

## Sample Requirements for Metabolomics

Reminder:

- Kindly note that all samples will not be returned. Please ensure you have made sufficient backups of the samples in advance.
- Please use 2 mL tube for sample shipping.

### 1. Non-targeted Metabolomics (LC, LC for Lipidome)

Species	Sample Requirements		
	Sample Type	Minimum Amount	Recommended Amount
Animal	Animal/Clinical Tissue, Muscle, Placental Tissue, Skin, Feces, Intestinal Contents	100 mg	200 mg
	Serum, Plasma, Semen, Bronchoalveolar Lavage Fluid, Peritoneal Fluid, Rumen Fluid, Breast Milk, Follicular Fluid, Cerebrospinal Fluid, Urine, Sputum, Saliva	200 uL	1 mL
	Vaginal Secretions	Cotton Swabs: 3	Cotton Swabs: 6
	Large Visible Insects	100 mg	200 mg
	Small Invisible Insects	$\geq 1 \times 10^9$	$\geq 1 \times 10^9$ /aliquot, 2 aliquots/sample
	Cells	$\geq 5 \times 10^6$ Cells	$\geq 1 \times 10^7$ /aliquot, 2 aliquots/sample
	Cell Culture Medium	1 mL	2 mL
Plant	Stem, Bud, Node, Leaf, Root, Flower, Callus Tissue, Fruit Peel	Lyophilized Powder 100 mg or Fresh Sample 200 mg	500 mg
	Fruit, Pulp	Lyophilized Powder 100 mg or Fresh Sample 1 g	Fresh sample 2 g
	Fruit Juice	Lyophilized Powder 100 mg	Lyophilized Powder 200 mg
	Root Exudates	Lyophilized Powder 20 mg	Lyophilized Powder 40 mg
	Fungal Precipitate	Fungal Cell	Fungal Cell Count $\geq$

		Count $\geq 5 \times 10^6$	$1 \times 10^7$ /aliquot, 2 aliquots/sample
	Yeast and Non-filamentous Fungal Precipitate	Fungal Cell Count $\geq 5 \times 10^6$	Fungal Cell Count $\geq$ $1 \times 10^7$ /aliquot, 2 aliquots/sample
	Filamentous Fungi and Mushroom (Macrofungi)	100 mg	200 mg
	Fungal Supernatant/Culture Medium	1 mL	2 mL
	Fermentation Broth, Bacterial Culture	1 mL	2 mL
	Fermentation Product	100 mg	200 mg
<b>Other</b>	Soil	1 g	2 g
	Broth	1 mL	2 mL

## 2. Wide-targeted Metabolomics for Plants

Sample	Sample Requirements		
	Sample Type	Minimum Amount	Recommended Amount
<b>Tissue</b>	Root, Stem, Leaf, Flower, Fruit, Pulp, Peel, Seed, Endosperm	Lyophilized Powder 50 mg or Fresh Sample 1 g	Lyophilized Powder 100 mg or Fresh Sample 2 g
<b>Liquid</b>	Type	Minimum Amount	Recommended Amount
	Root Exudates	50 mL	100 mL
	Fermentation Broth	3 mL	5 mL
	Wine/Tissue Fluid/Fruit Juice	3 mL	5 mL
	Honey/Floral Nectar/Oil	200 $\mu$ L	500 $\mu$ L
	Herbal Decoction/Extract Solution	200 $\mu$ L	500 $\mu$ L

Note:

- a. For liquid samples, please provide the extraction method, concentration, sample amount, and solution volume.
- b. Special samples: Please indicate the nature of the sample and the culture medium. Ensure that the sample quality meets the requirements. Also, please specify whether attention is given to substances secreted by the sample during the culture process and present in the culture medium.
- c. For wide-targeted metabolomics samples, lyophilization is required. If non-lyophilized powder samples are submitted, the laboratory will provide feedback on whether the samples meet the requirements for experiment initiation after lyophilization.
- d. Biological replicates of plants should be  $\geq 6$ .
- e. Grinding loss: 50%.
- f. The highest water content is found in growing plant bodies, with protoplasts containing 80-90% water, while chloroplasts and mitochondria contain approximately 50%. Vacuoles contain over 90% water. The water content of tissues or organs decreases with increasing lignification. For example, the fleshy part of fruits can have a water content exceeding 90%, tender leaves range from 80-90%, roots range from 70-95%, tree trunks average around 50%, dormant buds are approximately 40%, and mature seeds have the lowest water content, typically only 10-14% or less.
- g. Aquatic plant flowers have a water content of 70-95%.

### 3. Wide-targeted Metabolomics for Animals/Medical

Sample	Sample Requirements		
	Sample Type	Minimum Amount	Recommended Amount
<b>Animal</b>	Animal/Clinical Tissue, Muscle, Placental Tissue, Skin, Feces, Intestinal Contents	100 mg	200 mg
	Serum, Plasma, Hemolymph, Milk, Raw Egg	200 $\mu$ L	1 mL
	Semen, Bronchoalveolar Lavage Fluid, Peritoneal Fluid, Breast Milk, Follicular Fluid, Cerebrospinal Fluid, Urine, Sputum, Saliva	Lyophilized Powder 50 mg	Lyophilized Powder 100 mg
	Cells	$\geq 5 \times 10^6$ Cells	$\geq 1 \times 10^7$ /aliquot, 2 aliquots/sample
	Honey/Nasal Mucus	100 mg	200 mg
	Small microfaunal invertebrates (invisible to the naked eye)	$\geq 1 \times 10^9$	$\geq 1 \times 10^9$ /aliquot, 2 aliquots/sample
	Large macrofaunal invertebrates (visible to the naked eye)	100 mg	200 mg

Note:

Special liquid samples (e.g., tissue secretions, spinal cord) have high water content and thus require lyophilization.

#### 4. Targeted Metabolomics (Plant Hormones)

Sample	Sample Requirements		
	Type	Minimum Amount	Recommended Amount
<b>Plant Tissue</b>	Roots, Stems, Flowers, Leaves, Fruits, Pulp, Peel, Seeds, Endosperm	Lyophilized Powder 50 mg or Fresh Sample 2 g	Lyophilized Powder 2 g or Fresh Sample 5 g
<b>Liquid</b>	Root Exudate/Fermentation Broth/Wine/Tissue Fluid/Honey/Nectar/Oil/Herbal Decoction/Extract Solution/Culture Broth/Fruit Juice	3 mL	5 mL

Note:

- It is not recommended to use liquid samples for plant hormone-targeted metabolomics.
- Samples for plant-targeted metabolomics need to be freeze-dried. The laboratory will provide feedback on whether it meets the normal startup requirements after freeze-drying.

#### 5. Targeted Metabolomics (Bile Acid)

Sample	Sample Requirements		
	Sample Type	Minimum Amount	Recommended Amount
<b>Animal</b>	Animal/Clinical Tissue, Muscle, Placental Tissue, Skin	100 mg	200 mg
	Feces, Intestinal Contents, Bone	500 mg	1 g
	Serum, Plasma, Cerebrospinal Fluid	200 $\mu$ L	1 mL
	Semen, Bronchoalveolar Lavage Fluid, Peritoneal Fluid, Rumen Fluid, Breast Milk, Follicular Fluid, Urine, Sputum, Saliva	1 mL	2 mL
	Cells	$\geq 5 \times 10^6$ Cells	$\geq 1 \times 10^7$ /aliquot, 2 aliquots/sample
	Cell Culture Medium/Supernatant	1 mL	2 mL
<b>Microorganism</b>	Bacterial/Fungal Cells	$\geq 1 \times 10^{10}$ Cells	$\geq 1 \times 10^{10}$ /aliquot, 2 aliquots/sample
	Bacterial/Fungal Culture Solution/Supernatant	1 mL	2 mL

## 6. Targeted Metabolomics (Amino Acid/Fatty Acid/FFA/SCFA)

Species	Sample Requirements		
	Sample Type	Minimum Amount	Recommended Amount
<b>Animal</b>	Animal/Clinical Tissue, Muscle, Placental Tissue, Skin, Feces, Intestinal Contents	200 mg	500 mg
	Serum, Plasma, Semen, Bronchoalveolar Lavage Fluid, Peritoneal Fluid, Rumen Fluid, Breast Milk, Follicular Fluid, Cerebrospinal Fluid, Urine, Sputum, Saliva	200 uL	500 uL
	Cells	$\geq 1 \times 10^7$ Cells	$\geq 1 \times 10^7$ /aliquot, 2 aliquots/sample
<b>Plant</b>	Stem, Bud, Node, Leaf, Root, Flower, Callus Tissue, Fruit Peel	2 g	3 g
<b>Microorganism</b>	Bacterial/Fungal Cells	150 mg	300 mg
	Fermentation Broth, Bacterial/Fungal Culture Solution	1 mL	2 mL