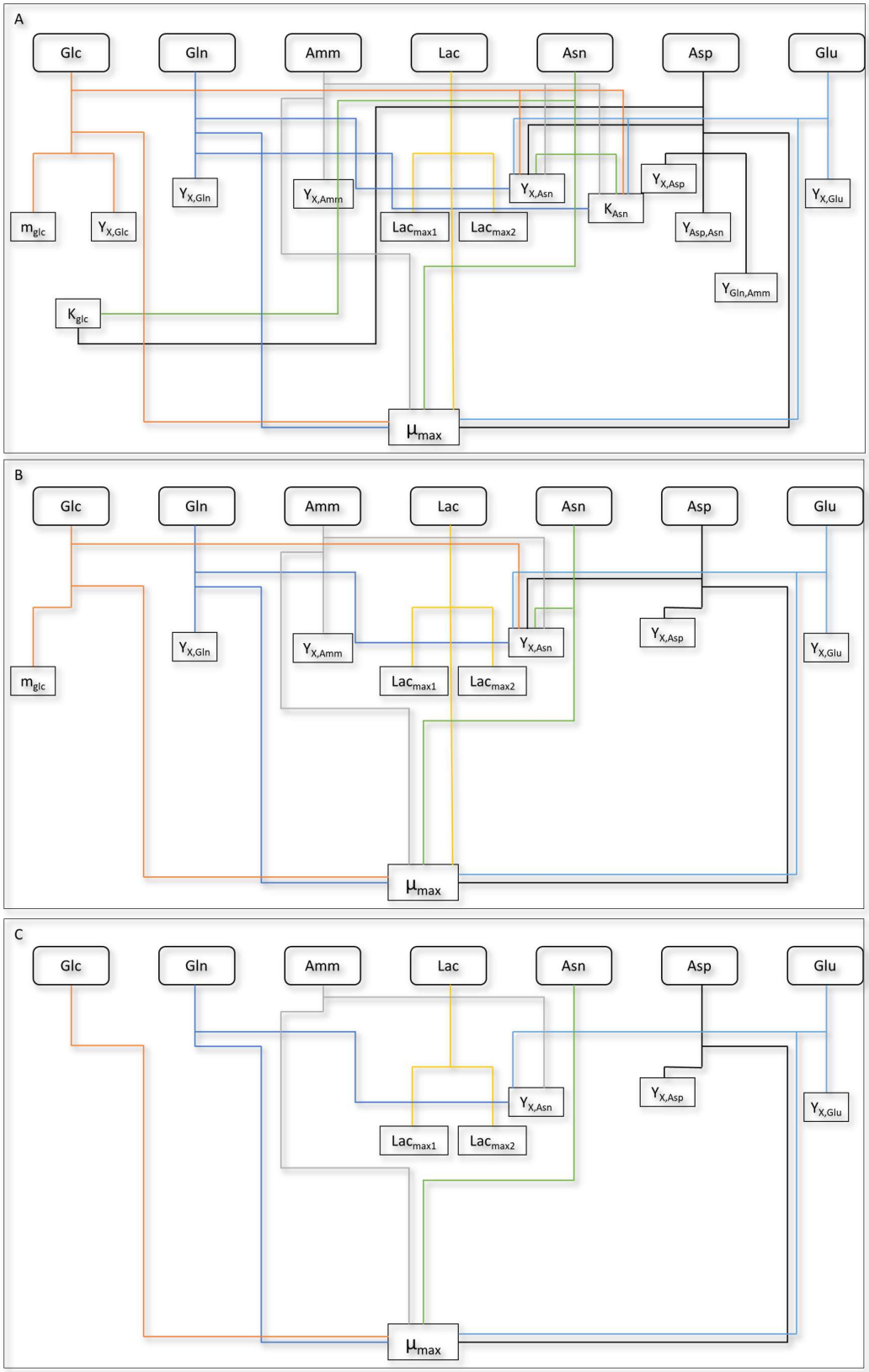

Figure S1. Correlations between the outputs (metabolites/amino acids) and the inputs (model parameters) for sensitivity index threshold set at A) 0.05, B) 0.1 and C) 0.2.

Table S1. Nomenclature of parameters used in the mathematical model

Parameter	Description
μ_{max}	maximum specific cell growth rate (h^{-1})
$\mu_{death,max}$	maximum specific cell death rate (h^{-1})
K_{Glc}	Monod constant for glucose (mM)
K_{Asn}	Monod constant for asparagine (mM)
KI_{Amm}	inhibiting constant for ammonia (mM)
KI_{Lac}	inhibiting constant for lactate (mM)
KI_{Urd}	inhibiting constant for uridine (mM)
$K_{d,Amm}$	ammonia constant for cell death (mM)
$K_{d,Urd}$	uridine constant for cell death (mM)
$Y_{mAb,X}$	yield of mAbs from cell growth ($pg \cdot cell^{-1}$)
m_{mAb}	non-growth associated term ($pg \cdot cell^{-1} \cdot h^{-1}$)
$Y_{X_{met}}$	yield of cell biomass on the metabolite, where metabolite can be glucose, lactate, ammonia, asparagine, aspartate, glutamine, glutamate, galactose and uridine ($cell \cdot mmol^{-1}$)
$Y_{Gln/Amm}$	yield of glutamine from ammonia ($mmol_{Gln} \cdot mmol_{Amm}^{-1}$)
$Y_{Lac/Glc}$	yield of lactate from glucose ($mmol_{Lac} \cdot mmol_{Glc}^{-1}$)
$Y_{Asn/Asp}$	yield of asparagine from aspartate ($mmol_{Asn} \cdot mmol_{Asp}^{-1}$)
$Y_{Asp/Asn}$	yield of aspartate from asparagine ($mmol_{Asp} \cdot mmol_{Asn}^{-1}$)
$Y_{Amm/Urd}$	yield of ammonia from uridine ($mmol_{Amm} \cdot mmol_{Urd}^{-1}$)
m_{Glc}	maintenance coefficient of glucose for other metabolic pathways of the cell ($mmol \cdot cell^{-1} \cdot h^{-1}$)
m_{lac}	maintenance coefficient of lactate for other metabolic pathways of the cell ($mmol \cdot cell^{-1} \cdot h^{-1}$)
Kc_{Gal}	regulating concentration of galactose (mM)
f_{Gal}	factor for glucose specific uptake regulation (n/a)
Lac_{max1}, Lac_{max2}	kinetic constants for the lactate consumption that occurs during the stationary phase (mM)
K_{Gal}	Monod constant for galactose (mM)
K_{Urd}	Monod constant for uridine (mM)