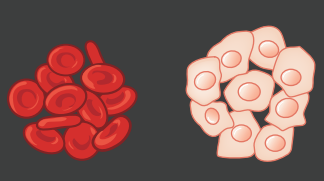
Creative Proteomics

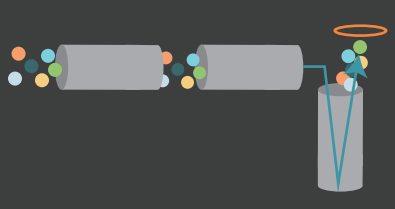
UNTARGETED Metabolomics VS TARGETED Metabolomics

Metabolomics can be divided into non-targeted and targeted metabolomics. Non-targeted metabolomics can analyze metabolites derived from the organisms comprehensively and systematically. It is an unbiased metabolomics analysis that can discover new biomarkers. Targeted metabolomics is the study and analysis of specific metabolites. Both have their own advantages and disadvantages, and are often used in combination for the discovery and accurate weight determination of differential metabolites, and in-depth research and analysis of subsequent metabolic molecular markers.
Targeted and non-targeted metabolomics take parts in food identification, disease research, animal model verification, biomarker discovery, disease diagnosis, drug development, drug screening, drug evaluation, clinical research, plant metabolism research, microbial metabolism research.

Untargeted Metabolomics Strategy

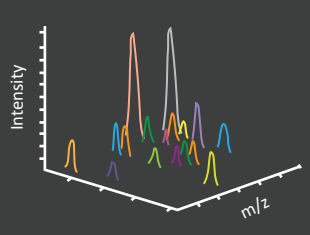


Metabolite Extraction



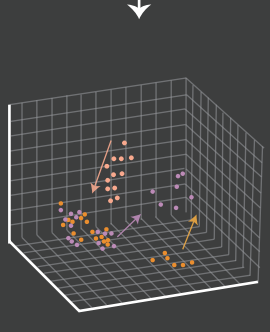
Mass Spectrometry

Data Acquisition



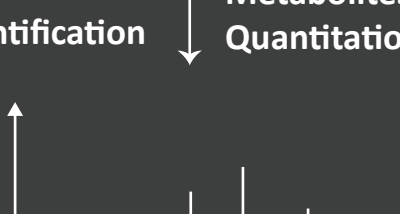
Features Selection

Data Processing



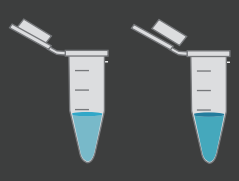
Metabolites Identification

Metabolites Quantitation



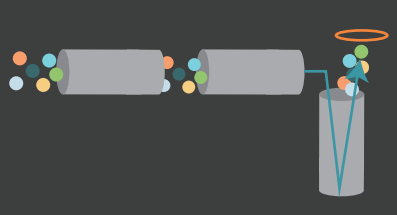
Data Interpretation

Targeted Metabolomics Strategy



Metabolites Purification

GC/LC



MS Analysis

Data Acquisition

Data Interpretation

	Untargeted Metabolomics	Targeted Metabolomics
Features	• Discovery • Hypothesis generating • Globalmetabolomics profling • Metabolomics fingerprinting • Metabolomics footprinting • Classification/ forming metabotypes • Qualitative identification • Relative quantification • > 1000s metabolites measured • No chemical commercial standartrequired	• Validation • Hypothesis driven • Absolute quantification of spesific features • Validation of identified feature (Requires commercially available chemicalstandart for validation) • Metabonomics • ~20 metabolites measured
Sample Preparation	• Global metabolite extraction: a. Hydrophobic fraction: C18 Column b. Hydrophiic fraction: HILIC Column • Derivatization (optional)	• Extraction procedure for spesific metabolites
Data Acquisition	• Chromatographic separation • MS ionization (negative and positive modes) (EI, ESI, APCI, MALDI) • Mass detection	• Chromatographic separation • MS ionization (negative and positive modes) (EI, ESI, APC, MALDI) • Mass detection • Multiple Reaction Monitoring (MRM)
Data Processing	• Data preprocessing: noise filtering, retention time correction, peak detection, chromatogram alignment, unknown features/metabolite identification • Data preparation: data integrity checking. data IS normalzasyon, compound name identification • Statistical analysis	• Data preprocessing • Statistical analysis • Absolute quantitation of metabolite concentrations
Data Interpretation	• Bioinformatics • Integrative OMICS • Enrichment Analysis • Pathway Analysis • Metabolic Network	• Bioinformatics • Integrative OMICS • Enrichment Analysis • Pathway Analysis • Metabolic Network

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