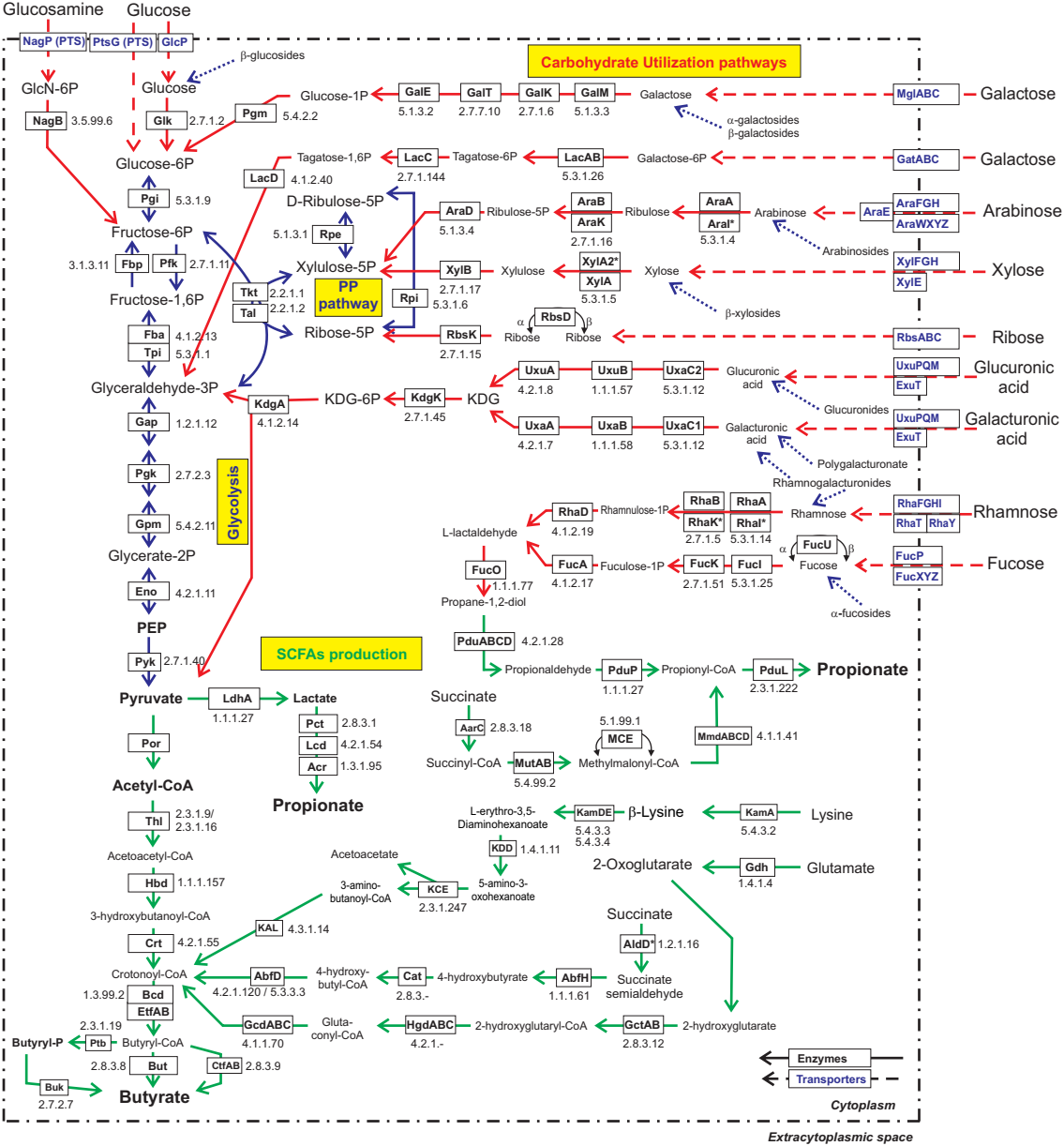
Glucosamine
Glucose
NagP (PTS)
PtsG (PTS)
GlcP
β-glucosides
Carbohydrate Utilization pathways
GlcN-6P
Glucose
NagB 3.5.99.6
Glk 2.7.1.2
Pgm 5.4.2.2
Glucose-1P
GalE 5.1.3.2
GalT 2.7.7.10
GalK 2.7.1.6
GalM 5.1.3.3
Galactose
α-galactosides
β-galactosides
MglABC
Galactose
Glucose-6P
Tagatose-1,6P
LacC 2.7.1.144
Tagatose-6P
LacAB 5.3.1.26
Galactose-6P
GatABC
Galactose
LacD 4.1.2.40
Pgi 5.3.1.9
D-Ribulose-5P
AraD 5.1.3.4
Ribulose-5P
AraB
AraK 2.7.1.16
Ribulose
AraA
AraI* 5.3.1.4
Arabinose
AraE
AraFGH
AraWXYZ
Arabinose
Arabinosides
Fructose-6P
5.1.3.1 Rpe
Xylulose-5P
3.1.3.11 Fbp
Pfk 2.7.1.11
Tkt 2.2.1.1
Tal 2.2.1.2
PP pathway
Rpi 5.3.1.6
XylB 2.7.1.17
Xylulose
XylA2*
XylA 5.3.1.5
Xylose
XylFGH
XylE
Xylose
β-xylosides
Fructose-1,6P
Fba 4.1.2.13
Tpi 5.3.1.1
Ribose-5P
RbsK 2.7.1.15
α RbsD β
Ribose
Ribose
RbsABC
Ribose
Glyceraldehyde-3P
KdgA 4.1.2.14
KDG-6P
KdgK 2.7.1.45
KDG
UxuA 4.2.1.8
UxuB 1.1.1.57
UxaC2 5.3.1.12
Glucuronic acid
UxuPQM
ExuT
Glucuronic acid
Glucuronides
UxaA 4.2.1.7
UxaB 1.1.1.58
UxaC1 5.3.1.12
Galacturonic acid
UxuPQM
ExuT
Galacturonic acid
Polygalacturonate
Rhamnogalacturonides
Gap 1.2.1.12
Pgk 2.7.2.3
Glycolysis
Gpm 5.4.2.11
Glycerate-2P
Eno 4.2.1.11
PEP
Pyk 2.7.1.40
RhaD 4.2.1.19
Rhamnulose-1P
RhaB
RhaK* 2.7.1.5
RhaA
RhaI* 5.3.1.14
Rhamnose
RhaFGHI
RhaT
RhaY
Rhamnose
L-lactaldehyde
FucO 1.1.1.77
Propane-1,2-diol
FucA 4.2.1.17
Fuculose-1P
FucK 2.7.1.51
FucI 5.3.1.25
α FucU β
Fucose
FucP
FucXYZ
Fucose
α-fucosides
PduABCD 4.2.1.28
SCFAs production
Propionaldehyde
PduP 1.1.1.27
Propionyl-CoA
PduL 2.3.1.222
Propionate
Pyruvate
LdhA 1.1.1.27
Lactate
Succinate
AarC 2.8.3.18
5.1.99.1
MCE
MmdABCD 4.1.1.41
Succinyl-CoA
MutAB 5.4.99.2
Methylmalonyl-CoA
Por
Pct 2.8.3.1
Lcd 4.2.1.54
Acr 1.3.1.95
Acetyl-CoA
Propionate
L-erythro-3,5-Diaminohexanoate
KamDE 5.4.3.3 5.4.3.4
β-Lysine
KamA 5.4.3.2
Lysine
Thl 2.3.1.9/ 2.3.1.16
KDD 1.4.1.11
Acetoacetate
Acetoacetyl-CoA
3-amino-butanoyl-CoA
KCE 2.3.1.247
5-amino-3-oxohexanoate
2-Oxoglutarate
Gdh 1.4.1.4
Glutamate
Hbd 1.1.1.157
3-hydroxybutanoyl-CoA
KAL 4.3.1.14
Succinate
AldD* 1.2.1.16
Succinate semialdehyde
Crt 4.2.1.55
Crotonoyl-CoA
AbfD 4.2.1.120 / 5.3.3.3
4-hydroxy-butyl-CoA
Cat 2.8.3.-
4-hydroxybutyrate
AbfH 1.1.1.61
1.3.99.2 Bcd
EtfAB
2.3.1.19
GcdABC 4.1.1.70
Gluta-conyl-CoA
HgdABC 4.2.1.-
2-hydroxyglutaryl-CoA
GctAB 2.8.3.12
2-hydroxyglutarate
Butyryl-P
Ptb 2.8.3.8
Butyryl-CoA
But
CtfAB 2.8.3.9
Buk 2.7.2.7
Butyrate
Enzymes
Transporters
Cytoplasm
Extracytoplasmic space