Targeted Metabolomics - HM700 Panel
- unlock even greater targeted metabolomics insight with our comprehensive panel

BGI

Service Description

BGI provides one of the world's most comprehensive panels for targeted metabolomics research. The HM700 panel uses LC-MS/MS technology for high-throughput targeted metabolomics detection. It covers 700 metabolites including 30 metabolite classes addressing key pathophysiological processes relevant in gut microbiota research and cancer research areas. This enables greater in-depth mining of metabolome information, while providing accurate quantification, excellent reproducibility, and high throughput. Each metabolite is quantitatively determined using the standard curve.

Key Features

Comprehensive Coverage of the Metabolic Network with 30 Metabolite Classes

Class	Count
Amino acids and peptides	111
Fatty acids	103
Organic acids and derivatives	56
Bile acids	111
Carbohydrates	49
Benzenoids	75
Carnitines or acyl carnitines	17
Indoles and derivatives	23
Nucleosides	22
Steroids and steroid derivatives	9
Phenylpropanoids and polyketides	37
Organooxygen	11
other	76

Waters ACQUITY UPLC, SCIEX QTRAP 6500+

- High Throughput
- Reproducible
- Small Sample Volume
- Standardized quantitative

Unique Pathway Coverage for A Deeper Understanding of Biology

Metabolic Pathway	Related Metabolites	Function Application
Tryptophan metabolism	Tryptophan, Melatonin, Kynurenine, Indoleacetic acid, etc.	Gut - brain axis signaling, immune response, gut barrier, nervous system protection or toxicity, microbiota - host bridge, etc.
Tricarboxylic acid cycle	Pyruvic acid, Malic acid, Citric acid, Isocitric acid, Succinic acid, Fumaric acid, Oxoglutaric acid, cis-Aconitic acid, etc.	Provide metabolic intermediates, body functions, affect cancer cell metastasis, etc.
Glycolysis / gluconeogenesis	Glucose-6-phosphate, Fructose-6-phosphate, Pyruvate, Lactic acid, Acetic acid, etc.	Provide metabolic intermediates, body function, tumor occurrence and development, metabolic diseases, etc.
Amino acid metabolism	Threonine, Glycine, 5-aminolevulinic acid, Creatine, Sarcosine, Dimethylglycine, Leucine, Aspartic acid, Glutamine, Glutamic acid, etc.	Nutritional assessment, metabolic syndrome, immune regulation, cardiovascular disease progression, tumor suppression, etc.
Fatty acid synthesis	Lauric acid, Myristic acid, Stearic acid, etc.	Metabolic syndrome, cardiovascular disease, tumor immune regulation, gut health, etc.
Phosphopentose pathway	Pyruvic acid, D-Gluconolactone, Gluconic acid, Glyceric acid, Fructose 1, 6-bisphosphate, etc.	Provide reducing power, prevent membrane lipid peroxidation, provide raw materials for substance synthesis, etc.

Linoleic acid metabolism	Arachidonic acid, 8,11,14-Eicosatrienoic acid, etc.	Prevention of atherosclerosis, cardiovascular and cerebrovascular diseases
Nucleotide metabolism	Xanthosine, Hypoxanthine, Thymine, Adenosine monophosphate, 2'-Deoxyadenosine, etc.	Active intermediate metabolites, involved in coenzyme composition, signal transduction
Metabolism of cofactors and vitamins	L-Aspartic acid, Nicotinic acid, Gamma-Aminobutyric acid, Maleic acid , Quinolinic acid, etc.	Active intermediate metabolite, participate in coenzyme composition and signal transduction
Nervous system function	L-Glutamine, L-Tyrosine, L-Dopa, Homovanillic acid, L-Tryptophan, 5-Hydroxy-L-tryptophan, etc.	GABAergic synapse, dopaminergic synapse, parkinson's disease, serotonergic synapse
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Functional Microbiomics and Foodomics for Unraveling the Interaction of Lifestyle, Microbiota, Metabolism, and Health

Investigations of the gut-brain, gut-liver and gut-heart axis are increasingly important as researchers learn more about the role of the microbiota and its effect on many organ systems. As metabolic profiles can be obtained from biofluids, metabolomics can provide information about microbiota-related processes where metagenomics studies may not be possible. BGI's HM700 panel covers a wide range of gut microbiota related metabolites.
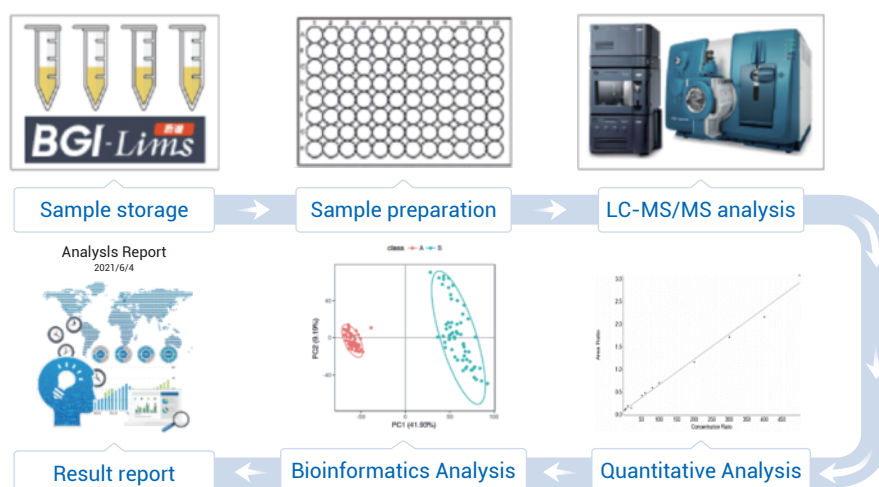
Brial *et al*., Bacteria-Produced Metabolites Affect Distant Organs. *Cell. Mol. Life Sci*. 2018

Research Applications

- Disease biomarkers research
- Pathogenesis and prognosis study on diseases
- Drug target research
- Animal special behavior mechanism and food/medicinal value research
- Gut microbiota research

Analysis Workflow

Sample storage → Sample preparation → LC-MS/MS analysis

Result report ← Bioinformatics Analysis ← Quantitative Analysis

Bioinformatics Analysis

Standard:

01	**LC Chromatogram**
	XIC diagram of standard metabolites and target metabolites from samples

| 02	**Quantitative Analysis**
	The standard curve is drawn to calculate the concentration of metabolites

03	**Statistical Analysis and Function Analysis**

- Sample correlation analysis
- Correlation analysis between metabolites
- Screening of differential metabolites
- Statistical analysis of differential metabolites

- PCA analysis
- Data distribution
- Correlation analysis of differential metabolites
- Pathway analysis of differential metabolites

- PLS-DA analysis
- OPLS-DA analysis

Customized:

- 16S/Metagenome + metabolome correlation analysis
- Transcriptome + metabolome correlation analysis
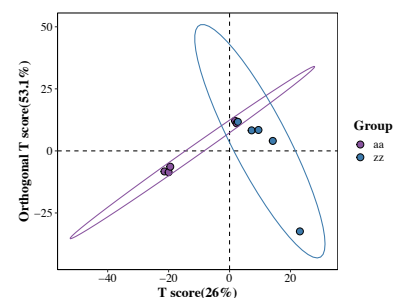- Proteome + metabolome correlation analysis

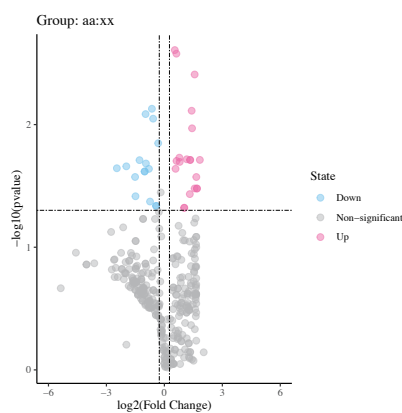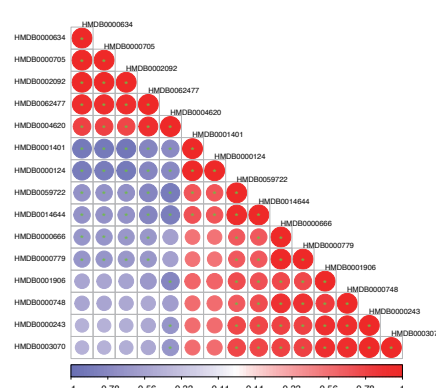# Examples of Bioinformatics Analysis
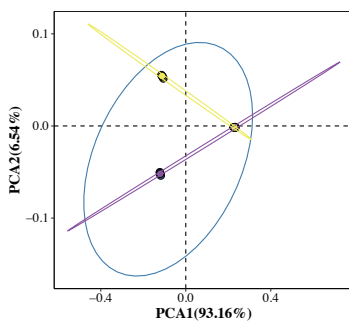
Score graph of PCA
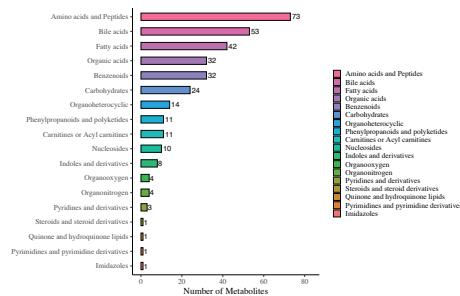
Metabolite classification bar chart
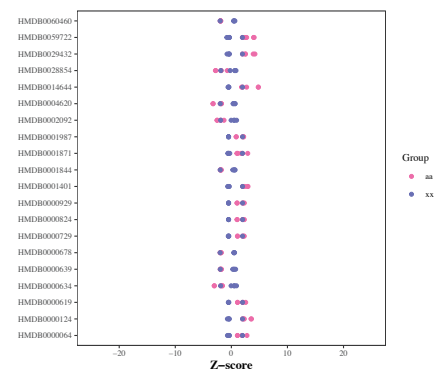

OPLS-DA score graph

Volcano plots of differential metabolites

Metabolite correlation heat map

Z-score

General Sample Requirements

Sample Type	Recommended Sample Amount	Minimum Sample Amount
Serum, plasma, urine	≥ 100 μL	≥ 50 μL
Urine Animal and clinical tissues Feces and intestinal contents	≥ 50 mg	≥ 20 mg
Cell	≥ 1×10^7	≥ 1×10^5
Cultureliquid,fermentationliquid	≥ 500 μL	≥100μL

Biological Replicates Requirements

Sample Type	Recommended Biological Duplicates	Minimum Biological Duplicates
Cell and Microorganism	≥ 6	≥ 3
Animal	≥ 10	≥ 6
Human	≥ 30	≥ 10

Turn Around Time

Sample size: 1-50, 4-5 weeks

To Learn More

To learn how your research can benefit from BGI's in HM700 panel, visit www.bgi.com , write to us via info@bgi.com or contact your local BGI office

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We Sequence, You Discover