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The names of the authors:

Li Zhang, Zhijie Cheng, Jing Jiang, Xinyu Zhou, Longjun Han, Lei Yang, Jian Gao*

The affiliation(s) and address(es) of the author(s):

Li Zhang: zlyzhangli@163.com, Yancheng Institute of Technology

Zhijie Cheng: 630721864@qq.com, Yancheng Institute of Technology

Jing Jiang: 2247067026@qq.com, Yancheng Institute of Technology

Xinyu Zhou: 1437478505@qq.com, Yancheng Institute of Technology

Longjun Han: 2939744191@qq.com, Yancheng Institute of Technology

Lei Yang: lyang305@hotmail.com, Yancheng Institute of Technology

Jian Gao: gaojian@ycit.edu.cn, Yancheng Institute of Technology

The e-mail address, telephone and fax numbers of the corresponding author:

Jian Gao

Tel: +86-515-88298960

Fax: +86-515-88298965

E-mail: gaojian@ycit.edu.cn

Address: No. 211 Jianjun East Road, Yancheng City, Jiangsu Province

College of Marine and Bioengineering, Yancheng Institute of Technology

Postcode: 224051

P.R. China

Supplementary files

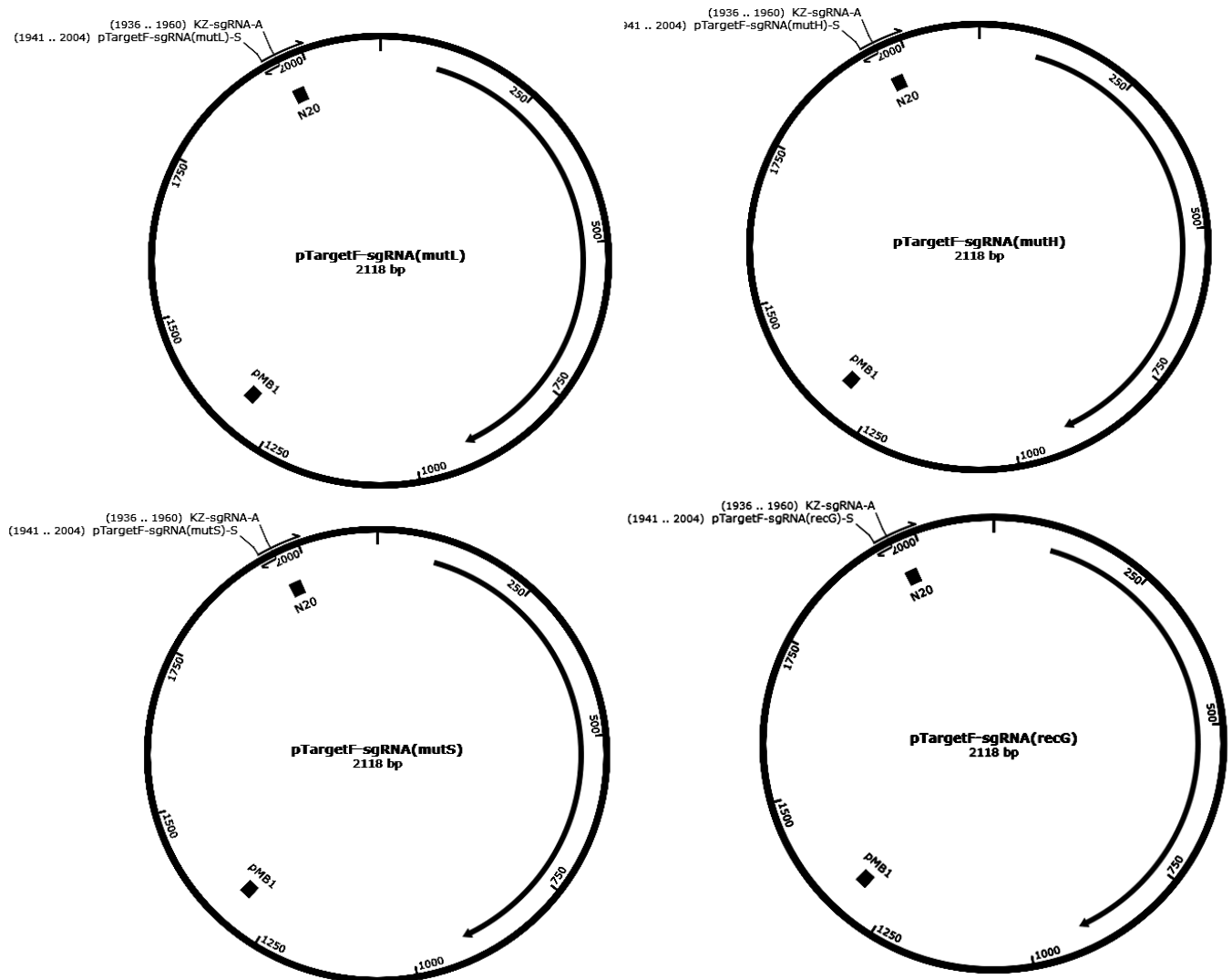


Fig. S1 Schematic diagram of plasmid structure of pTargetF-N20-*mutL*, pTargetF-N20-*mutH*, pTargetF-N20-*mutS* and pTargetF-N20-*recG*

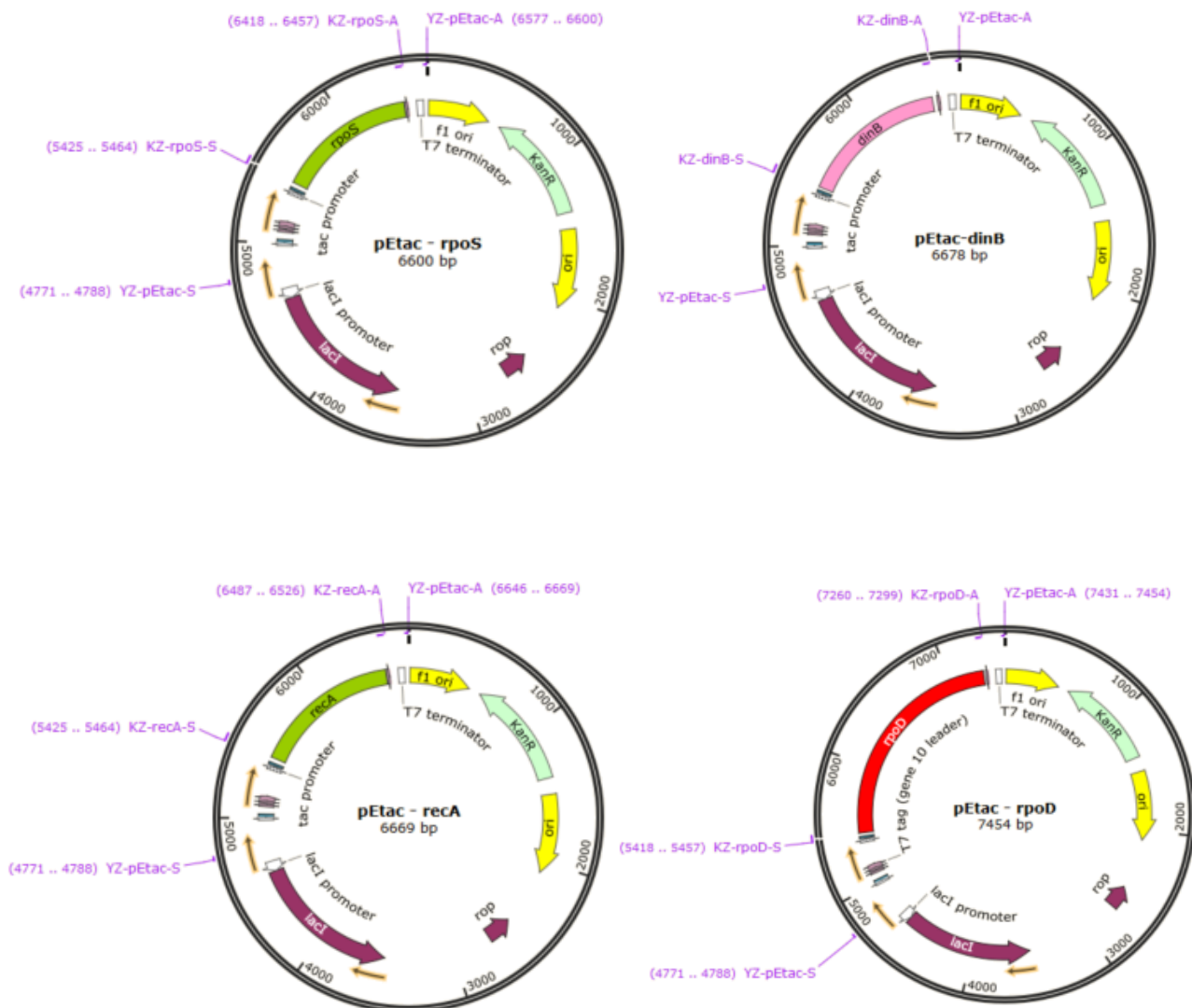


Fig. S2 Schematic diagram of plasmid structure of pEtac-*rpoS*, pEtac-*dinB*, pEtac-*recA* and pEtac-*rpoD*

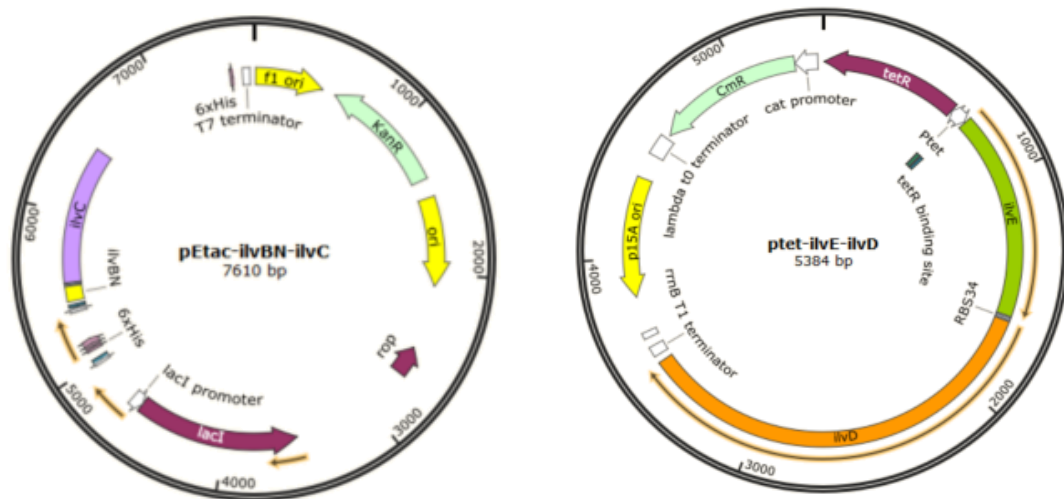
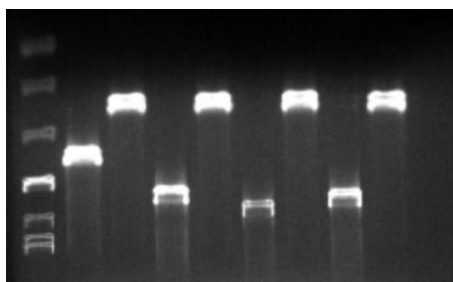
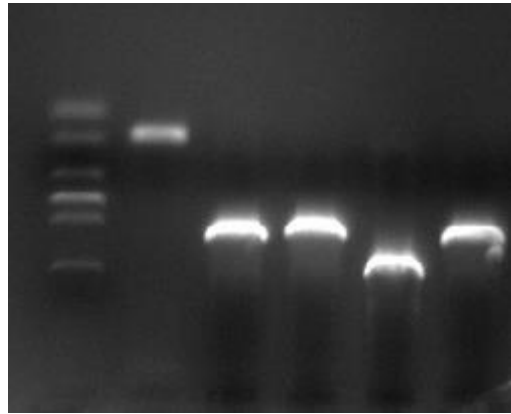


Fig. S3 Schematic diagram of the structure of tandem expression of double plasmids *pEtac-ilvBN-ilvC* and *ptet-ilvE-ilvD*



Marker 1 2 3 4 5 6 7 8

Fig. S4 Gel electrophoresis verification diagram of single gene knockout strain
Marker: 10000 bp; 1: *mutH* wild type strain; 2: *mutH* knockout strain; 3: *mutL* wild type strain; 4: *mutL* knockout strain; 5: *mutS* wild type strain; 6: *mutS* knockout strain; 7: *recG* wild type strain; 8: *recG* knockout strain



Marker 1 2 3 4 5

Fig. S5 Gel electrophoresis verification of single gene overexpressed bacteria

Marker: 2000 bp; 1: pEtac; 2: pEtac-*dinB*; 3: pEtac-*rpoS*; 4: pEtac-*rpoD*; 5: pEtac-*recA*

Table S1 Primer sequences

Primer	Sequences (5'→3')
KZ- <i>recG</i> (u)-S	GGATCCCGTTTCTGCGATTATTCGTA
KZ- <i>recG</i> (u)-A	GGTCTTCTCACTGCCGCCTTGGCACTTACCCTGCAGCCTG
KZ- <i>recG</i> (d)-S	AAGGCGGCAGTGAGAAGACC
KZ- <i>recG</i> (d)-A	GAATTCAGCAACGGTCTGTCAATAAT
KZ- <i>mutH</i> (u)-S	GGATCCGTGAAGAAGTACGGAATTAC
KZ- <i>mutH</i> (u)-A	GCGGCAGGTCAAAGCGATGGGTCATGATACCTTGATTAAA
KZ- <i>mutH</i> (d)-S	CCATCGCTTTGACCTGCCGC
KZ- <i>mutH</i> (d)-A	CTGCAGCACCGAGTCGAGGCTAAAGA
KZ- <i>mutL</i> (u)-S	GAATTCTATGGGTGCTCTCTAACCGT
KZ- <i>mutL</i> (u)-A	GCAGGCTCGCCTTACTGATACAATCGTCCTTAGTTTGGCA
KZ- <i>mutL</i> (d)-S	TATCAGTAAGGCGAGCCTGC
KZ- <i>mutL</i> (d)-A	CTGCAGGGGAAAGCCTTTGTGGATCA
KZ- <i>mutS</i> (u)-S	GGATCCCTTCACGCTTTGCAGGCTGG
KZ- <i>mutS</i> (u)-A	AAGACTATCGGGAATTGTTAGGGGTTATGTCCGGTTCCCT
KZ- <i>mutS</i> (d)-S	AGGGAACCGGACATAACCCCTAACAAATCCCGATAGTCTTTTG
KZ- <i>mutS</i> (d)-A	GAATTCTCGTTAGTGATTTCATAATATGTG
KZ-sgRNA-A	ACTAGTATTATACCTAGGACTGAGC
pTargetF-sgRNA(<i>mutS</i>)-S	gtcctaggtataataactagtgtgcaactattggcgcattgcgttttagagctagaaatagcaagt
pTargetF-sgRNA(<i>mutH</i>)-S	gtcctaggtataataactagtgtactgttgataccggttgagtttagagctagaaatagcaagt
pTargetF-sgRNA(<i>mutL</i>)-S	gtcctaggtataataactagtttcacgcaccgcagaacagcgttttagagctagaaatagcaagt
pTargetF-sgRNA(<i>recG</i>)-S	gtcctaggtataataactagtccggtttatccaacaacggagtttagagctagaaatagcaagt

Table S2 Primer sequences

Primer	Sequences (5'→3')
KZ- <i>dinB</i> -S	TCACACAGGAAACAGAATTCATGCGTAAAATCATTCATGT
KZ- <i>dinB</i> -A	AAGCTTGTCGACGGAGCTCtcataatcccagcaccagtt
KZ- <i>recA</i> -S	AGAATTCGAGCTCCGTCGACATGGCTATCGACGAAAACAA
KZ- <i>recA</i> -A	TGGTGGTGGTGGTGGTCTCGAGTTAAAAATCTTCGTTAGTTT
KZ- <i>rpoD</i> -S	AGGAAACAGAATTCGAGCTCATGGAGCAAAACCCGCAGTC
KZ- <i>rpoD</i> -A	TGCTCGAGAAGCTTGTCGACTTAATCGTCCAGGAAGCTAC
KZ- <i>rpoS</i> -S	TGCTCGAGAAGCTTGTCGACTTAATCGTCCAGGAAGCTAC
KZ- <i>rpoS</i> -A	TGGTGGTGGTGGTGGTCTCGAGTTACTCGCGGAACAGCGCTT

Table S3 Primer sequences

Primer	Sequences 5'→3')
KZ- <i>ilvBN</i> -S	GAAACAGAATTCATGACTAC
KZ- <i>ilvBN</i> -A	gtaaatccacCTAGTATTTCTCCTCTTTGAGCTCctacggcgca
KZ- <i>ilvC</i> -S	aatgcgccgtagGAGCTCAAAGAGGAGAAATACTAGgtggatttac
KZ- <i>ilvC</i> -A	tcttcatttaaatcatttggtggtcggc
KZ- <i>ilvD</i> -S	ttaatcaataaGAGCTCAAAGAGGAGAAATACTAGatgcctaagtaccgttcgc
KZ- <i>ilvD</i> -A	AAGCTTGTCGACttaaccccc
KZ- <i>ilvE</i> -S	gagaaaagAATTCatgaccacgaagaaag
KZ- <i>ilvE</i> -A	acttaggcacCTAGTATTTCTCCTCTTTGAGCTCttattgatta