

**Table S1.** Primers used in this study.

Primer	Sequence(5'-3')	Function
WF0001	CTGCCAAGAGTAAAGCAGAT	Constructing of knocking-out cassette/UBP5
WF0002	GTCATAGCTGTTTCTGGTCAACATCTCGTCCAAACT	Constructing of knocking-out cassette/UBP5
WF0003	CTGGCCGTCGTTTACTTACACACATTTGCGAACTC	Constructing of knocking-out cassette
WF0004	GCAAGGTGCATAGACTAACC	Constructing of knocking-out cassette/UBP5
WF0009	TGCTCTCAGCAACTTCTT	Constructing of knocking-out cassette/OTU1
WF0010	GTCATAGCTGTTTCTGCATCTATGGTGGTGGTTTCT	Constructing of knocking-out cassette/OTU1
WF0011	CTGGCCGTCGTTTACACCCATAATCCGAAGAGAAT	Constructing of knocking-out cassette/OTU1
WF0012	CTGGCTAACAAAGTTCGTTT	Constructing of knocking-out cassette/OTU1
WF0033	CTCCTTCTCTCGTGCATCT	Constructing of knocking-out cassette/RPN11
WF0034	GTCATAGCTGTTTCTGACGCGAGCGTCATCTTCTAT	Constructing of knocking-out cassette/RPN11
WF0035	CTGGCCGTCGTTTACGCTCGAAAACGACAATGACA	Constructing of knocking-out cassette/RPN11
WF0036	ACGTGGGATGCCTAGGTA AAA	Constructing of knocking-out cassette/RPN11
WF0037	TGCTCGGTAAGTCCTCAACC	Constructing of knocking-out cassette/UBP13
WF0038	GTCATAGCTGTTTCTGCCAAAGACAGGCGAGTAACC	Constructing of knocking-out cassette/UBP13
WF0039	CTGGCCGTCGTTTACGATTGTCAACCCCATCATC	Constructing of knocking-out cassette/UBP13
WF0040	TTGAGAGGACGTCTGTGGTG	Constructing of knocking-out cassette/UBP13
WF0045	GATGGCCCCTTACTCATCCT	Constructing of knocking-out cassette/UBP7
WF0046	GTCATAGCTGTTTCTGCACAAGGAATGCCCTGAAAT	Constructing of knocking-out cassette/UBP7
WF0047	CTGGCCGTCGTTTACCACTTGACGCGTGTGTTTT	Constructing of knocking-out cassette/UBP7

WF0048	GGCAGAAGCTGTCTCAAAC	Constructing of knocking-out cassette/UBP7
WF0065	TTGGTCTATCCAGACACACA	Constructing of knocking-out cassette/UBP14
WF0068	TATGGTCGTGATGAAGATGA	Constructing of knocking-out cassette/UBP14
WF0069	GAGATTGGAGAGGATGTCAA	Constructing of knocking-out cassette/DOA4
WF0070	GTCATAGCTGTTTCTG GCGTTCGAACCATACTTTG	Constructing of knocking-out cassette/DOA4
WF0071	CTGGCCGTCGTTTTAC AAGAAGAGTACTGCGATTGG	Constructing of knocking-out cassette/DOA4
WF0072	AGGACAGAAGACAGGAAAAA	Constructing of knocking-out cassette/DOA4
M13F	GTAACACGACGGCCAG	Constructing of knocking-out cassette
M13R	CAGGAAACAGCTATGAC	Constructing of knocking-out cassette
WF0104-cp	TCCCAGCATTGTGATTGAAA	Analysis of proper homologous recombination/UBP5
WF0912-cp	GGTCACCCTTTTCATGCACT	Analysis of proper homologous recombination/OTU1
WF3336-cp	TCTGGCAAGTCAATGCTGTC	Analysis of proper homologous recombination/RPN11
WF3740-cp	TCGTCGTGGGTGATGTTAAA	Analysis of proper homologous recombination/UBP13
WF4548-cp	GAATCATTCCCCTCTCGTCA	Analysis of proper homologous recombination/UBP7
WF6568-cp	GCAGGGTGTATTATCGACAT	Analysis of proper homologous recombination/UBP14
WF6972-cp	CAAACATAACATGACGCATC	Analysis of proper homologous recombination/DOA4
Re0104-F	CGAGCATGCATCTAGAACTCAAACGAGCAGAACAT	Reconstitution for <i>Cn-ubp5Δ</i> mutant
Re0104-R	AATTGGGCCCTCTAGAAGCTTTAGACTGCAAGAGC	Reconstitution for <i>Cn-ubp5Δ</i> mutant
Probe14-F	CGAATTGAGCACTGGAGTCA	Creation of UB5 Probe for Southern analysis
Probe14-R	AGTACGGGCCCTTCTTTGTT	Creation of UB5 Probe for Southern analysis

Neo-F	TATGTCCTGATAGCGGTCCG	Creation of NEO Probe for Southern analysis
Neo-R	AAGATGGATTGCACGCAGG	Creation of NEO Probe for Southern analysis
Nat-F	ACCTCTGGCTGGAGGTCAC	Creation of NAT Probe for Southern analysis
Nat-R	GGGCATGCTCATGTAGAGC	Creation of NAT Probe for Southern analysis
GPD1-a	AGTATGACTCCAACAATGGTCCG	Real time PCR
GPD1-b	AGACAAACATCGGAGCATCAGC	Real time PCR
AGS1-a	TACCGATGGCCCTTTACTCTA	Real time PCR
AGS1-b	AGGAATACACCATGGATGGAAG	Real time PCR
UBI4-a	CACCTTGTTCTCCGTCTG	Real time PCR
UBI4-b	TTGGAGGATGAGGACAATC	Real time PCR
MF $\alpha$ -a	ACGCCTTCACTGCCATCTTC	Real time PCR
MF $\alpha$ -b	GACGCATAGGGTCATGCCAC	Real time PCR