Fraunhofer
ITEM

FRAUNHOFER INSTITUTE FOR TOXICOLOGY AND EXPERIMENTAL MEDICINE ITEM

TARGETED METABOLOMICS


© Ralf Mohr/Fraunhofer ITEM

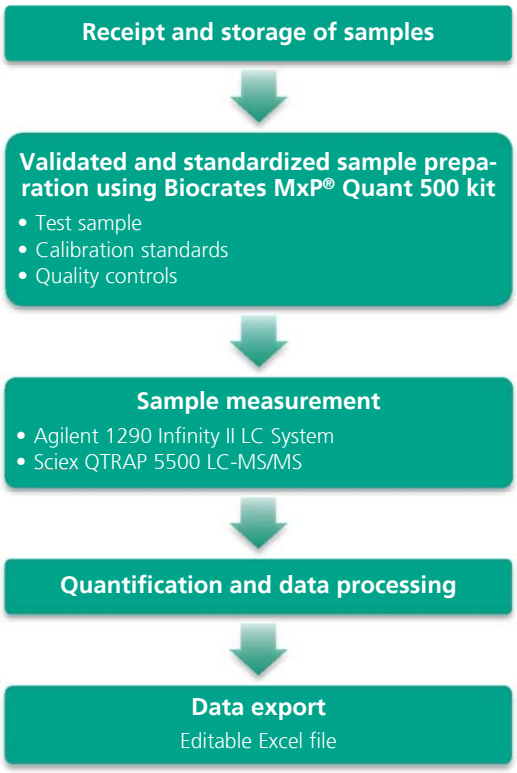
The metabolome comprises the entirety of all small molecules found in the different compartments of an organism. These are not only end products or intermediates but integral as signaling molecules of metabolic pathways. The metabolome is influenced by protein expression (proteome), the read-out of the individual's specific genome (DNA) and transcriptome (RNA). But this is not a one-way track: environmental factors also play an important role in the regulation of metabolic pathways. Hence, in biological systems the interactions between the four "omics" (genomics, transcriptomics, proteomics and metabolomics) are in a continuous multidimensional flow. Significant deviations of metabolite levels can be an indication of changes in the genome, whether of benign or malignant origin, or an adaptation to external factors. The number of metabolites in any organism is vast and their entirety cannot be captured by a single analytical method.
Quantitative targeted metabolomics, with a focus on a subset of hundreds of metabolites, is a valuable tool to study possible underlying mechanisms. Fraunhofer ITEM provides certified mass spectrometry (MS)-based metabolomic analyses involving two LC-MS platforms for the kit-based analysis of the metabolome. In combination with other methods, over 600 metabolites can be quantified.

Fraunhofer Institute for Toxicology and Experimental Medicine ITEM
Department of Analytical Chemistry
Nikolai-Fuchs-Strasse 1
30625 Hannover, Germany

Contact
Dr. Sven Schuchardt
Phone +49 511 5350-218
sven.schuchardt@item.fraunhofer.de
www.item.fraunhofer.de

Our services and expertise

- Well-established workflow for LC-MS based determination of more than 600 metabolites using the Biocrates MxP® Quant 500 kit
- Generation of quantitative data for hundreds of samples within a very short time frame
- Coverage of several substance classes, including amino acids and related compounds, bile acids, biogenic amines, carbohydrates, carboxylic acids, fatty acids, acylcarnitines, phosphatidylcholines, sphingomyelins, ceramides, cholesteryl esters, di- and triglycerides etc.
- Application to various matrices such as plasma, serum, urine, feces and tissue samples from different species such as rat, mouse, human etc.
- Data delivery in an editable Excel format



Your benefits

- Efficient and on-time project work benefiting from standardized processes and the expertise of our experienced team of scientists
- Pooled expertise from different scientific disciplines such as toxicology, analytical chemistry, bioinformatics and statistics
- Interdisciplinary knowledge exchange between scientists at Fraunhofer ITEM – the key to ongoing development and improvement of existing and new methods