



Company Overview

Metanomics Health applies state-of-the-art comprehensive metabolite profiling (metabolomics) with in-depth biomedical data interpretation. Focus is on biomarker identification and validation across various applications providing partners with actionable insight along healthcare research and development programs:

- Mechanism of Action Studies
- Mechanism of Toxicity Studies
- Translational and Clinical Biomarker Development (e.g. PK/PD, Patient Stratification, Efficacy and Safety Markers)
- Cell Culture & Bioprocess Optimization
- Companion Diagnostic Development

Company Introduction

Metanomics Health GmbH, a BASF Group company, was founded in 2003 to deliver the leading metabolite profiling platform expertise of its plant-biotech focused sister company, metanomics GmbH, to the pharma, biotech and nutrition industry.

Founded already in 1998, metanomics pioneered the use of metabolite profiling and integration of other -omics-data to create the by far largest plant gene-function knowledgebase in the world.



Headquarter in Berlin, Germany

Metabolite profiling is defined as the parallel analysis of multiple endogenous and xenobiotic metabolites in body fluids, tissues, or *in-vitro* cell cultures. These small molecules (<1.5 kDa) most closely reflect the physiological status of a biological system and are highly responsive to both genetic and environmental factors. The resulting characteristic metabolite fingerprints can be used as biomarkers to characterize the (patho-) physiological condition of an organism.

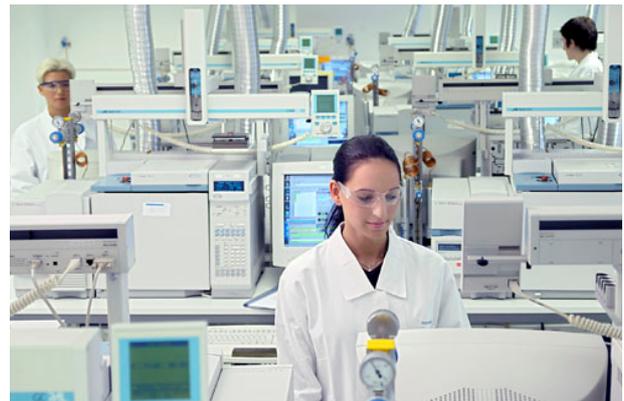
They may indicate the underlying **mechanisms** of disease or determine **responses** to drugs, nutritional intervention or toxic effects. In addition, metabolite markers have proven to be **translatable across species** based on highly conserved biochemical processes.

Technology Leadership

Metanomics Health combines state-of-the-art metabolite profiling with innovative bioinformatics and data mining systems to enable the discovery and validation of both, simple and complex metabolomic biomarkers.

Metanomics Health provides:

- The largest metabolite profiling platform globally, with over 75 GC-MS and LC-MS/MS instruments



Laboratory with over 50 GC-MS systems in operation

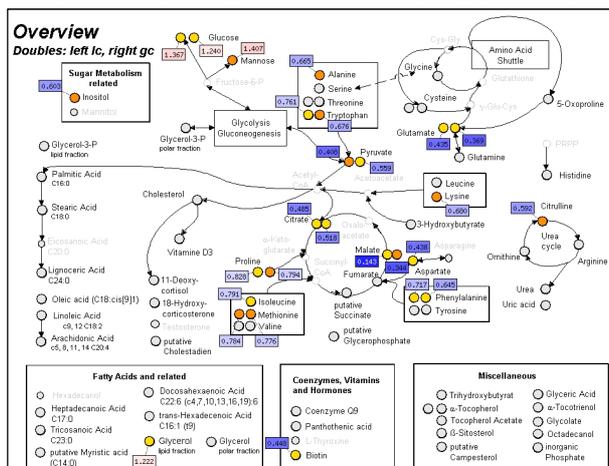
- Widest possible metabolite coverage via the unique combination of unbiased and targeted platforms including:
 - Amino acids, nucleobases, lipids, carbohydrates, vitamins and co-factors
 - Low abundance catecholamines and steroid hormones
 - Eicosanoids
 - Highly-polar energy metabolites and their phosphorylated derivatives
 - Simple and complex lipid profiles (lipidomics)
- Superior sensitivity, reproducibility and reliability of the largely automated high throughput platform

- Rigorous process control and data validation across the entire technology platform
- Unique toxicology mechanism of action classification and prediction through its proprietary database, MetaMap®Tox
- Proprietary software, knowledge base and data integration systems translate analytical data into dynamic pathway visualizations
- Excellence in the interpretation of metabolic patterns and systems correlation analysis of complex gene function relationships

Supporting Decision Making in Healthcare Research

Metanomics Health enables its pharma and biotech clients by:

- Increasing mechanistic understanding of drug and adverse effects as well as providing insights into underlying pathways



Differentiation of nephrotoxic MoAs of two anticancer compounds, statistical analysis of underlying metabolite changes and visualization in *PathwayExplorer™*

- Improving efficiency of clinical programs while reducing attrition through:
 - Pre-selection of clinical candidates using Metanomics Health's toxicology database (MetaMap®Tox)
 - Assessment of intervention using the Metanomics Health data mining and interpretation platforms

- Identification and validation of bio-markers for efficacy and disease progression
- Identification of response markers for patient stratification

Fee-for-Service and Shared Risk/Reward Partnerships:

Metanomics Health offers its proven metabolite profiling platform and expertise through two complementary business models:

■ Fee-for-Service:

Metanomics Health offers its metabolite profiling capabilities as a fee-for-service model, under which it operates on a project by project basis, with all rights remaining with its clients. Specific services (e.g. mechanistic studies, toxicology assessments or clinical trial monitoring) can be contracted individually or as an integrated project.

■ Risk Sharing Collaborations:

Metanomics Health also offers shared risk/reward collaborations with selected partners, aiming at increasing mechanistic understanding, improving drug development and enhancing market penetration through jointly discovering and commercializing novel high-value biomarkers and companion diagnostics.

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