

Targeted metabolomics assays

Each targeted assay provides the relative quantification of metabolites by normalization to internal standards. All our targeted assays are validated in EDTA plasma. Our portfolio includes:

Signaling & bioactive lipids

Required sample volume (EDTA plasma): 75 μ L

What: The signaling lipid assay covers a range of molecules involved in inflammatory responses and oxidative stress. These compounds are n-3 and n-6 poly unsaturated fatty acids (PUFAs) and their oxylipin derivative, endocannabinoids, bile acids, (cyclic-)lysophospholipids, sphingolipids (C16, C18) as well as their phosphorylated forms, and platelet activating factors (C16, C18).

How: After a liquid-liquid extraction, two reversed-phase chromatographic injections are executed at low pH and high pH. Both chromatography's are coupled to a triple quadrupole mass spectrometer which operates at polarity switching mode. Instrumentation used for this assay comprises of a Shimadzu UHPLC coupled to a Sciex QTRAP 6500+ mass spectrometer (high pH) and a Sciex Exion UHPLC coupled to a Sciex QTRAP 7500 mass spectrometer.



Instrumentation used for high pH chromatography



Instrumentation used for low pH chromatography

Amines:

Required sample volume (EDTA plasma): 50 μ L

What: This assay includes biogenic amines and (oxidized) amino acids which provides insight in inflammatory response. Amongst others, important inflammatory metabolites are tryptophan, kynurenine, histamine, GABA, adrenaline, and noradrenaline.

How: After a protein precipitation and derivatization step, these metabolites are measured by reversed-phase UHPLC-MS/MS in positive ionization mode. Instrumentation used for this assay comprises of a Shimadzu UHPLC coupled to a Sciex QTRAP 6500+ mass spectrometer (see photo below).

TMAO:

Required sample volume (EDTA plasma): 50 μ L

What: This assay focusses on the gut metabolism and includes betaine, carnitine, choline, γ -butyrobetaine (deoxycarnitine) and Trimethylamine-N-oxide (TMAO).

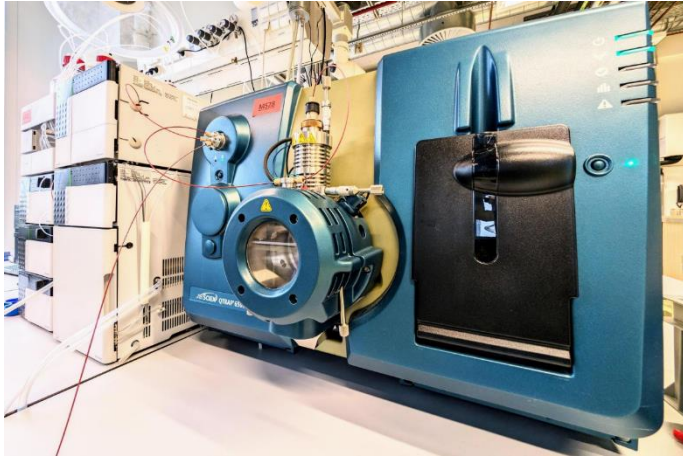
How: After a protein precipitation step, these metabolites are measured by reversed-phase UHPLC-MS/MS in positive ionization mode. Instrumentation used for this assay comprises of a Shimadzu UHPLC coupled to a Sciex QTRAP 6500+ mass spectrometer (see photo below).

Acylcarnitines:

Required sample volume (EDTA plasma): 50 μ L

What: This assay includes acylcarnitines, TMAO, choline, and betaine to investigate cellular energy metabolism pathways and the gut metabolism.

How: After a protein precipitation step, these metabolites are measured by reversed-phase UHPLC-MS/MS in positive ionization mode. Instrumentation used for this assay comprises of a Shimadzu UHPLC coupled to a Sciex QTRAP 6500+ mass spectrometer (see photo below).



Instrumentation used for the amines, TMAO, and acylcarnitines assay