How to use gDel_minRN

About gDel_minRN

gDel_minRN calculates gene deletion strategies by mixed integer linear programming to achieve growth coupling by repressing the maximum number of reactions via gene-protein-reaction relations.

Necessary environments

An environment where MATLAB, CPLEX, and COBRA Toolbox can run is required.

Run the test code for gDel_minRN

The test code is run by the following command:

>> test()

"test()" employs "initCobraToolbox" to initialize the COBRA Toolbox environment, loads a MATLAB matfile "e_coli_core.mat" containing a core metabolic model of E.coli, and employs "gDel_minRN" to obtain the gene deletion strategy for growth coupling of succinate.

Example code

Before using example codes, please download iML1515.mat from
http://bigg.ucsd.edu/models/iML1515

"example 1" employs gDel_minRN to calculate the gene deletion strategy for biotin.
"example 2" employs gDel_minRN to calculate the gene deletion strategy for riboflavin.
"example 3" employs gDel_minRN to calculate the gene deletion strategy for pantothenate.

The calculation results are available in "**biotinStrategy.mat**," "**riboflavinStrategy.mat**," and "**pantothenateStrategy.mat**."

In the output, "**vg**" is the 0/1 vector indicating which genes should be deleted.

0: genes to be deleted. 1: genes to remain.

Details are described in the comments in the source codes.