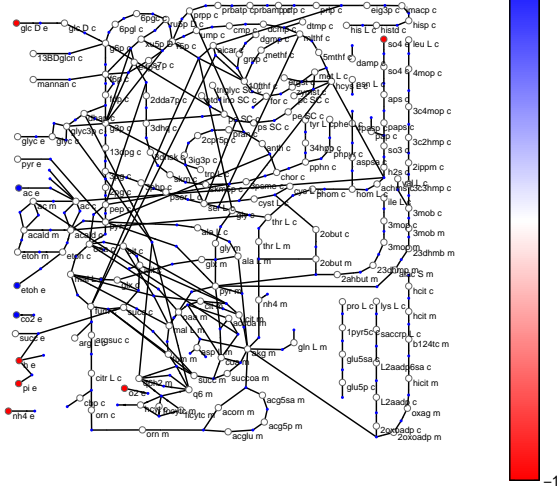
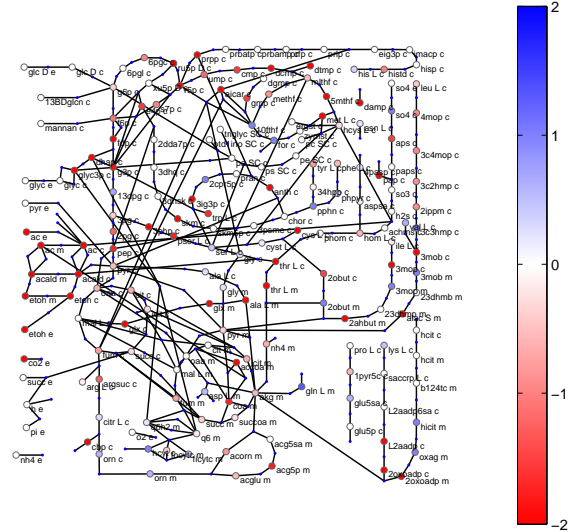


# Saccharomyces cerevisiae

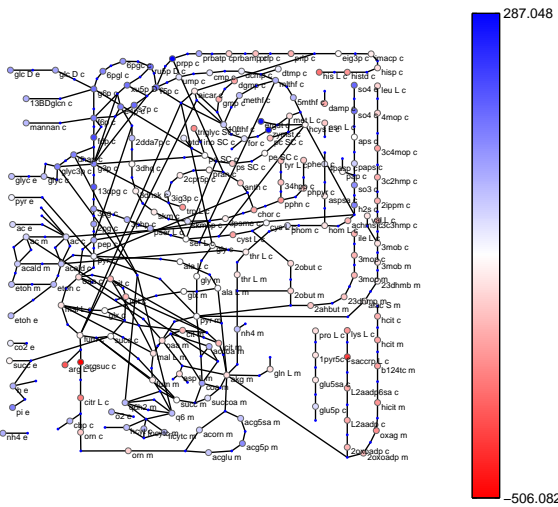
(a) Metabolic fluxes (mM/s)



(b) Concentrations (mM)



(c) Chemical potentials (kJ/mol)



(d) Thermodynamic forces (kJ/mol)

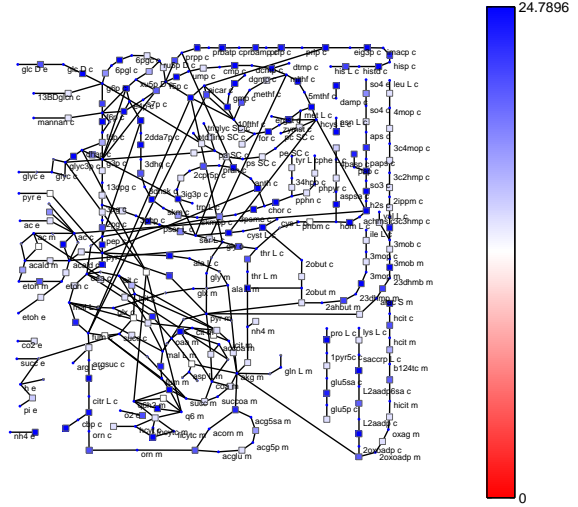
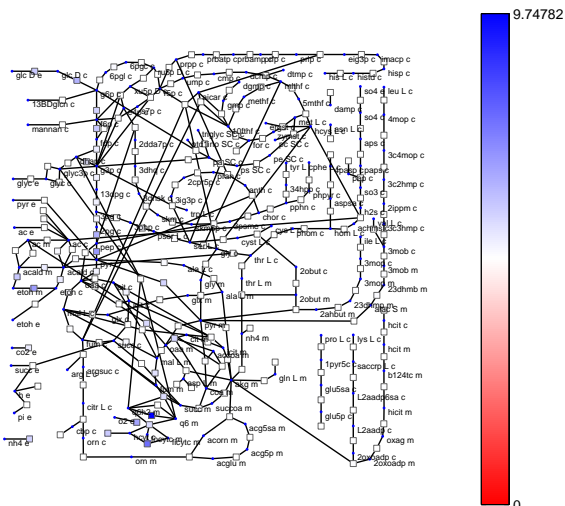
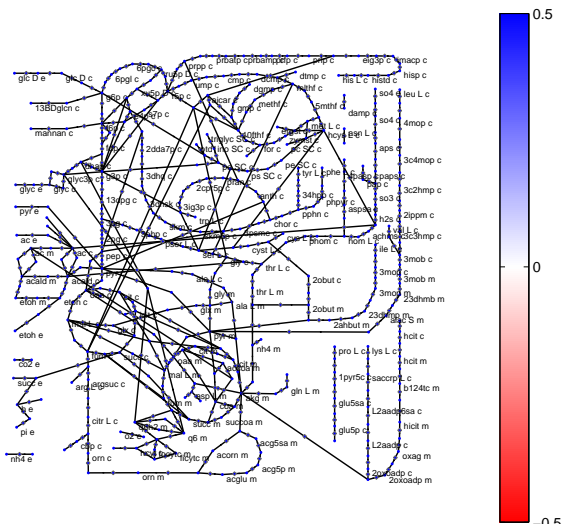


Figure 1: Model construction step by step. (a) Thermodynamically feasible flux distribution (grey arrows). (b) Metabolite levels. (c) Chemical potentials. (d) Thermodynamic driving forces.

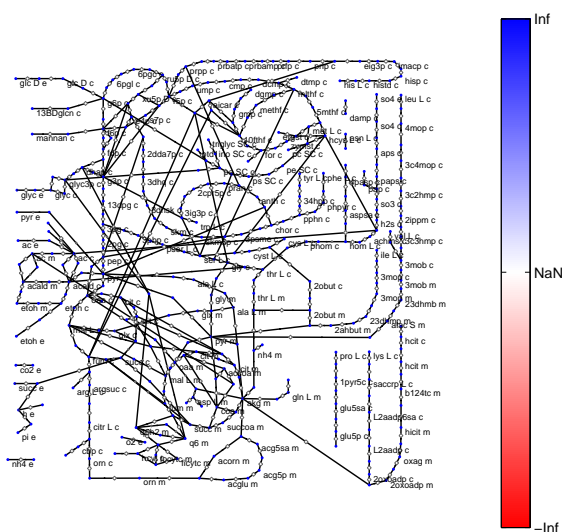
(e) Energy dissipation ( $\text{kJ}/(\text{m}^3 \text{ s})$ )



(f) Enzyme saturation



(g) Reaction elasticities



(h) Flux response

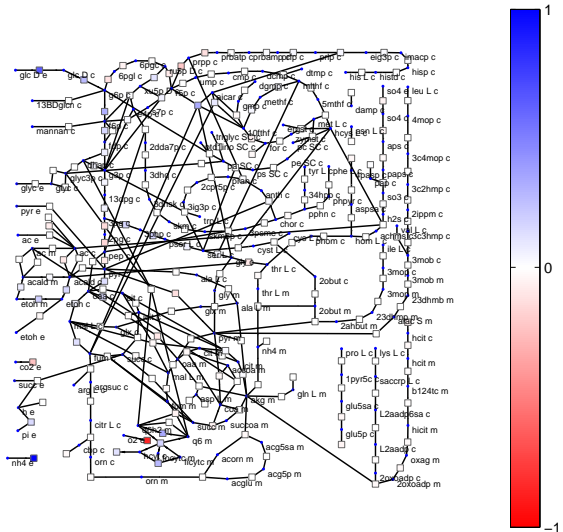


Figure 2: Model construction step by step (continued). (e) Local dissipation of Gibbs free energy (driving force multiplied by flux). (f) Saturation values. (g) Scaled elasticities. (h) Scaled enzyme response coefficients, predicted by elasticity sampling. Positive values are shown in blue, negative values in red, zero values in white.