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Authors: Jingjing Liu, Zhipeng Xie, Hyun-dong Shin, Jianghua Li, Guocheng Du, Jian Chen, Long Liu

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Rewiring the reductive tricarboxylic acid pathway and L-malate transport pathway of *Aspergillus oryzae* for overproduction of L-malate

Jingjing Liu[1,2], Zhipeng Xie[3], Hyun-dong Shin[4], Jianghua Li[2,*], Guocheng Du[2], Jian Chen[2], Long Liu[1,*]

[1]Key Laboratory of Carbohydrate Chemistry and Biotechnology, Ministry of Education, Jiangnan University, Wuxi 214122, China

[2]Key Laboratory of Industrial Biotechnology, Ministry of Education, Jiangnan University, Wuxi 214122, China

[3]Hangzhou Bioking Biochemical Engineering Co., Ltd, Hangzhou 311106, China

[4]School of Chemical and Biomolecular Engineering, Georgia Institute of Technology, Atlanta, GA 30332, USA

[*]Corresponding authors:

Jianghua Li, Tel: +86-510-85329031, Fax: +86-510-85918309, E-mail: lijianghua@jiangnan.edu.cn

Long Liu, Tel: +86-510-85918312, Fax: +86-510-85918309, E-mail: longliu@jiangnan.edu.cn

Highlights

- Overexpression of native pyruvate carboxylase and malate dehydrogenase in the rTCA pathway.
- Construction of oxaloacetate anaplerotic reaction.
- Overexpression of a C4-dicarboxylate transporter gene from *A. oryzae* and an L-malate permease gene from *Schizosaccharomyces pombe*
- Overexpression of the 6-phosphofructokinase which was identified as a potential limiting step for L-malate synthesis.