

### **'Nitrogen Source is Ammonia'**

'adenine phosphoribosyltransferase'  
  
' 2-Oxoglutarate dehydrogenase'  
'alcohol dehydrogenase (ethanol)'  
'L-aspartase'  
  
'aspartate transaminase'  
  
'L-allo-threonine dehydrogenase'  
'citrate synthase'  
  
'fructose-bisphosphatase'  
'glutamate dehydrogenase (NADP)'  
'hydroxypyruvate isomerase'  
  
'Hydroxypyruvate reductase (NADPH)'  
'sodium proton antiporter (H:NA is 1.5)  
(periplasm)'  
'pyruvate formate lyase'

### **'Nitrogen Source is Adenine'**

'adenine deaminase'  
  
'adenine phosphoribosyltransferase'  
'adenylsuccinate lyase'  
'adenylosuccinate synthase'  
  
'L-aspartase'  
  
'formyltetrahydrofolate deformylase'  
'glutamate dehydrogenase (NADP)'  
  
'hypoxanthine dehydrogenase'  
' 5'-nucleotidase (dAMP)'  
  
'purine-nucleoside phosphorylase (Adenosine)'  
  
'purine-nucleoside phosphorylase (Deoxyadenosine)'

### **'Nitrogen Source is Cytidine'**

'adenosine kinase'  
  
'aldehyde dehydrogenase (acetaldehyde, NADP)'  
'AMP nucleosidase'  
'aspartate carbamoyltransferase'  
'L-allo-threonine dehydrogenase'  
'CTP synthase (glutamine)'  
'Cysteine Desulfhydrase'  
'cytidine deaminase'  
'fructose-bisphosphatase'  
'formate dehydrogenase (quinone-8) (periplasm)'  
'glycerol-3-phosphate dehydrogenase (ubiquinone-8)'  
'hydroxypyruvate isomerase'  
'Hydroxypyruvate reductase (NADPH)'  
'sodium proton antiporter (H:NA is 1.5) (periplasm)'  
' 5'-nucleotidase (AMP)'  
' 2-Octaprenylphenol hydroxylase (anaerobic)'  
'pyrimidine-nucleoside phosphorylase (uracil)'  
'tartronate semialdehyde reductase'

### **'Nitrogen Source is Putrescine'**

' 4-aminobutyrate transaminase'  
  
'Aminobutyraldehyde dehydrogenase'  
'fructose-bisphosphatase'  
'glycerol-3-phosphatase'  
'sodium proton antiporter (H:NA is 1.5) (periplasm)'  
'Putrescine Transaminase'

**'Nitrogen Source is Glycine'**

'glycine hydroxymethyltransferase, reversible'

'Glycine Cleavage System'

**'Nitrogen Source is L-Alanine'**

'5'-deoxyadenosine nucleosidase'

'acetylglutamate kinase'

'N-acetylglutamate synthase'

'aspartate transaminase'

'glucose 6-phosphate dehydrogenase'

'glutamine synthetase'

'glutamate dehydrogenase (NADP)'

'malate dehydrogenase'

'pyruvate formate lyase'

'pyruvate oxidase'

'phosphoenolpyruvate synthase'

**'Nitrogen Source is L-Glutamine'**

'N-Acetyl-D-glucosamine(anhydrous)N-Acetylmuramyl-tripeptide  
amidase'

'L-allo-threonine dehydrogenase'

'Cysteine Desulfhydrase'

'glucosamine-1-phosphate N-acetyltransferase'

'glutaminase'

'glycine C-acetyltransferase'

'murein polymerizing transglycosylase'

'phospho-N-acetylmuramoyl-pentapeptide-transferase (meso-2,6-  
diaminopimelate)'

'phosphoglucosamine mutase'

'L-allo-Threonine Aldolase'

'UDP-N-acetylglucosamine diphosphorylase'