

Mutant/Wild-Type
Amino Acids

Metabolite	Phase 1	Phase 2	Phase 3	Phase 4
Arginine				
Histidine				
Threonine				
Glutamine				
Lysine				
Valine				
Methionine				
Isoleucine				
Leucine				
Phenylalanine				
Tryptophan				
L-Tyrosine				
Proline				
Serine				
Aspartic acid				
Glutamic acid				
Glycine				
Asparagine				
Alanine				

Central Carbon Metabolism

PYR				
FUM				
SUC				
KGA				
PEP				
DHAP				
3PG_2PG				
CIT				
RL5P				
R5P				
G1P				
G6P				
F6P				
F16DP				
Glyox				
Mal				
GA3P				
GMP				
UDP				
ADP				
GDP				
ATP				
GTP				
CMP				
UMP				
AMP				
NADPH				
cAMP				
UDPGA				
NAD				
NADH				
NADP				
UDPNAc				
ACO				

Fatty Acid Methyl Esthers

C4:0				
C8:0				
C10:0				
C12:0				
C14:0				
C14:1				
C15:0				
C15:1				
C16:0				
C16:1				
C17:0				
C17:1				
C18:0				
C18:1				
C18:1				
C18:2				
C18:2				
C18:3				
C18:3				
C20:1				
C21:0				
C22:0				
C23:0				
C24:0				

