

Flux Balance Analysis

Consider the *E coli* core metabolic model given

- Perform FBA and find the biomass flux for the model
- Identify 5 single lethal genes and single lethal reactions
- How does the growth rate vary if the growth substrate is replaced by a different carbon source (say succinate or acetate?)
- Identify the variability of 'fumarate reductase(FRD7)' reaction in *E coli* growing on glucose
- Identify how robust the metabolic network is to changes in the glucose uptake rate. (Fix the oxygen uptake rate to $17 \text{ mmol gDW}^{-1} \text{ hr}^{-1}$)