

Targeted Metabolomics - HM700 Panel

- unlock even greater targeted metabolomics insight with our comprehensive panel



Service Description

BGI Genomics 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

Amino acids and Peptides	~125
Fatty acids	~110
Organic acids and derivatives	~63
Bile acids	~99
Carbohydrates	~51
Benzenoids	~69
Carnitines or Acyl carnitines	~23
Indoles and derivatives	~24
Nucleosides	~19
Organoheterocyclic	~25
Phenylpropanoids and polyketides	~35
Organooxygen	~10
other	~47

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, Aconitic acid, etc.	Provide metabolic intermediates, body functions, affect cancer cell metastasis, etc.
Glycolysis / gluconeogenesis	Glucose 6-phosphate, Fructose 6-phosphate, Pyruvate, L-Lactic acid, Acetic acid, etc.	Provide metabolic intermediates, body function, tumor occurrence and development, metabolic diseases, etc.
Amino acid metabolism	L-Threonine, Glycine, Creatine, Sarcosine, Dimethylglycine, L-Leucine, L-Aspartic acid, L-Glutamine, L-Glutamic acid, etc.	Nutritional assessment, metabolic syndrome, immune regulation, cardiovascular disease progression, tumor suppression, etc.
Fatty acid synthesis	Lauric acid, Myristic acid, Stearic acid, Oleic acid, Caprylic 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.

Glutathione metabolism	Ascorbic acid, Oxidized glutathione, Glycine, Dehydroascorbic acid, L-Glutamic acid, etc.	Resist oxidative stress, regulate cell apoptosis, and maintain immune system function
Nucleotide metabolism	Xanthosine, Hypoxanthine, Thymine, Adenosine monophosphate, etc.	Active intermediate metabolite, participate in coenzyme composition and signal transduction
Metabolism of cofactors and vitamins	L-Aspartic acid, Nicotinic acid, Gamma-Aminobutyric acid, Maleic acid, Quinolinic acid, etc.	Participate in body metabolism as a coenzyme, play a role in transferring electrons, atoms or chemical groups.
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 Genomics HM700 panel covers a wide range of gut microbiota related metabolites.

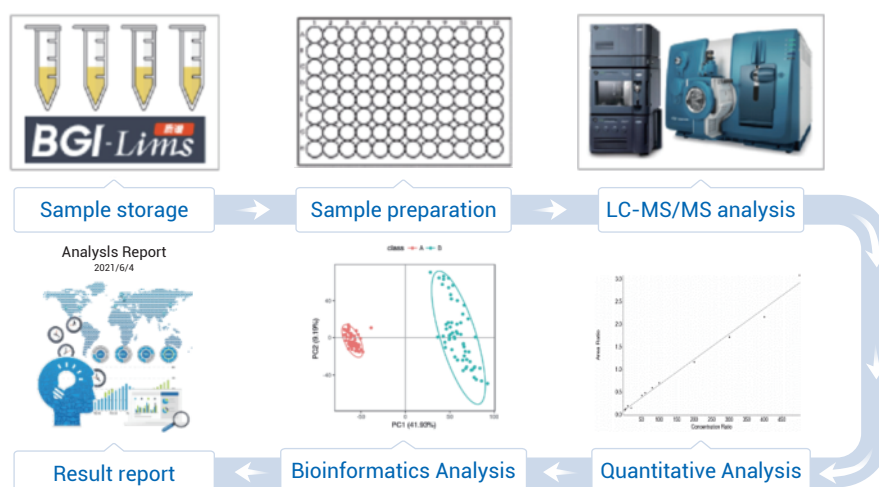
Brial et al., Bacteria-Produced Metabolites Affect Distant Organs. *Cell. Mol. Life Sci.* 2018

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



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

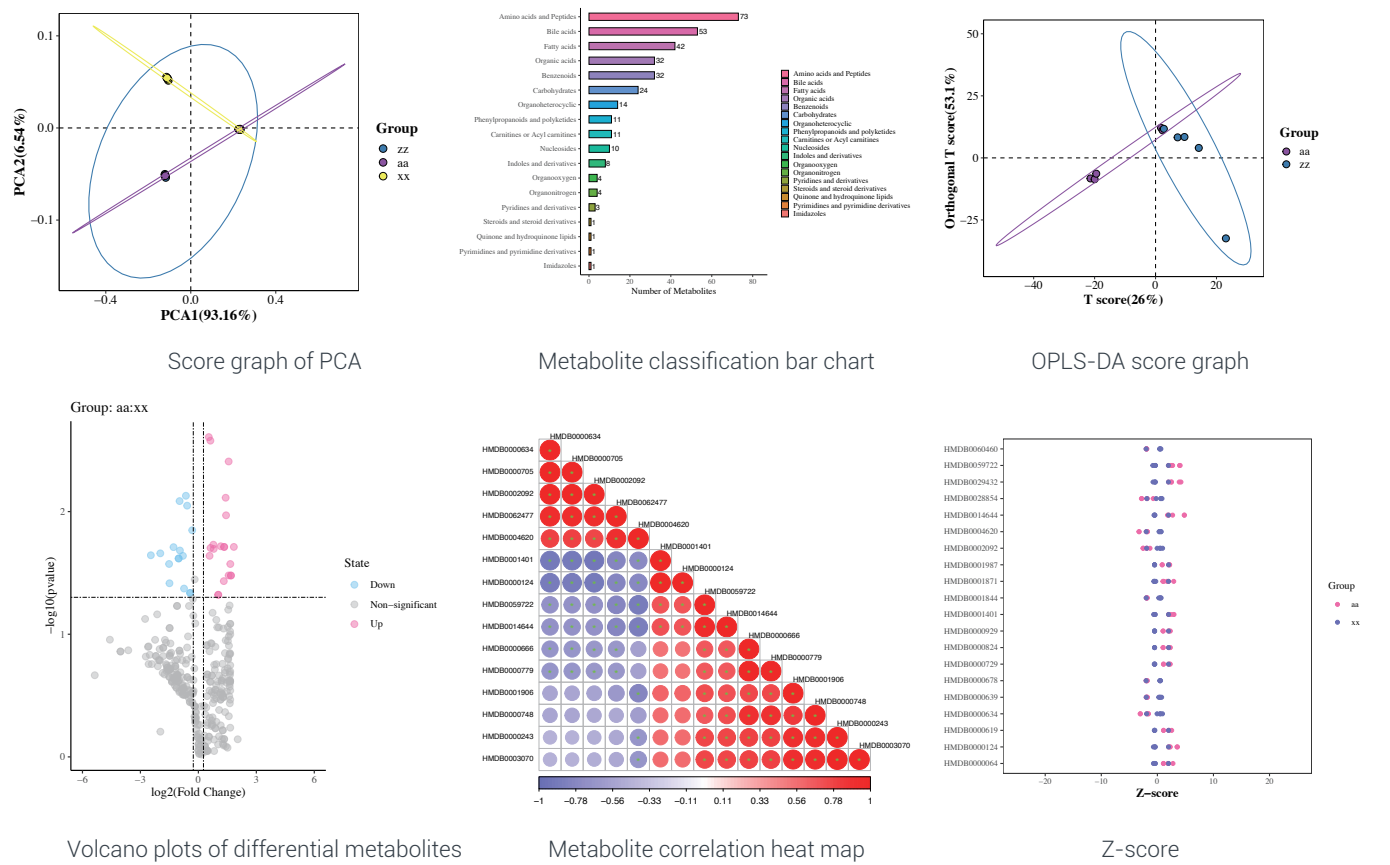
• PLS-DA analysis

• OPLS-DA analysis

Customized:

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

Examples of Bioinformatics Analysis



General Sample Requirements

Sample Type	Recommended Sample Amount	Minimum Sample Amount
Serum, plasma	$\geq 100 \mu\text{L}$	$\geq 50 \mu\text{L}$
Animal and clinical tissues, feces, intestinal contents, microbial organisms	$\geq 50 \text{ mg}$	$\geq 20 \text{ mg}$
Cell	$\geq 1 \times 10^7$	$\geq 1 \times 10^5$
Urine	$\geq 200 \mu\text{L}$	$\geq 100 \mu\text{L}$
Breast milk, milk	$\geq 100 \mu\text{L}$	$\geq 50 \mu\text{L}$
Culture broth, fermentation broth	$\geq 500 \mu\text{L}$	$\geq 100 \mu\text{L}$

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

Request for Information or Quotation

Contact a BGI Genomics representative to discuss how we can meet your specific needs or for expert advice on experiment design, from sample to bioinformatics.

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