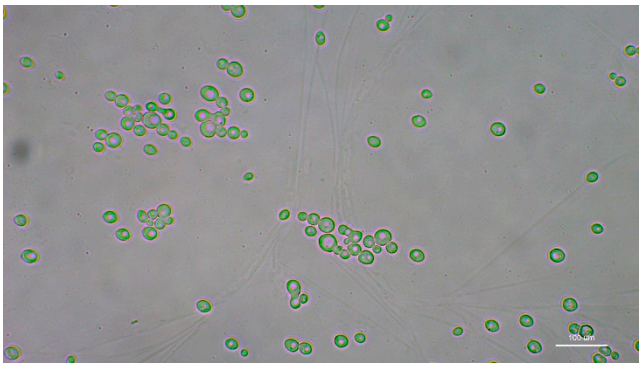
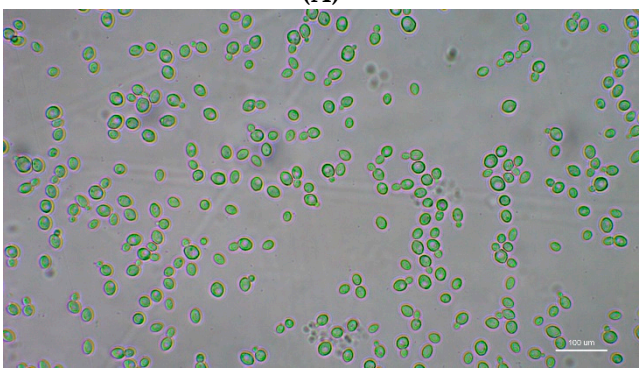
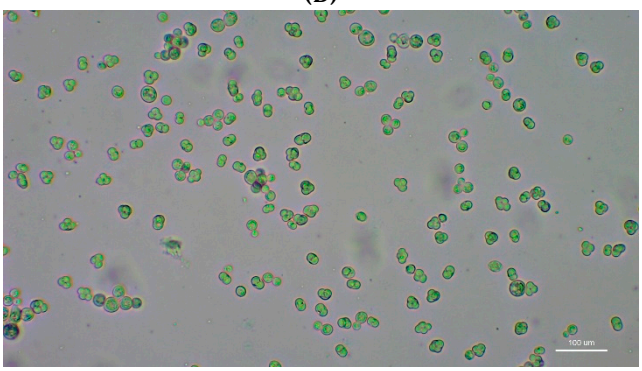
Supplementary Materials:



(A)



(B)



(C)

Figure S1. Hybridization acquisition and verification of recombinant diploid strain. (**A**) Hybrid morphology of recombinant haploid yeasts. (**B**) Diploid yeast morphology after hybridization. (**C**) Verification of sporulation of recombinant diploid yeast. (at ×400 magnification).

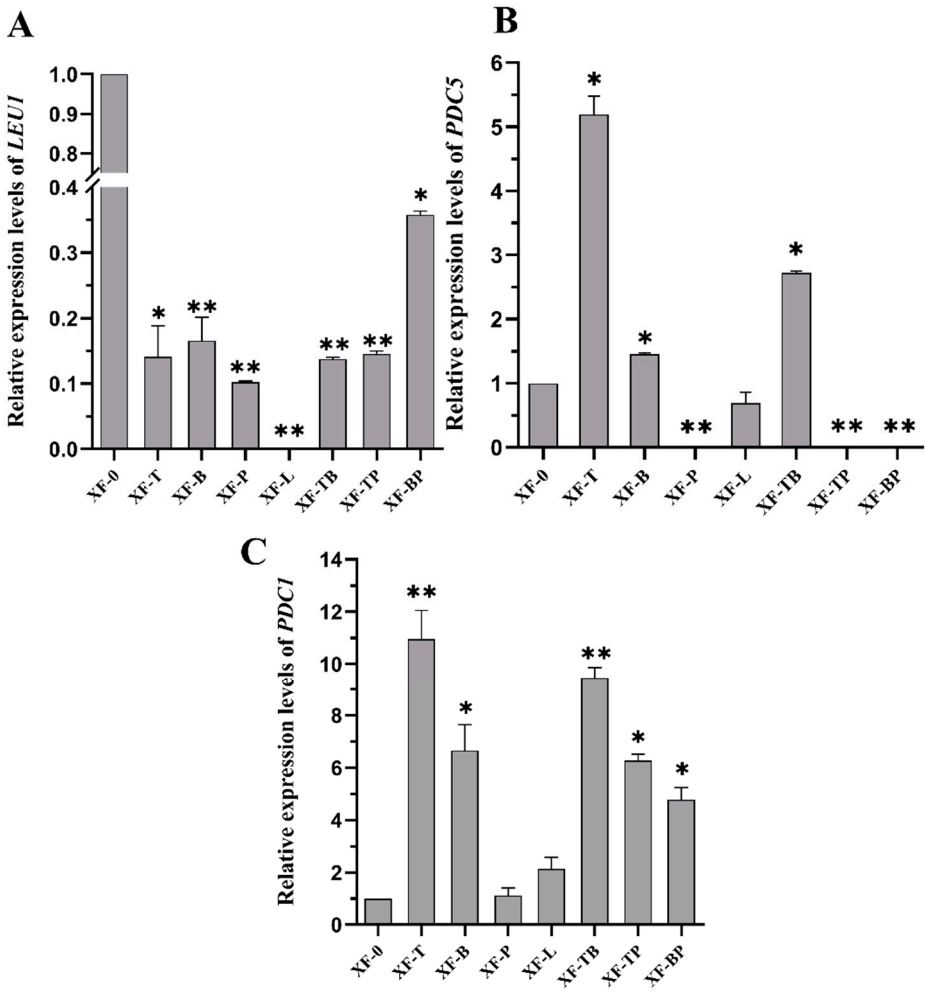


Figure S2. Relative expression level of *LEU1* (**A**), *PDC5* (**B**), and *PDC1* (**C**) in different recombinant strains. (* $p < 0.05$,** $p < 0.01$).

Table S1. Strains and plasmids used in this study.

Strains or plasmids	Relevant characteristics	Reference or provider
	Strains	
XF1	Diploid wild-type yeast strain	This lab
XF-B	*ΔBAT2:: loxP*	This lab[24]
XF-T	*ΔTHI3:: loxP*	This lab[23]
XF-TB	*ΔTHI3::ΔBAT2:: loxP*	This lab[24]
XFa7	MATa，haploid yeast strain from XF1	This lab

XFα6	MATα，haploid yeast strain from XF1	This lab
XFa7-T	MATa *ΔTHI3:: loxP*	This lab
XFα6-T	MATα *ΔTHI3:: loxP*	This lab
XFa7-B	MATa *ΔBAT2:: loxP*	This lab
XFα6-B	MATα *ΔBAT2:: loxP*	This lab
XFa7-P	MATa *ΔPDC5:: loxP*	This study
XFα6-P	MATα *ΔPDC5:: loxP*	This study
XFa7-L	MATa *ΔLEU1:: loxP*	This study
XFα6-L	MATα *ΔLEU1:: loxP*	This study
XFa7-BP	MATa*ΔBAT2::ΔPDC5:: loxP*	This study
XFα6-BP	MATα*ΔBAT2::ΔPDC5:: loxP*	This study
XFa7-TP	MATa*ΔTHI3::ΔPDC5:: loxP*	This study
XFα6-TP	MATα*ΔTHI3::ΔPDC5:: loxP*	This study
XF-P	*ΔPDC5:: loxP*	This study
XF-L	*ΔLEU1:: loxP*	This study
XF-BP	*ΔBAT2::ΔPDC5:: loxP*	This study
XF-TP	*ΔTHI3::ΔPDC5:: loxP*	This study
	Plasmids	
PUG6	Kanr, containing Amp+ and loxP-kanMX-loxP gene disruption cassette	This lab

PSH65	Zeor, Cre recombinant enzyme expression vector	This lab

Table S2. List of the Primer sequences used in the current study.

Primers	**sequence (5′→ 3′)** [a]
	For disruption cassette construction
PDC5-F1	CTCCATATCCAAAGGTCGCG
PDC5-R1	TCGAGAATGGCAGCTCTTATATAC
PDC5-F2	TATGTTCTTGTAATTACTTTTCTG
PDC5-R2	GATCATAGCTAAAGGTAC
P-*lox*P-F	GTATATAAGAGCTGCCATTCTCGATTCGTACGCTGCAGGTC
P-*lox*P-R	CAGAAAAGTAATTACAAGAACATAGCGTTGGCCGATTCAT
LEU1-F1	GCTACTAAGGCGTCATTACTC
LEU1-R1	TTGAGAAAATTCAGCGGAAAC
LEU1-F2	CTGGTATGGAAAGAGCCTTAG
LEU1-R2	GTAGAAGCACAACGTTCATAG
L-*loxP*-F	CGCTGTTTCCGCTGAATTTTCTCAATTCGTACGCTGCAGGTC
L-*loxP*-R	TAGGCTAAGGCTCTTTCCATACCAGGCGTTGGCCGATTCAT
	For PCR verification
PDC5-A	CGTAAATGCATACTACATGCG
PDC5-D	CACCACCCTCTTCAATTAGC
LEU1-A	AGTATTCGATGATTGAAGGCCGC
LEU1-D	GTAGAAGCACAACGTTCATAG

[a] Overlaping sequence for fusion PCR is underlined.