CBmed
BIOMARKER RESEARCH

Project Leader
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CBmed
is an internationally
recognized biomarker research
center with a focus on cancer,
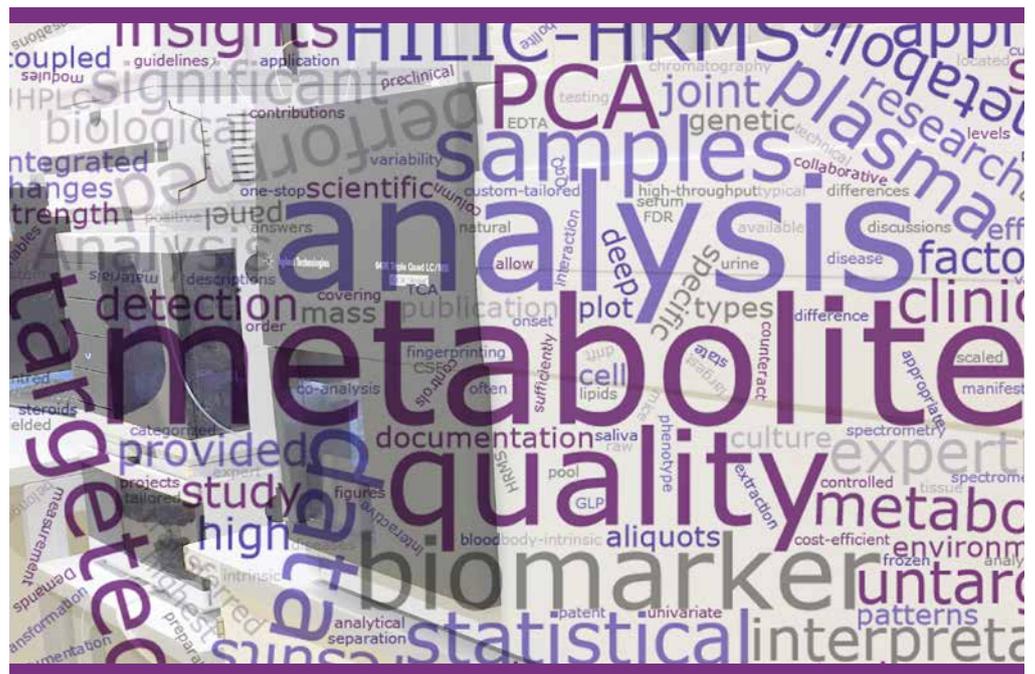metabolism and inflammation.
www.cbmed.at

In cooperation with

JOANNEUM
RESEARCH
HEALTH

Funded by

FFG

SFG
Im Auftrag des Wirtschaftslandesrates

Das Land
Steiermark

vienna
business
agency

COMET
Competence Centers for
Excellent Technologies

Metabolomics

The metabolome is especially well suited for biomarker research as the most integrated, dynamic and nearest-to-the-phenotype measure. Metabolomics offers important information in the development of prognostic and predictive biomarkers since metabolites are directly influenced by genetic, transcriptomic, proteomic, environmental factors and their complex interactions.

Metabolomics Potential

- **early biomarkers** – many diseases induce compensatory mechanisms often visible as highly specific metabolic patterns long before manifestation of clinical symptoms
- **intrinsic quality control** – metabolomics is a very sensitive and comprehensive technology safely detecting typical confounding factors
- **gain mechanistic insights** – the metabolome is nearest to the actual, current phenotype

Our Expertise

- **basic research, preclinical testing** and **clinical research** covering all steps from study design, data quality control, statistical analysis, biological interpretation up to patenting and dissemination
- **one-stop solution** for your project or **custom-tailored modules**
- projects are performed in a **cooperative, interactive approach** for results and high best added value

Our Resources

- **broad metabolome coverage** (central carbon metabolism, fatty acids, amino acids, …) paired with either
  - **targeted analysis** for deep mechanistic insights and detection of biomarker patterns
  - **untargeted analysis** for detection of novel, formerly unknown biomarkers
- **efficient cooperation** with JOANNEUM RESEARCH HEALTH enables follow-up with cost-efficient, high-throughput **specific analysis**, in compliance with **GLP**
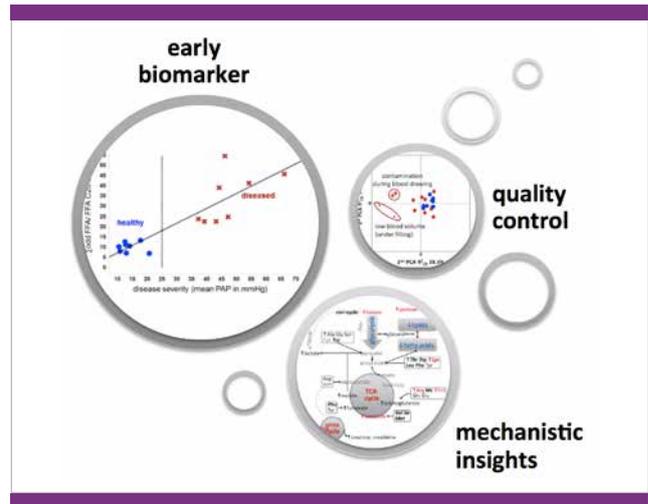

Our Methods

- **all** types of biological **materials** are **suitable,** e.g. plasma, serum, blood, urine, saliva, CSF, tissue, cell culture pellets, cell culture supernatant, …
- **low sample volumes** (10 – 100 µl)
- **expert support** and comprehensive sample preparation recommendations for efficient planning **upfront available**
- **state of the art,** well equipped **instrumentation** including several HRMS, QqQ, UHPLC among others
- **reliable** assembly of **patient cohorts,** prospective in close interaction with **medical universities** and **hospitals,** retrospective with **biobanks**
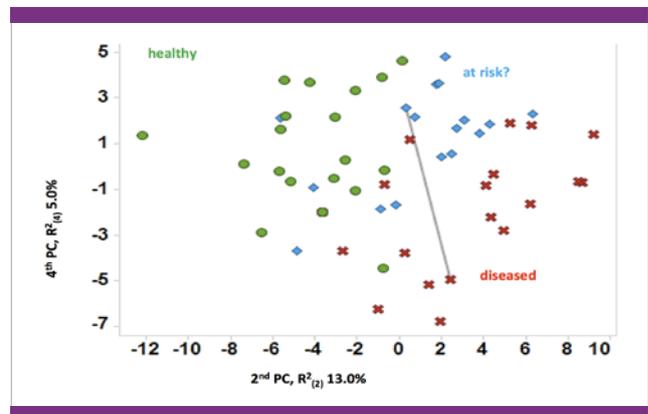
Principal component analysis (PCA) of circulating plasma metabolites from 55 humans displays a separation between diseased and healthy volunteers, also indicating individuals at special risk.
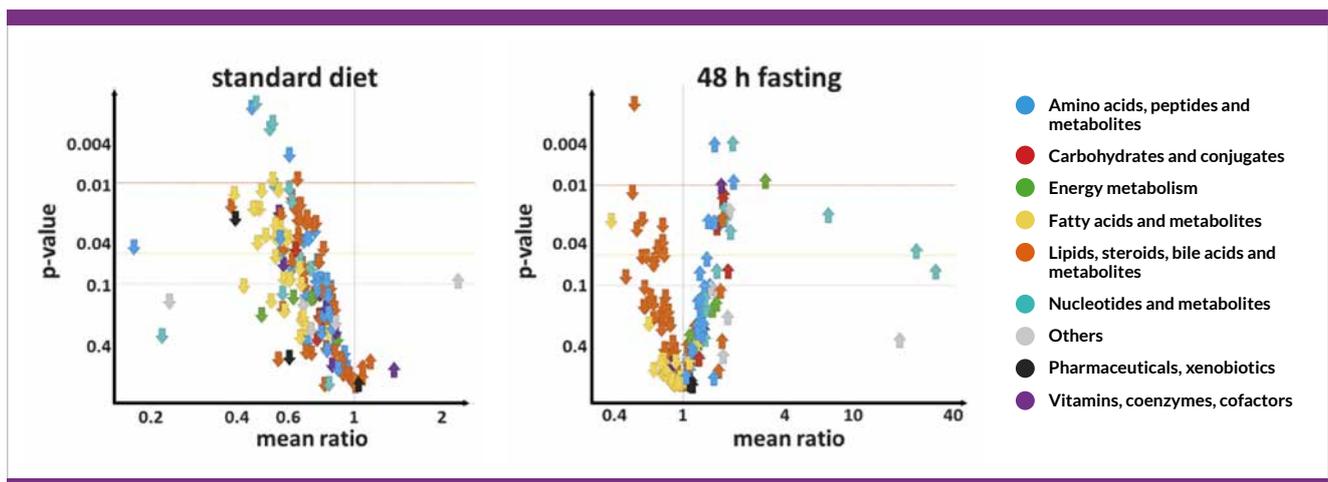
Volcano plots from analysis of variance (ANOVA) of circulating plasma metabolites from 26 mice. Knock out mice display a notably different metabolism compared to control mice under standard diet and exhibit a further marked metabolic shift after 48 h fasting.

Success story
09.03.2016

CBmed filed a European patent application "Biomarker for diagnosis of pulmonary hypertension" claiming metabolic markers for disease diagnosis and monitoring of therapy response thanks to an excellent cooperation with Ludwig Boltzmann Institute for Lung Vascular Research, Medical University Graz and JOANNEUM RESEARCH HEALTH.