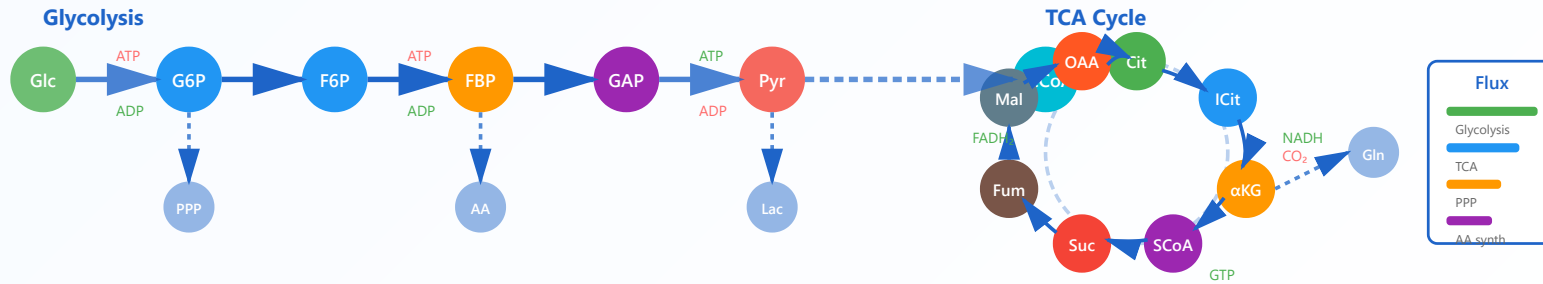


# Pathway Mapping



## KEGG Pathways

- Kyoto Encyclopedia database
- Metabolic pathway maps
- Organism-specific pathways



# Metabolic Networks

- Biochemical connections
- Reaction stoichiometry
- Flux balance analysis



## Flux Analysis

- $^{13}\text{C}$  glucose/glutamine tracing
- MID (mass isotopomer distribution)
- Pathway activity quantification



## Integration Tools

- MetaboAnalyst, XCMS
- Pathway enrichment analysis
- Multi-omics integration

