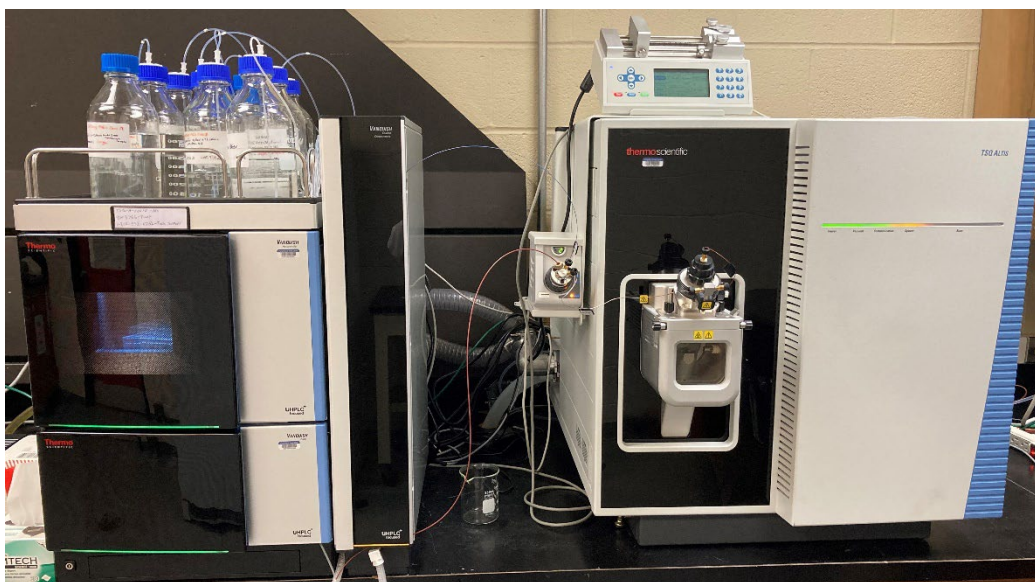
Major Laboratory Instrumentation

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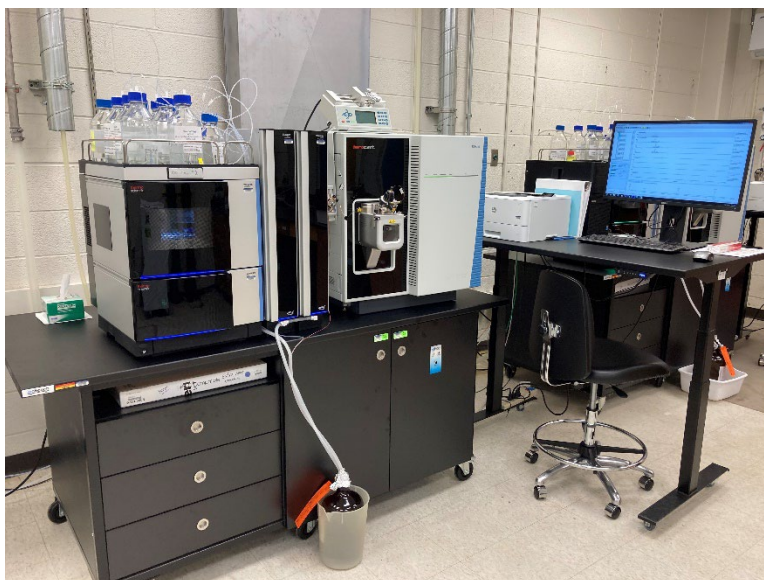
LC/MS Instrumentation

Triple Quadrupole Instruments

The laboratory has 3 triple quadrupole LC/MS (Liquid Chromatography/Mass Spectrometry) instruments. These systems are capable of accurate and sensitive trace level targeted quantitation. These systems are used for routine tests including the Mycotoxin Panel, Antibiotic Feed Panel, Hormone Free Feed Panel, and the Beta Lactam Milk Panel. These systems are also used for a variety of research studies including pharmacokinetic (PK) studies of drugs in a wide variety of biological matrices.



'Altis 1' = Thermo Fisher Scientific TSQ Altis Triple Quadrupole Mass Spectrometer with Vanquish UHPLC System



'Altis 2' = Thermo Fisher Scientific TSQ Altis Triple Quadrupole Mass Spectrometer with Vanquish UHPLC System



'Altis 3' = Thermo Fisher Scientific TSQ Altis Triple Quadrupole Mass Spectrometer with Vanquish UHPLC System

Quadrupole Orbitrap Instruments

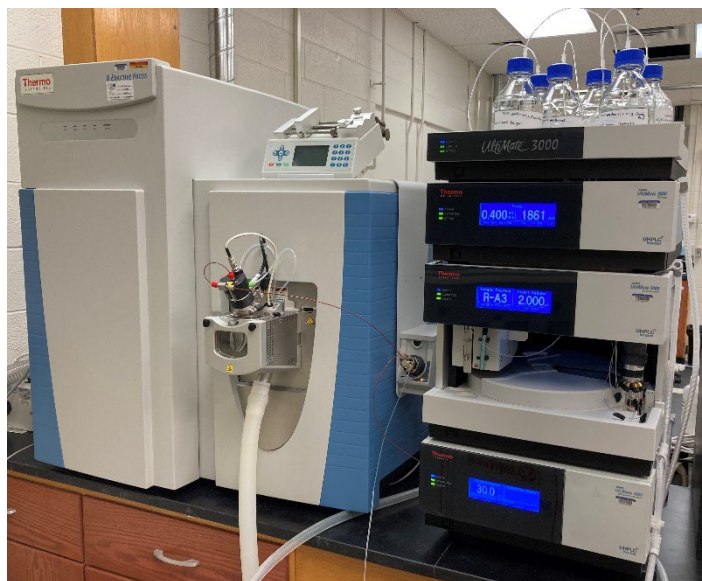
The laboratory also has 3 quadrupole – orbitrap LC/MS instruments. These systems are capable of providing High Resolution Accurate Mass (HRAM) data. These systems are ideally suited for unknown screening and molecular structure confirmation and elucidation. These systems also provide excellent targeted quantitation capabilities. These systems are used for routine testing including 25-Hydroxy Vitamin D and the Mass Spec Toxicant Screen. They are also used for unknown compound identification and confirmation.



'Exploris 120' = Thermo Fisher Scientific Exploris 120 Mass Spectrometer with Vanquish UHPLC System



'QE Focus 1' = Thermo Fisher Scientific Q Exactive Focus Mass Spectrometer with UltiMate 3000 UHPLC System



'QE Focus 2' = Thermo Fisher Scientific Q Exactive Focus Mass Spectrometer with UltiMate 3000 UHPLC System

Paper Spray Mass Spectrometry

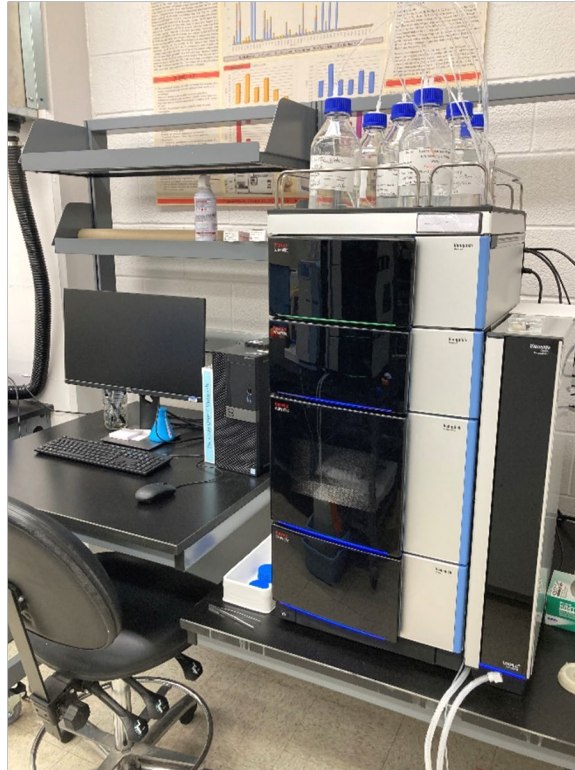
The laboratory also has a paper spray ionization mass spectrometry interface. Paper spray is an ambient ionization technique that enables rapid, sensitive, and direct mass spectrometry analysis of biofluid samples with essentially no sample preparation. The paper spray mass spectrometry interface is currently compatible with the lab's 3 TSQ Altis triple quadrupole mass spectrometers.



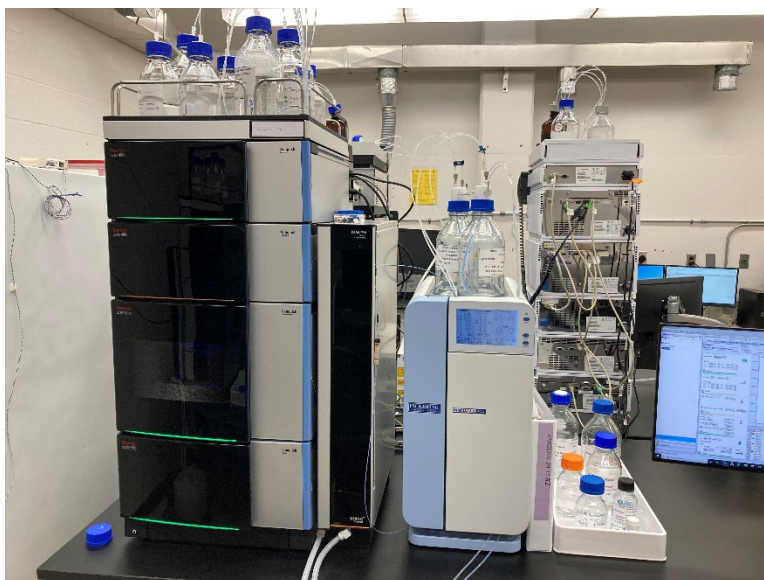
'Paper Spray' = Thermo Fisher Scientific VeriSpray PaperSpray Ion Source

HPLC/UHPLC Instrumentation

The laboratory has 3 HPLC (High Performance Liquid Chromatography)/UHPLC (Ultra High-Performance Liquid Chromatography) systems equipped with a variety of detectors. These systems are capable of accurate and sensitive low-level targeted quantitation. These systems are used for routine tests including Vitamins A and E and Nitrate/Nitrite.



'Vanquish 1' = Thermo Fisher Scientific Vanquish UHPLC System with Variable Wavelength and Fluorescence Detectors



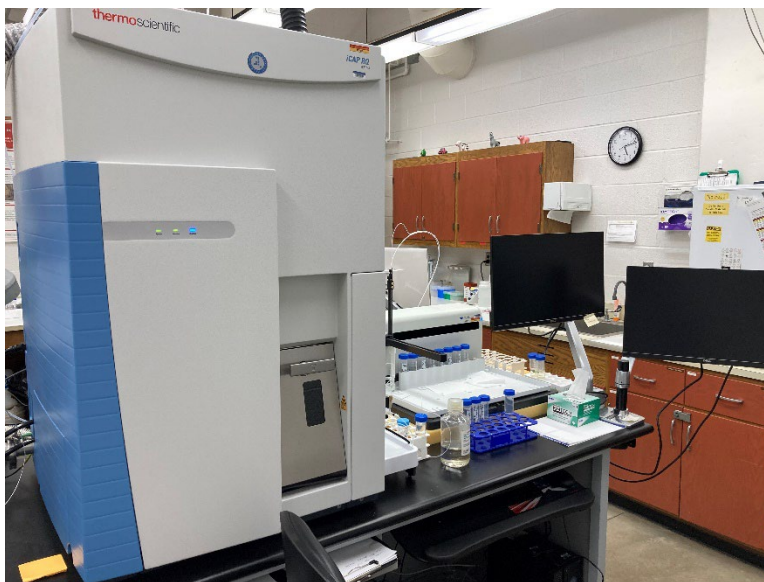
'Vanquish 2' = Thermo Fisher Scientific Vanquish UHPLC System with Diode Array and Fluorescence Detectors and Pinnacle Labs PCX Post-Column Derivatization System



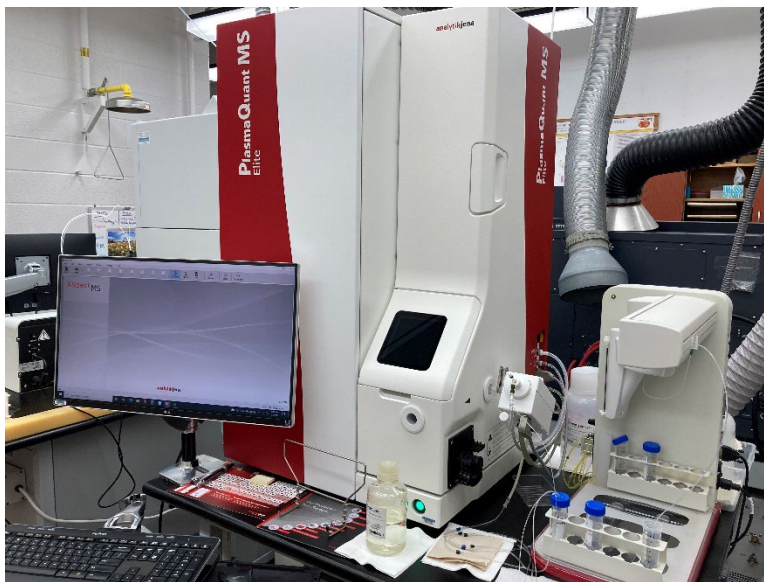
'Agilent 1260' = Agilent Technologies 1260 Infinity HPLC System with Diode Array Detector

ICP-MS/ICP-OES Instrumentation

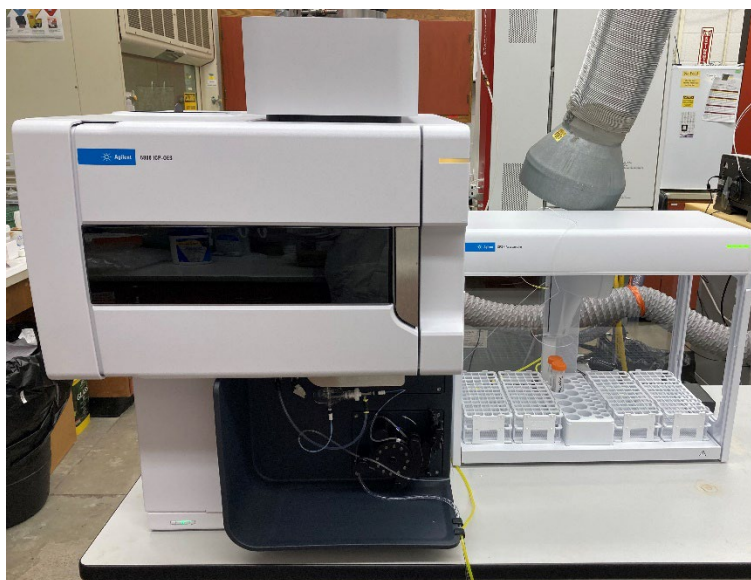
The laboratory has 2 ICP-MS (Inductively Coupled Plasma – Mass Spectrometry) instruments. These systems are used for trace level quantitative elemental analysis (including metals) in a wide variety of matrices. These systems are used for the Trace Mineral Panel. The laboratory also has 1 ICP-OES (Inductively Couple Plasma – Optical Emission Spectroscopy) instrument. This system is used for low level quantitative elemental analysis (including metals) in a wide variety of matrices. This system is used for the Toxic Element Panel.



'iCAP RQ' = Thermo Fisher Scientific iCAP RQ Single Quadrupole ICP-MS System



'Plasma Quant' = Analytik Jena PlasmaQuant MS Elite Single Quadrupole ICP-MS System



'ICP-OES 5800' = Agilent Technologies ICP-OES System

GC/MS Instrumentation

The laboratory has 1 GC/MS (Gas Chromatography/Mass Spectrometry) instrument. This system is used for screening and trace level quantitation of volatile and semi-volatile organic compounds in a variety of matrices. This system is used for the Mass Spec Screen.



‘Agilent GC/MS’ = Agilent Technologies 7890B GC with 5977A single quadrupole mass spectrometer, Nitrogen-Phosphorous Detector (NPD), and Electron Capture Detector (ECD)