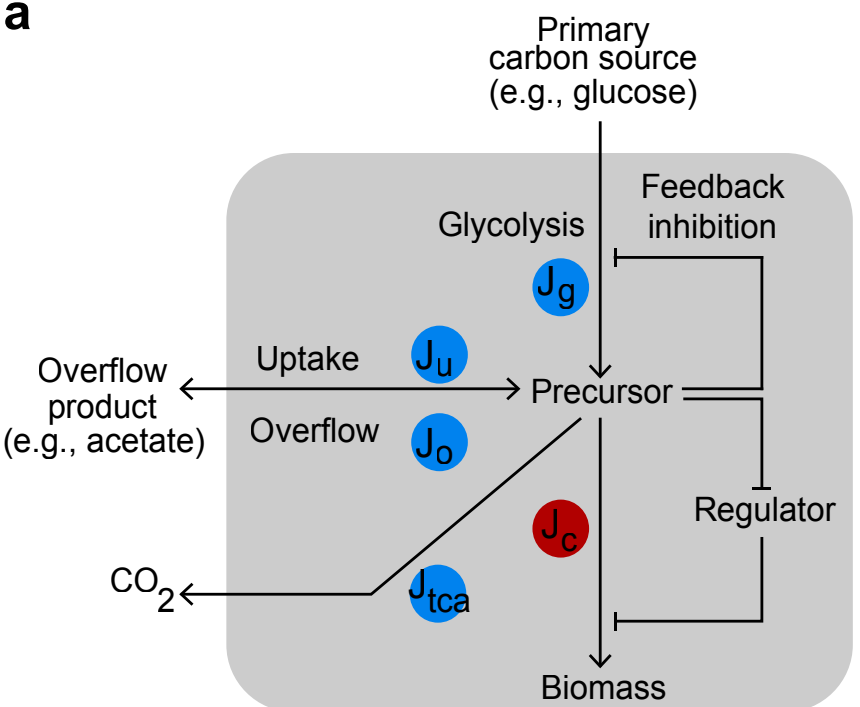
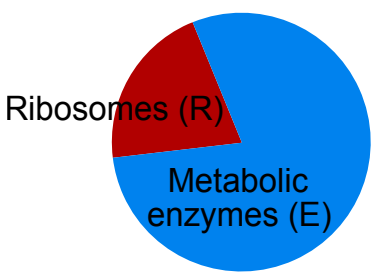
Build biophysical model of cell growth

a



Proteome resource allocation



Growth rate is limited by carbon or energy

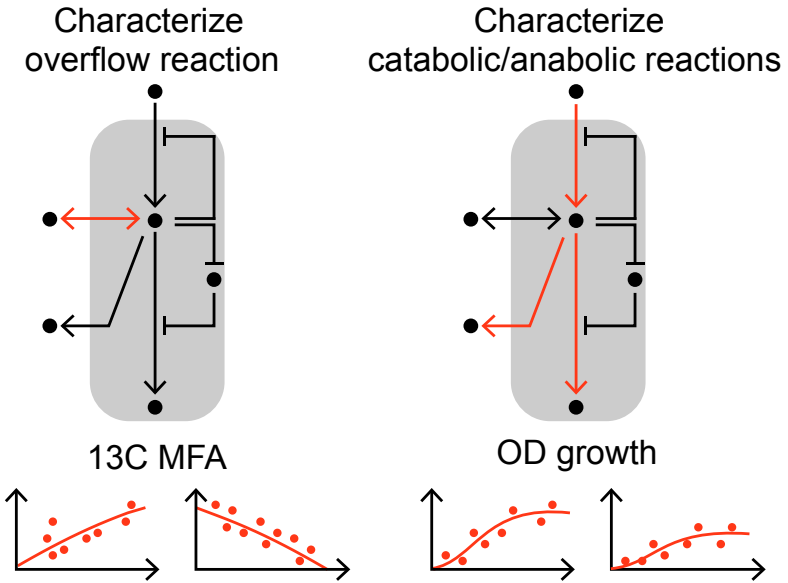
$$g = \min(g_c, g_e)$$

$$g_c \sim J_c$$

$$g_e \sim \underbrace{n_g J_g}_{\text{substrate-level phorsphorylation}} + \underbrace{n_{tca} J_{tca}}_{\text{respiration}} + \underbrace{n_o (J_o - J_u)}_{\text{fermentation}}$$

Fit kinetic parameters using data

b



Coexistence study and model simplification

c