

**Table S5. List of primers used in this study.**

<b>Primer</b>	<b>Sequence</b>	
pTE1_for	CCTTAATTAAACTCCGCCGAACGTA CTG	Creation sgRNA on plasmids
pTE1_rev	CCTTAATTA AAAAAGCAAAAAGGAAGGTACAAAAAAGC	Creation sgRNA on plasmids
tpsA_2_fw	CAGCTGTGCGTTCTCCCATCGTTTTAGAGCTAGAAATAGCAAG	3' tpsA gRNA (target)
tpsA_2_rv	GATGGGAGAAGCGACAGCTGGACGAGCTTACTCGTTTTCG	5' tpsA gRNA (target)
TS1_tpsA_fw	GTTGTTGCTCGTTAAGTCGGGG	5' tpsA flank (repair DNA fragment)
TS1_tpsA_rv	ATAAGCCAGTCTCGCCCTTTGTGATTGTTCAACGGCCGAGGATC	5' tpsA flank (repair DNA fragment)
TS2_tpsA_fw	GATCCTCGGCCGTTGAACAATCACAAAGGGCGAGACTGGCTTAT	3' tpsA flank (repair DNA fragment)
TS2_tpsA_rv	GCCGGA ACTACTCTTGTCCTT	3' tpsA flank (repair DNA fragment)
DIAG_tpsA_5'_fw	TTGGTCTTGTAGGGGTAGCTGC	Diagnostic PCR tpsA deletion
DIAG_tpsA_3'_rv	GGTGGTTTTACTGCTGGGGTG	Diagnostic PCR tpsA deletion
tpsB_fw	TTTGTGTC CATGAACACCGGTTTTAGAGCTAGAAATAGCAAG	3' tpsB gRNA (target)
tpsB_rv	CGGTGTT CATGGACGACAAAGACGAGCTTACTCGTTTTCG	5' tpsB gRNA (target)
TS1_tpsB_fw	CCATCTGTCTGCCTGTCTTCA	5' tpsB flank (repair DNA fragment)
TS1_tpsB_rv	CTCCTTTCGCTCTGCTCTCCATTCTTTGGCGAACACAAGCAC	5' tpsB flank (repair DNA fragment)
TS2_tpsB_fw	GTGCTTGTGTTCCCAAAGAGAATGGAGAGCAGAGCGAAAGGAG	3' tpsB flank (repair DNA fragment)
TS2_tpsB_rv	TAGACACCCGAACCAGCAGATG	3' tpsB flank (repair DNA fragment)
DIAG_tpsB_5'_fw	CAACCGCAACCGCTACTACTTC	Diagnostic PCR tpsB deletion
DIAG_tpsB_3'_rv	CCGGACCAAGGGATGCTAAAGA	Diagnostic PCR tpsB deletion
tpsC_2_fw	TCGCTGAAAAGGTGACGGGTTTTAGAGCTAGAAATAGCAAG	3' tpsC gRNA (target)
tpsC_2_rv	CCGTCGACCTTTTTAGCGAGACGAGCTTACTCGTTTTCG	5' tpsC gRNA (target)
TS1_tpsC_fw	TGCTCGAGTCTGAGTCTGAAGC	5' tpsC flank (repair DNA fragment)
TS1_tpsC_rv	GCAGCTCGAAGCATTGCAATTGAGAGACCGTTGGAAGGCTGAAC	5' tpsC flank (repair DNA fragment)
TS2_tpsC_fw	GTT CAGCCTTCCAACGGTCTCTCAATTGCAATGCTTCGAGCTGC	3' tpsC flank (repair DNA fragment)
TS2_tpsC_rv	AGCTGGAAGGCGATTGTAGGTT	3' tpsC flank (repair DNA fragment)

DIAG_tpsC_5'_fw	AATGAATGTGTGTGGGTGCTGC	Diagnostic PCR tpsC deletion
DIAG_tpsC_3'_rv	AAACTGGGAGCGATGCATGAAC	Diagnostic PCR tpsC deletion
mtdA_fw	GCTGGCAAGACAGCCAGCAGGTTTTAGAGCTAGAAAATAGCAAG	3' mtdA gRNA (target)
mtdA_rv	CTGCTGGCTGTCTTGCCAGCGACGAGCTTACTCGTTTCG	5' mtdA gRNA (target)
GOI5_mtdA_fw	CGGTTTGTTCGGTCTTACGGG	5' mtdA flank (repair DNA fragment)
XXGOI5_mtdA_rv	GGAGTGGTACCAATATAAGCCGGCGCGGTCCGATAGAAAATAATGT	5' mtdA flank (repair DNA fragment)
XXGOI3_mtdA_fw	CCGGCTTATATTGGTACCACTCCTGATTGAGGTAGAGATGAGTTTGGT	3' mtdA flank (repair DNA fragment)
GOI3_mtdA_rv	CTGCAACGTCACTTAGTGGCTG	3' mtdA flank (repair DNA fragment)
DIAG_mtdA_3'_rv	GCATGCTTGACGTACGGATTGT	Diagnostic PCR mtdA deletion
DIAG_mtdA_5'_fw	CCCCTTGATTTCTCTCCAGCCA	Diagnostic PCR mtdA deletion
mtdB1_fw	GAATTTGTCGCAAATCGTGGGTTTTAGAGCTAGAAAATAGCAAG	3' mtdB gRNA (target)
mtdB1_rv	CCACGATTTGCGACAAATTCGACGAGCTTACTCGTTTCG	5' mtdB gRNA (target)
5_mtdB_fw	ATCAAGGGATGGAAGGGGTTGG	5' mtdB flank (repair DNA fragment)
5_mtdB_rv	GGAGTGGTACCAATATAAGCCGGGCGGTGTAATTTACCTCTTTGTCGG	5' mtdB flank (repair DNA fragment)
3_mtdB_fw	CCGGCTTATATTGGTACCACTCCTGGGAGGATGAAGGAGGAAGGA	3' mtdB flank (repair DNA fragment)
3_mtdB_rv	AGGTGGCACATGTTCCGGTATCA	3' mtdB flank (repair DNA fragment)
DIAG_MtdB_3'_rv	CGACCAGATCCTCGAAGGGCCA	Diagnostic PCR mtdB deletion
DIAG_MtdB_5'_fw	CTTGCGGAATTTGCGTGGCCAC	Diagnostic PCR mtdB deletion
mpdA_fw	CGATGAACTTGAGAATGTGGGTTTTAGAGCTAGAAAATAGC	3' mpdA gRNA (target)
mpdA_rv	CCACATTCTCAAGTTCATCGGACGAGCTTACTCGTTTCGT	5' mpdA gRNA (target)
GOI5_mpdA_fw	TAGTCGCGAGGGAGTCAAGTTG	5' mpdA flank (repair DNA fragment)
NEW_GOI5_mpdA_rv	GGAGTGGTACCAATATAAGCCGGATTCCGAGTCGATCACCTGCAT	5' mpdA flank (repair DNA fragment)
XXGOI3_mpdA_fw	CCGGCTTATATTGGTACCACTCCAGTGAAGTCTGATAGTAGAAGGGA	3' mpdA flank (repair DNA fragment)
GOI3_mpdA_rv	TTTGATTGGCTTGGATTGGGC	3' mpdA flank (repair DNA fragment)
DIAG_mpdA_3'_rv	AATCAACCGGGACCATGACTGT	Diagnostic PCR mpdA deletion
DIAG_mpdA_5'_fw	CCGACATGGTGATTGCGTCTTC	Diagnostic PCR mpdA deletion

tpsA_KORE2_fw	CAAGAATTACATACCTATGAAGGACAAAGGGCGAGACTGGCTT	Complementation with different KORE (no repair) for SJS156
tpsA_KORE2_rv	CCTTCATAGGTATGTAATTCTTGGATTGTTCAACGGCCGAGGA	Complementation with different KORE (no repair) for SJS156
tpsB_KORE3_fw	TTTGTTACAGTCCTCATTAAGGATGGAGAGCAGAGCGAAAGG	Complementation with different KORE (no repair) for SJS156
tpsB_KORE3_rv	CCTTAATGAGGACTGTGAACAAATGACTGCAGCTTTTTCTTG	Complementation with different KORE (no repair) for SJS156
tpsC_KORE4_fw	AACACCGTTTACCCCTTAAGGGCAATTGCAATGCTTCGAGCT	Complementation with different KORE (no repair) for SJS156
tpsC_KORE4_rv	CCCTTAAGGGGGTAAACGGTGTTAGAGACCGTTGGAAGGCTGA	Complementation with different KORE (no repair) for SJS156
mpdA_KORE5_fw	TCAGTCTATCCGTTTCTTGACGGAGTGGAAGTCTGATAGTAGA	Complementation with different KORE (no repair) for SJS156
mpdA_KORE5_rv	CCGTCAAGAAACGGATAGACTGATTGCTACTGTCGCAAAGTGT	Complementation with different KORE (no repair) for SJS156
SJS_compl_tpsC_seq_rv	ACGTATTGCCATTCCGTCGGAG	sequence silent mutations tpsC gene
compl_tpsA_fw	CTCATCATCAATGAACACCGGCACG	Create complementation with 2 silent mutations in tpsA gene
compl_tpsA_rv	CGTGCCGGTGTTTCATTGATGATGAG	Create complementation with 2 silent mutations in tpsA gene
seq_tpsA_fw	GCCGATCTCCTCACGCAGCATC	sequence silent mutations tpsA gene
seq_tpsA_rv	CGGTGGCCTGGTCAGTGGACTA	sequence silent mutations tpsA gene
compl_tpsB_fw	CAGTTTATCATCCATGAACACCGGG	Create complementation with 2 silent mutations in tpsB gene
compl_tpsB_rv	CCCGGTGTTTCATGGATGATAAACTG	Create complementation with 2 silent mutations in tpsB gene
seq_tpsB_fw	AGACAAGGTCTCCTTCCCGGGC	sequence silent mutations tpsB gene
seq_tpsB_rv	TCCATGTCCTCTGGTGGCCTGG	sequence silent mutations tpsB gene

seq_mtdB_fw	ACCCGCATCGTGTCTCTCACCA	sequence silent mutations mtdB gene
seq_mtdB_rv	GTGACGACAGGCCAGGAGTCCT	sequence silent mutations mtdB gene
seq_mpdA_fw	CTCGTCGTCACCAGGCACGTTT	Create complementation with 2 silent mutations in mpdA gene
seq_mpdA_rv	CTCAGCAAGCCCCAACAGTGG	Create complementation with 2 silent mutations in mpdA gene
mpdA_comsil_fw	CCAAAGTAGGCCGTTGTAGCATGGCTGGTGTGACAGTGA	sequence silent mutations mpdA gene
mpdA_comsil_rv	CTACAACGGCCTACTTTGGACACTTCCGGGGCAAGAAGAT	sequence silent mutations mpdA gene
SJS_tpsC_complemenationSilent_fw	GTGACTAGTCCACCCTGGAGAGGGAAGATTCGTATCCCC	Create complementation with 2 silent mutations in tpsC gene
SJS_tpsC_complemenationSilent_rv	CTCCAGTGGTGGACTAGTCACATCTTTATCGGGATTGACT	Create complementation with 2 silent mutations in tpsC gene
compl3_mtdB_rv	GCGAGGGCAGCGTAGAGGAAACCGAAAGTGGTACGGGGGG	Create complementation with 2 silent mutations in mpdA gene
compl2_mtdB_fw	CCCCCGTACCACTTTTCGGTTTCCTCTACGCTGCCCTCGC	Create complementation with 2 silent mutations in mpdA gene
Con10_fw	AGTGTGCAATATCGCCAAGAGTTTTAGAGCTAGAAATAGC	3' <i>conJ</i> gRNA
Con10_rv	TCTTGCGGATATTCGACACTGACGAGCTTACTCGTTTCGT	5' <i>conJ</i> gRNA
5_Con10_fw	CCCTGCCATGTAAGTTCCCGCG	5' <i>conJ</i> flank (repair DNA fragment)
5_Con10_KORE_rv	GGAGTGGTACCAATATAAGCCGGTGATTCTGATCCAATTCCAAACCTCA	5' <i>conJ</i> flank (repair DNA fragment)
3_Con10_KORE_fw	CCGGCTTATATTGGTACCACTCCTTGAGTGAAGGTACCGCTGGGA	3' <i>conJ</i> flank (repair DNA fragment)
3_Con10_rv	CGTCGAGTTGAAGCGACCGGAA	3' <i>conJ</i> flank (repair DNA fragment)
DIAG_Con10_5_fw	TAGCCTAGGCTCCCCTTCCCCA	Diagnostic PCR <i>conJ</i> deletion
DIAG_Con10_3_rv	ACGCTGCCGCTTACTGTAGCAC	Diagnostic PCR <i>conJ</i> deletion
Lea3_fw	GCCACTGCCCGTCGTGACAAGTTTTAGAGCTAGAAATAGC	3' <i>LEA3-like</i> gRNA
Lea3_rv	TTGTACGACGGGCAGTGGCGACGAGCTTACTCGTTTCGT	5' <i>LEA3-like</i> gRNA

5_Lea3_fw	GGCAGTTGGACTGGGTTTGGGG	5' <i>LEA3-like</i> flank (repair DNA fragment)
5_Lea3_KORE_rv	GGAGTGGTACCAATATAAGCCGGTCAAGTTGATGGGATTGAGGATGGA	5' <i>LEA3-like</i> flank (repair DNA fragment)
3_Lea3_KORE_fw	CCGGCTTATATTGGTACCACTCCGCACGCTTGACGACCTGCATGA	3' <i>LEA3-like</i> flank (repair DNA fragment)
3_Lea3_rv	CCCGGACACTGGCAATTCCGTC	3' <i>LEA3-like</i> flank (repair DNA fragment)
DIAG_Lea3_5_fw	TCACCGACCAGGGGAAGGATGC	Diagnostic PCR <i>LEA3-like</i> deletion
DIAG_Lea3_3_rv	TGGAGACGATGGGTCCGCATGA	Diagnostic PCR <i>LEA3-like</i> deletion
DehydrinA_fw	TGGTCCCCTCCTCCAACAGTTTTAGAGCTAGAAATAGC	3' <i>dprA</i> gRNA
DehydrinA_rv	TGTTGGAGGAGTGGGGACCAGACGAGCTTACTCGTTTCGT	5' <i>dprA</i> gRNA
5_DehydrinA_fw	ACCCAGACTTGGACTCGAGGC	5' <i>dprA</i> flank (repair DNA fragment)
5_DehydrinA_KORE_rv	GGAGTGGTACCAATATAAGCCGGTGGCAATTGTATGTGTGTTTGGT	5' <i>dprA</i> flank (repair DNA fragment)
3_DehydrinA_KORE_fw	CCGGCTTATATTGGTACCACTCCGCGGGCAAACATAAATGCTTGCCT	3' <i>dprA</i> flank (repair DNA fragment)
3_DehydrinA_rv	ACGTTCCCGCACACATATGCAT	3' <i>dprA</i> flank (repair DNA fragment)
DIAG_DehydrinA_5_fw	GACATCGACGGCACTGGCTGAG	Diagnostic PCR <i>dprA</i> deletion
DIAG_DehydrinA_3_rv	CGGAAGGGCTGTTCAACCCACC	Diagnostic PCR <i>dprA</i> deletion
DehydrinB_fw	CCAGCGCAACCACTGCAACAGTTTTAGAGCTAGAAATAGC	3' <i>dprB</i> gRNA
DehydrinB_rv	TGTTGCAGTGGTTGCGCTGGGACGAGCTTACTCGTTTCGT	5' <i>dprB</i> gRNA
5_DehydrinB_fw	CCGCAATCCACACTAGGCCGTC	5' <i>dprB</i> flank (repair DNA fragment)
5_DehydrinB_KORE_rv	GGAGTGGTACCAATATAAGCCGGAGGTAGTATCCATTCCCCACCGT	5' <i>dprB</i> flank (repair DNA fragment)
3_DehydrinB_KORE_fw	CCGGCTTATATTGGTACCACTCCCGCTATGGGAATGAACCCCGCC	3' <i>dprB</i> flank (repair DNA fragment)
3_DehydrinB_rv	GAAGATGGAGCACCTCAGGCCG	3' <i>dprB</i> flank (repair DNA fragment)
DIAG_DehydrinB_5_fw	GGCGATCGTGGTGCTCTTGAGG	Diagnostic PCR <i>dprB</i> deletion
DIAG_DehydrinB_3_rv	AGAGGATTGGGTGCGCTGGAGT	Diagnostic PCR <i>dprB</i> deletion
HSF1_fw_1	ACTGGAAGTGGAGAAAACGGGTTTTAGAGCTAGAAATAGCAAG	PCR target 3'flank
HSF1_rv_1	CCGTTTTCTCCAGTCCAGTGACGAGCTTACTCGTTTCG	PCR target 5' flank
HSP12_fw_2	CAGCAAGTCCGGTCCCCAGGGTTTTAGAGCTAGAAATAGCAAG	PCR target 3'flank
HSP12_rv_2	CCTGGGGACCCGGACTTGCTGGACGAGCTTACTCGTTTCG	PCR target 5' flank
HSP104_fw_2	GGATCGAGAAGGGCCGTCGGGTTTTAGAGCTAGAAATAGCAAG	PCR target 3'flank

HSP104_rv_2	CCGACGGCCCTTCTCGATCCGACGAGCTTACTCGTTTCG	PCR target 5' flank
NRRL3-02725-5'-fw	ACGTGCTGGTCAAGTGTATCGA	Donor DNA Hsp104 deletion; Diagnostic PCR
NRRL3-02725-5'-rv	GGAGTGGTACCAATATAAGCCGGGGTGGTTGATGGGTAGATGGAA	Donor DNA Hsp104 deletion
NRRL3-02725-3'-fw	CCGGCTTATATTGGTACCACTCCGGCGGAATGTGAGGGAAGAATG	Donor DNA Hsp104 deletion
NRRL3-02725-3'-rv	GCTTGAGCATCCCAAGGAGAGA	Donor DNA Hsp104 deletion; Diagnostic PCR
NRRL3-07278-5'-fw	GAAATCAGGCTTTGGGACAGGC	Donor DNA Hsf1 deletion
NRRL3-07278-5'-rv	GGAGTGGTACCAATATAAGCCGGCGGTCGGTAAAGAGCAAAGACG	Donor DNA Hsf1 deletion
NRRL3-07278-3'-fw	CCGGCTTATATTGGTACCACTCCTGTGTCCGCGGAAGGCAATATA	Donor DNA Hsf1 deletion
NRRL3-07278-3'-rv	TAGGCGATGACACAGACCAAGG	Donor DNA Hsf1 deletion
NRRL3-11620-5'-fw	ATGATACTGCGGATGAGGAGGC	Donor DNA Hsp9/12 deletion; Diagnostic PCR
NRRL3-11620-5'-rv	GGAGTGGTACCAATATAAGCCGGCGCCACACCCTGATTACAATCG	Donor DNA Hsp9/12 deletion
NRRL3-11620-3'-fw	CCGGCTTATATTGGTACCACTCCAAGTTGCTCCATGACGTCGAC	Donor DNA Hsp9/12 deletion
NRRL3-11620-3'-rv	TTTGTCTCCCAAGTAGGCCGAG	Donor DNA Hsp9/12 deletion; Diagnostic PCR