

## Sample Preparation

### Quenching Metabolism

- Rapid cooling or organic solvents
- Stop enzymatic reactions
- Preserve metabolite levels

### Extraction Methods

- Methanol/chloroform extraction
- Solid-phase extraction (SPE)
- Method depends on metabolite class

### Matrix Effects

- Ion suppression/enhancement
- Sample cleanup required
- Calibration curve considerations

### Internal Standards

- Isotope-labeled compounds
- Normalize for extraction/ionization
- Quality control