Input: Set M of candidate reactions
A cost $c_r > 0$ for each reaction r of M
Network N of reactions to complete
Set B of biomass metabolites to produce

Output: Sets of candidate reactions to add to N

$\alpha \leftarrow 0$

$\beta \leftarrow 2|M|$

Loop Until $|\alpha - \beta| \leq 1$

$\delta \leftarrow \lfloor(\alpha + \beta)/2\rfloor$

The objective to maximize is $\delta f_b - \sum_{r \in M} c_r f_r$

where f_b is the flux of the biomass reaction
c_r is the cost of reaction r
f_r is the flux of reaction r

Generate LP with reactions N and M

Solve LP

If $f_b > 0$ Then // organism is growing

Let R be the set of reactions $r \in M, f_r > 0$

Keep R in the Solution set

If R has less reactions than the last iteration

Then $\beta \leftarrow \delta$

Else $\alpha \leftarrow \delta$