



大连理工大学

DALIAN UNIVERSITY OF TECHNOLOGY

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April 2020 – May 2020

The Bloom Time at DUT Campus in Spring

Source: DUT News Center, Publicity Department



When winter passes away and spring returns, everything comes back to life. Recently, the main campus of Dalian University of Technology has witnessed the blooming of magnolias and peach blossoms. Please enjoy these photos to celebrate this wonderful season!





The Power of DUT Alumni in Fighting against COVID-19

Source: Alumni Office



During the epidemic period, a group of Dalian people living in Tokyo distributed masks to Japanese citizens for free on Ginza Street of Tokyo, in order to thank the Japanese people for their sincere assistance to China when COVID-19 raged at the beginning of the new year.

The initiator of this charity event, Liu Yanlin, is an alumna of DUT. This activity was also strongly supported by the DUT Alumni Association in Japan and Dalian General Chamber of Commerce in Japan.

The packing bags had a heartwarming message printed on them which says “海上生明月，天涯共此时”, when translated to English,

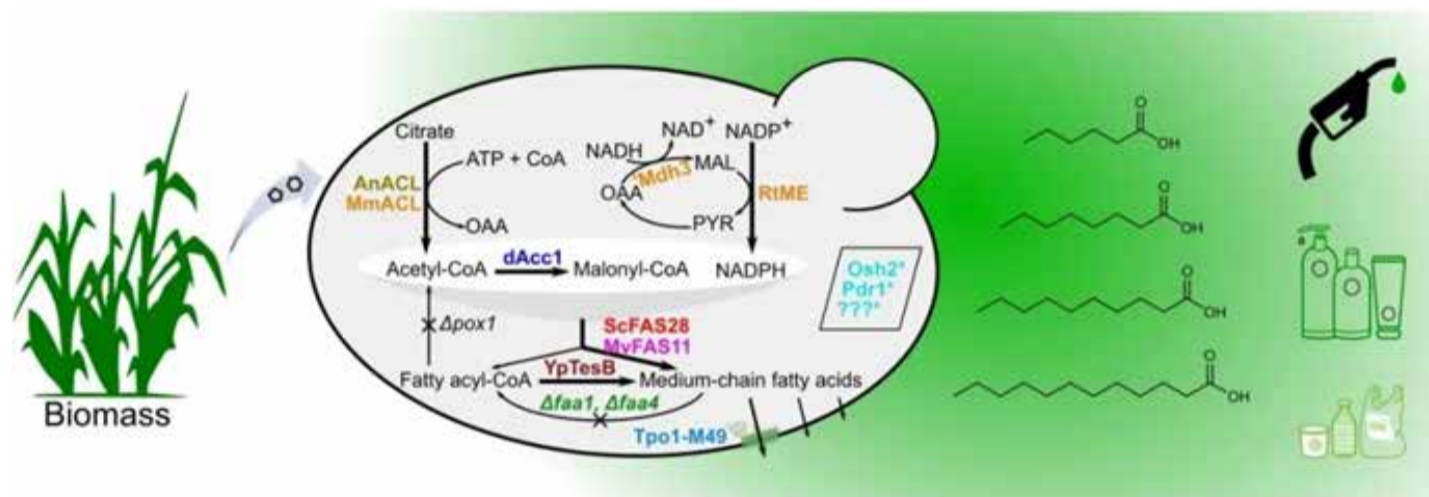
the short message says “As the bright moon shines over the sea, from far away, you share this moment with me”. By doing this, the alumni hoped to show that people in different nations and regions should support each other and work together to win this battle.



DUT Made Significant Progress on Biocatalytic Transformation

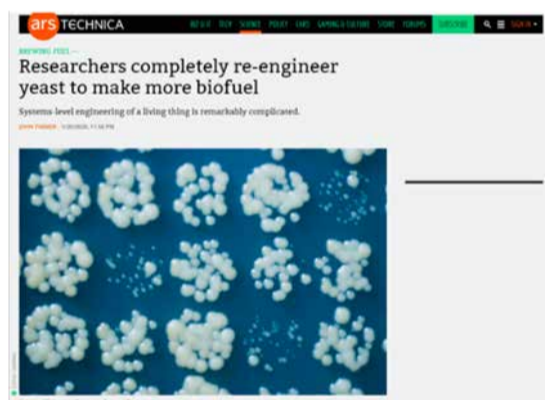
Source: School of Bioengineering

Recently, together with Prof. Jens Nielsen from Chalmers University of Technology, Prof. Zhu Zhiwei from DUT School of Bioengineering, published their latest research results in the world's top journal *Nature Catalysis*: "Multidimensional engineering of *Saccharomyces cerevisiae* for efficient synthesis of medium-chain fatty acids", which marks that the research work of DUT in the field of biocatalytic transformation of medium-chain fatty acids has entered the forefront of the world.



Various media have reported this article. The famous technology review website Arstechnica.com published a comment article named "Brewing fuel—Researchers completely re-engineer yeast to make more biofuel", and

triggered hundreds of comments by experts and scholars. This article has also been recommended by the Spotlight column of Trends in Biotechnology, an authoritative review journal in the field of bioengineering.



The abstract of the article

Medium-chain fatty acids (MCFAs; C₆–C₁₂) are valuable molecules used for biofuel and oleochemical production; however, it is challenging to synthesize these fatty acids efficiently using microbial biocatalysts due to the cellular toxicity of MCFAs. In this study, both the endogenous fatty acid synthase (FAS) and an orthogonal bacterial type I FAS were engineered for MCFA production in the yeast *Saccharomyces cerevisiae*. To improve cellular tolerance to toxic MCFAs, the researchers performed directed evolution of the

membrane transporter Tpo1 and strain adaptive laboratory evolution, which elevated the MCFA production by 1.3 ± 0.3 - and 1.7 ± 0.2 -fold, respectively. The researchers therefore further engineered the highly resistant strain to augment the metabolic flux towards MCFAs. This multidimensional engineering of the yeast at the single protein/enzyme level, the pathway level and the cellular level, combined with an optimized cultivation process, resulted in the production of >1 g l⁻¹ extracellular MCFAs—a more than 250-fold improvement over the original strain.

Pleaser refer to the following websites - copy and go to browser to visit - to get more information about the article:

※ Zhu, Z. et al. Multidimensional engineering of *Saccharomyces cerevisiae* for efficient synthesis of medium-chain fatty acids. *Nat Catal* 3, 64-74, doi:10.1038/s41929-019-0409-1 (2020).

<https://www.nature.com/articles/s41929-019-0409-1>

※ Nature chemistry community blog

Behind the paper: Efficient synthesis of valuable chemicals by engineered Baker's yeasts.

<https://chemistrycommunity.nature.com/users/336448-zhiwei-zhu/posts/57198-efficient-synthesis-of-valuable-chemicals-by-engineered-baker-s-yeasts>

※ Arstechnica.com

Brewing fuel—Researchers completely re-engineer yeast to make more biofuel

<https://arstechnica.com/science/2020/01/making-fuel-molecules-in-yeast-much-harder-than-you-d-imagine/>

※ Trends in Biotechnology

Multidimensional Metabolic Engineering for Constructing Efficient Cell Factories

[https://www.cell.com/trends/biotechnology/fulltext/S0167-7799\(20\)30055-X](https://www.cell.com/trends/biotechnology/fulltext/S0167-7799(20)30055-X)