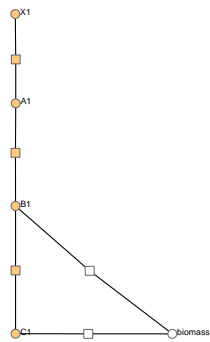


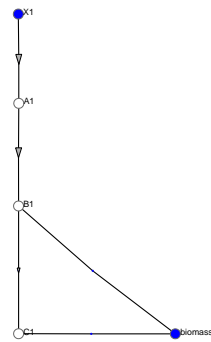
Example model 1

(a) Model and flux projection

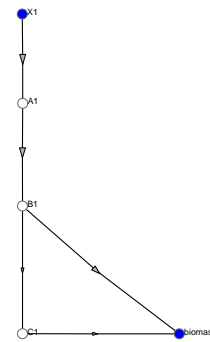
Embedded pathway (brown)



Predefined pathway flux

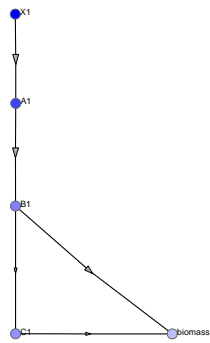


Projected, stationary flux

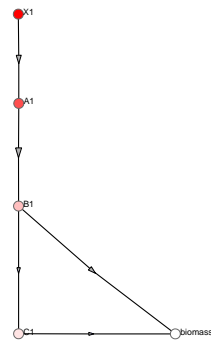


(b) Embedded model

Steady state (concentrations)

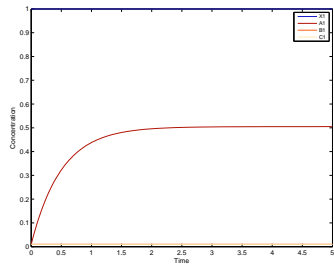


Steady state (chemical potentials)



(c) Simulation

Isolated pathway



Embedded pathway

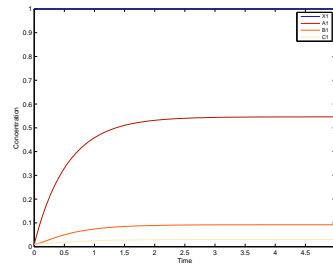
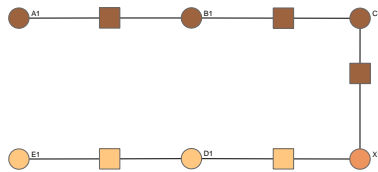


Figure 1: Example model 1

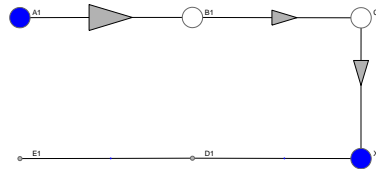
Example model 2

(a) Original models

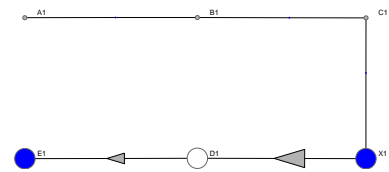
Embedded pathways (light/dark)



Predefined flux 1

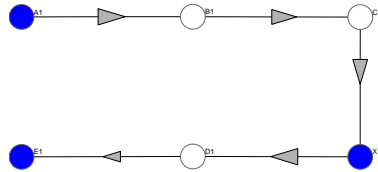


Predefined flux 2

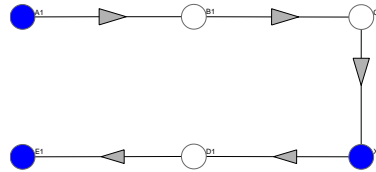


(b) Flux projection

Predefined fluxes

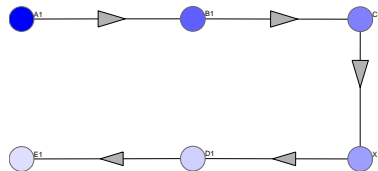


Projected flux

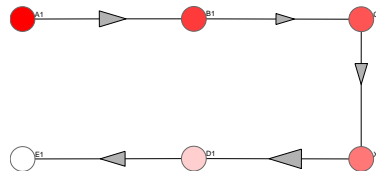


(c) Embedded model

Steady state (concentrations)

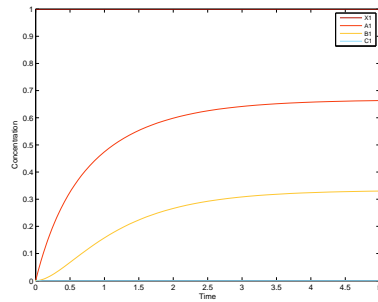


Steady state (chemical potentials)



(d) Simulation

Isolated pathway



Embedded pathway

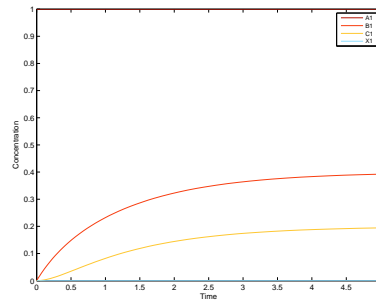
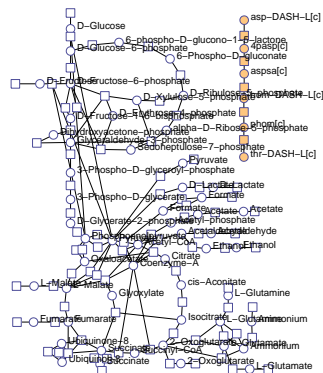


Figure 2: Example model 2

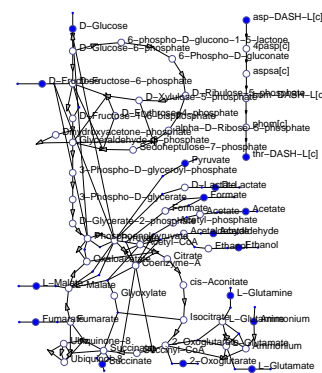
E. coli threonine pathway, embedded in central metabolism

(a) Model and flux projection

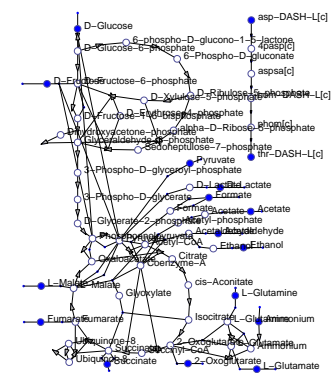
Embedded pathway (brown)



Predefined pathway flux

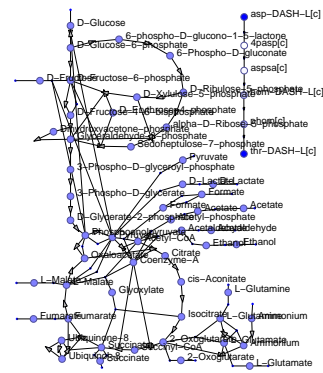


Projected, stationary flux

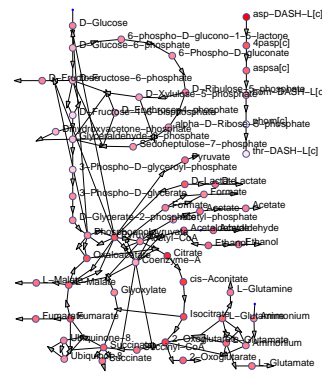


(b) Embedded model

Steady state (concentrations)

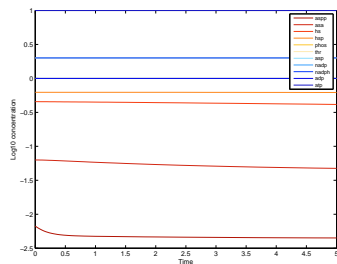


Steady state (chemical potentials)



(c) Simulation

Isolated pathway



Embedded pathway

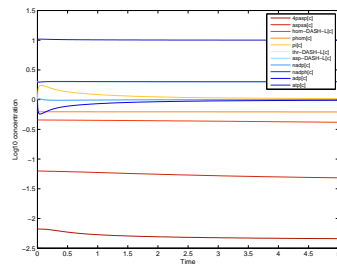
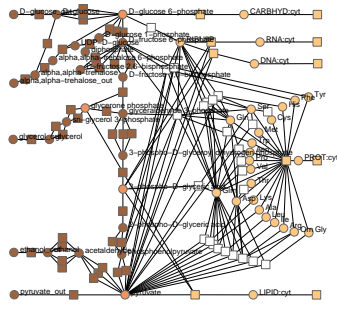


Figure 3: Threonine model

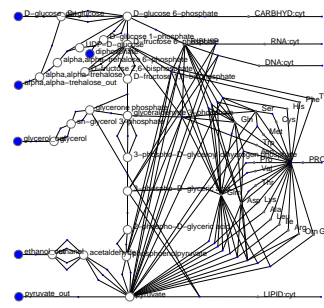
Yeast central metabolism and biomass production

(a) Original models

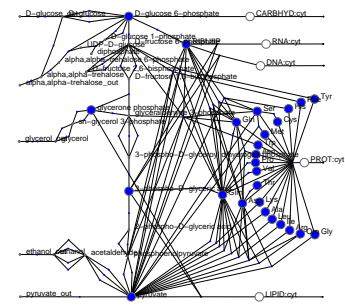
Embedded pathways (light/dark)



Predefined flux 1

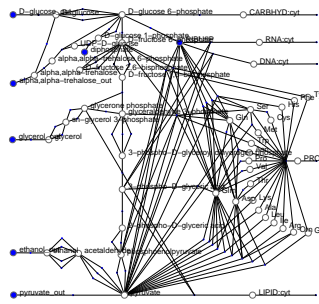


Predefined flux 2

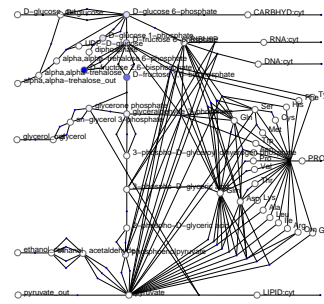


(b) Flux projection and steady state

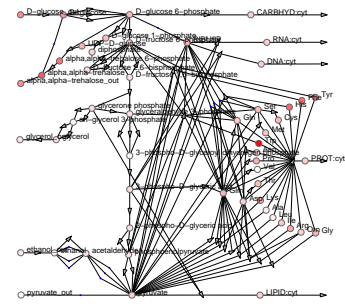
Predefined pathway fluxes



Steady state (concentrations)

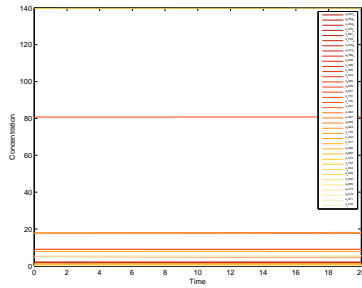


Steady state (chemical potentials)



(c) Simulation

Isolated pathway



Embedded pathway

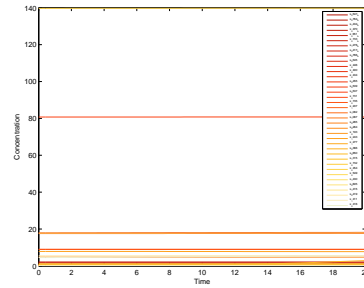
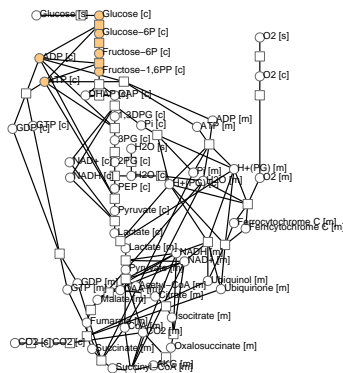


Figure 4: Part of yeast consensus model

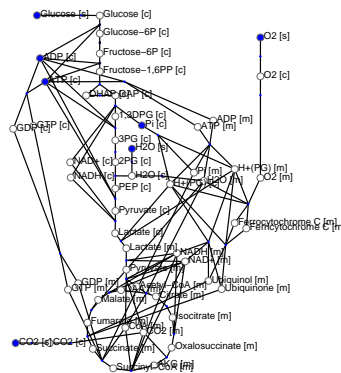
Hepatonet model

(a) Model and flux projection

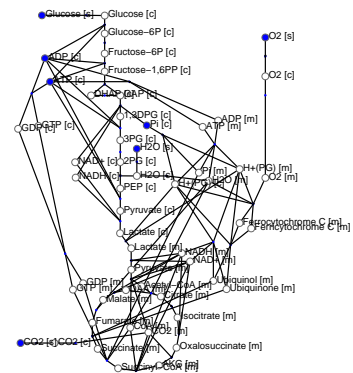
Embedded pathway (brown)



Predefined pathway flux

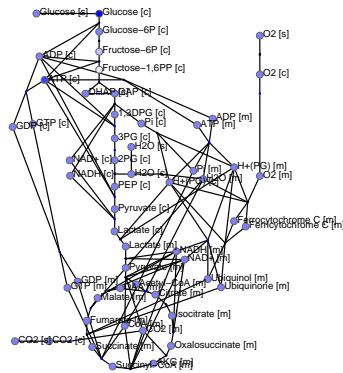


Projected, stationary flux

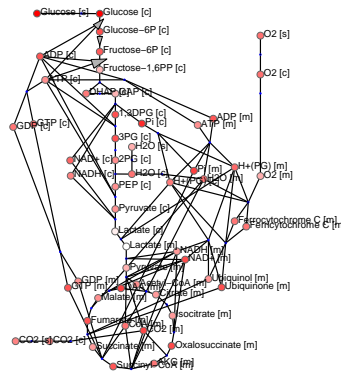


(b) Embedded model

Steady state (concentrations)

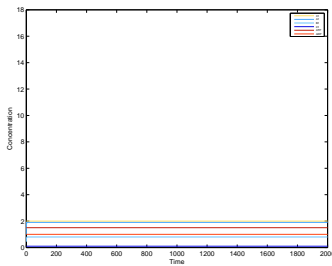


Steady state (chemical potentials)



(c) Simulation

Isolated pathway



Embedded pathway

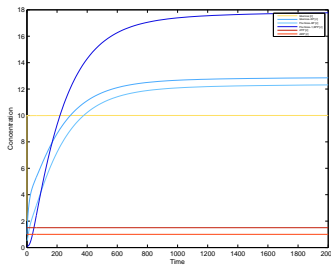


Figure 5: Part of heptonet liver model (ATP regeneration)