GENETICS

Supporting Information
http://www.genetics.org/cgi/content/full/genetics.109.103036/DC1

Note

Precise Gene-Dose Alleles for Chemical Genetics

Zhun Yan, Nicolas M Berbenetz, Guri Giaever and Corey Nislow

DOI: 10.1534/genetics.109.103036

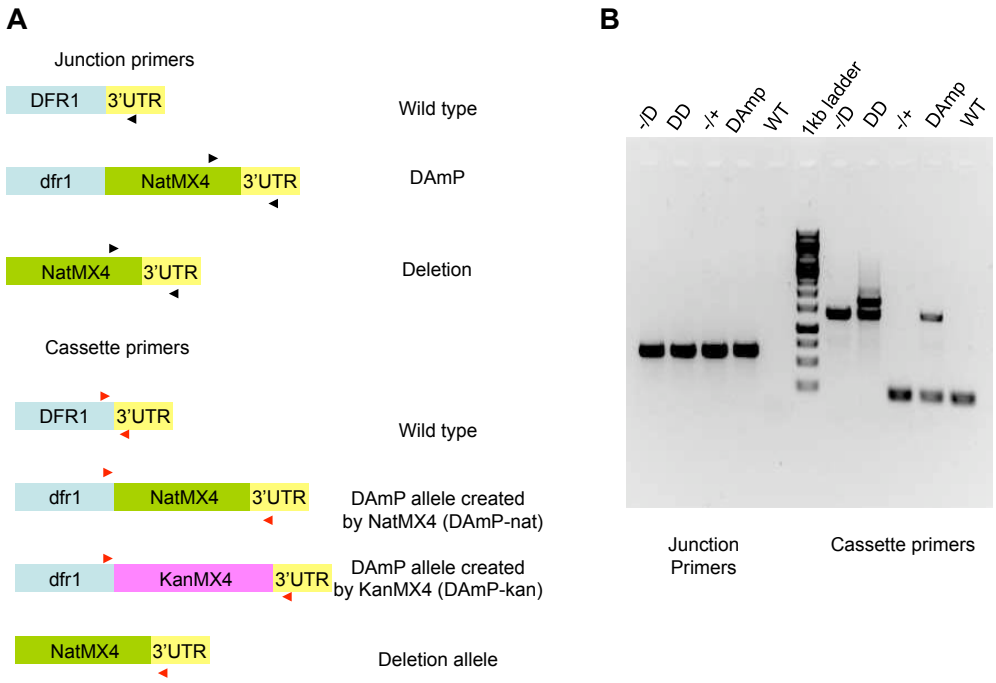

FIGURE S1.—Confirmation of gene-dose strains by PCR. The *DFR1* gene-dose alleles were used to illustrate the confirmation of gene-dose alleles. (A) Schematic diagram of primers used to confirm gene dosage alleles. Two pairs of primers were used to confirm gene dose strains. One pair spans the right junction of the mutation module (junction primer) represented by black short arrows in the figure. A second pair of primers flanks the stop codon of *DFR1* (cassette primer) represented by red short arrows. Using this pair of primers, the deletion modules cannot produce a product because the homologous region of one of the primers was deleted. The other modules can produce a PCR product but the size of PCR product varies depending on modules. The size of PCR products for the wild type allele, DAmP –Kan and DAmP-Nat allele are 207, 1676 and 1326 base pair respectively. (B) Agarose gel analysis of confirmation PCR of *DFR1* gene-dose strains. The strain names were listed in the top of each lane. When using the junction primer pair (left side), the D/+, D/D, -/D and -/+ strain produced a 650 base pair PCR product whereas the wild type strain will not generate a PCR product. When using the cassette primer (right side), the -/D produced a 1326 bp band. The wild type and -/+ strain produced a 207 bp band. The D/+ strain produced two bands, 1326 bp and 207 bp. The D/D strain produced two bands, 1326 bp and 1676 bp. To verify the genotype of each strain, genomic DNA was prepared using the YeaStar genomic DNA kit (Zymo research, cat# D2002) and used as template in PCR. Two pairs of primers were used to confirm each strain (Table S2).

TABLE S1

Strains used in this study

Name	Genotype	Source
BY4741	*MAT***a** *his3Δ1 leu2Δ0 ura3Δ0 met15Δ0*	Boone lab
BY4742	*MATα his3Δ1 leu2Δ0 ura3Δ0 lys2Δ0*	Boone lab
BY4743	his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+	This study
dfr1 D/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, dfr1-DAmP::natMX4/+*	This study
dfr1 -/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, dfr1Δ0::natMX4/+*	This study
dfr1 D/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, dfr1-DAmP::natMX4/dfr1-DAmP::kanMX4*	This study
dfr1 -/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, dfr1-DAmP::natMX4/-*	This study
rnr2 D/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, rnr2-DAmP::natMX4/+*	This study
rnr2 -/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, rnr2Δ0::natMX4/+*	This study
rnr2 D/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, rnr2-DAmP::natMX4/rnr2-DAmP::kanMX4*	This study
rnr2 -/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, rnr2-DAmP::natMX4/-*	This study
ipp1 D/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, ipp1-DAmP::natMX4/+*	This study
ipp1 -/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+,ipp1Δ0::natMX4/+*	This study
ipp1 D/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, ipp1-DAmP::natMX4/ipp1-DAmP::kanMX4*	This study
ipp1 -/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, ipp1-DAmP::kanMX4/-*	This study
alg7 D/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, alg7-DAmP::natMX4/+*	This study
alg7 -/+	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, alg7Δ0::natMX4/+*	This study
alg7 -/D	*his3Δ1/his3Δ1, leu2Δ0/leu2Δ0, ura3Δ0/ura3Δ0,met15Δ0/+, lys2Δ0/+, alg7-DAmP::natMX4/alg7-DAmP::kanMX4*	This study

TABLE S2

Primers used in this study

Gene name	Sequence (5'-3')	Comments
DFR1	AGGTTATTGCTTCGAATTCACTCTATACAATCGT AAATGACGTACGCTGCAGGTCGAC	Forward primer used to create *dfr1-DAmP::kanMX4* allele
DFR1	CTATTTAACATATTAAAAAAAATATACGGGCGGA GAGGTTATCGATGAATTCGAGCTCG	Reverse primer used to create *dfr1-DAmP::kanMX4* or *dfr1Δ0::kanMX4* allele
DFR1	TGATAATAAGAGAAATTGAAGAGCGCAACGAACT ACGAGCCGTACGCTGCAGGTCGAC	Forward primer used to create *dfr1Δ0::kanMX4* allele
DFR1	AGGTTATTGCTTCGAATTCACTCTATACAATCGT AAATGAACATGGAGGCCCAGAATACCC	Forward primer used to create *dfr1-DAmP::natMX4* allele
DFR1	CTATTTAACATATTAAAAAAAATATACGGGCGGA GAGGTTCAGTATAGCGACCAGCATTCAC	Reverse primer used to create *dfr1-DAmP::natMX4* or *dfr1Δ0::natMX4* allele
DFR1	TGATAATAAGAGAAATTGAAGAGCGCAACGAACT ACGAGCACATGGAGGCCCAGAATACCC	Forward primer used to create *dfr1Δ0::natMX4* allele
IPP1	GTCTATTGACAAGTGGTTCTTCATCTCCGGTTCT GTTTAACGTACGCTGCAGGTCGAC	Forward primer used to create *ipp1-DAmP::kanMX4* allele
IPP1	CGCATACGTGGTAGGTGTCTCATTTTCAATTCAA AATATTATCGATGAATTCGAGCTCG	Reverse primer used to create *ipp1-DAmP::kanMX4* or *ipp1Δ0::kanMX4* allele
IPP1	TAGGTCTATAGAACAGGATATCCCGCCGCGCAAT TTACTACGTACGCTGCAGGTCGAC	Forward primer used to create *ipp1Δ0::kanMX4* allele
IPP1	GTCTATTGACAAGTGGTTCTTCATCTCCGGTTCT GTTTAAACATGGAGGCCCAGAATACCC	Forward primer used to create *ipp1-DAmP::natMX4* allele
IPP1	CGCATACGTGGTAGGTGTCTCATTTTCAATTCAA AATATTCAGTATAGCGACCAGCATTCAC	Reverse primer used to create *ipp1-DAmP::natMX4* or *ipp1Δ0::natMX4* allele
IPP1	TAGGTCTATAGAACAGGATATCCCGCCGCGCAAT TTACTAACATGGAGGCCCAGAATACCC	Forward primer used to create *ipp1Δ0::natMX4* allele
RNR2	GCAAGAAGCCGGTGCTTTCACCTTCAACGAAGAC TTTTAACGTACGCTGCAGGTCGAC	Forward primer used to create *rnr2-DAmP::kanMX4* allele
RNR2	TGAAGAGACTGCGTAAAAAGAAATATATAGAGAG ATACTCATCGATGAATTCGAGCTCG	Reverse primer used to create *rnr2-DAmP::kanMX4* or *rnr2Δ0::kanMX4* allele
RNR2	GAATCCAAACTTAATACACGTATTTATTTGTCCA ATTACCCGTACGCTGCAGGTCGAC	Forward primer used to create *rnr2Δ0::kanMX4* allele
RNR2	GCAAGAAGCCGGTGCTTTCACCTTCAACGAAGAC TTTTAAACATGGAGGCCCAGAATACCC	Forward primer used to create *rnr2-DAmP::natMX4* allele
RNR2	TGAAGAGACTGCGTAAAAAGAAATATATAGAGAG ATACTCCAGTATAGCGACCAGCATTCAC	Reverse primer used to create rnr2-*DAmP::natMX4* or *rnr2Δ0::natMX4* allele
RNR2	GAATCCAAACTTAATACACGTATTTATTTGTCCA ATTACCACATGGAGGCCCAGAATACCC	Forward primer used to create *rnr2Δ0::natMX4* allele
ALG7	TATAGGCGCTATCATCTTTGGCCACGACAACCTA TGGACAGTACGTTGACGTACGCTGCAGGTCGAC	Forward primer used to create *alg7-DAmP::kanMX4* allele

ALG7	TGCGTCATAAAAGTACAAAGTAACTACCAATACA TAATCTATCGATGAATTCGAGCTCG	Reverse primer used to create *alg7-DAmP::kanMX4* or *alg7Δ0::kanMX4* allele
ALG7	AGTAGAGCAAGGCGGAGAACGGTAACAAAAAGTA GACTATCGTACGCTGCAGGTCGAC	Forward primer used to create *alg7Δ0::kanMX4* allele
ALG7	TATCATCTTTGGCCACGACAACCTATGGACAGTA CGTTGAACATGGAGGCCCAGAATACCC	Forward primer used to create *alg7-DAmP::natMX4* allele
ALG7	TGCGTCATAAAAGTACAAAGTAACTACCAATACA TAATCTCAGTATAGCGACCAGCATTCAC	Reverse primer used to create *alg7-DAmP::natMX4* or *alg7Δ0::natMX4* allele
ALG7	AGTAGAGCAAGGCGGAGAACGGTAACAAAAAGTA GACTATACATGGAGGCCCAGAATACCC	Forward primer used to create *alg7Δ0::natMX4* allele
ACT1	AAAGGAAATCACCGCTTTGG	Forward primer used in RT-PCR
ACT1	AGATGGACCACTTTCGTCGT	Reverse primer used in RT-PCR
DFR1	GCAACTCCTGCAATGGACACT	Forward primer used in RT-PCR
DFR1	AACCTTTTTCTTCCAGCGAGT	Reverse primer used in RT-PCR
IPP1	TCTCCGGTGAAGCTAAGAACA	Forward primer used in RT-PCR
IPP1	TTGGAGTAGGTTGGGGTGTC	Reverse primer used in RT-PCR
RNR2	GCCTCCATTTTCTGGTTGAA	Forward primer used in RT-PCR
RNR2	TTTCAACAATGGCTGGGTCT	Reverse primer used in RT-PCR
ALG7	CTCCATTTGATTGACCTGGAA	Forward primer used in RT-PCR
ALG7	AAGCCAAAATTCCAATGCAG	Reverse primer used in RT-PCR
DFR1	TGGAGGTCACCAACGTCAAC	Forward junction primer
DFR1	GTTTGACGGCATACCTTGCT	Reverse junction primer
IPP1	CGAAGTTAAGTGCGCAGAAA	Forward junction primer
IPP1	CCAGAACAAAGCAAACAGCA	Reverse junction primer
RNR2	TTTTCGCCTCGACATCATCT	Forward junction primer
RNR2	TGAGATTGCCTTTGCTGTTG	Reverse junction primer
ALG7	TTTTAATCAAATGTTAGCGTGATTT	Forward junction primer
ALG7	CCGGTTATCTTGACCTCGGTA	Reverse junction primer
DFR1	ACGCTACTCGCTGGAAGAAA	Forward cassette primer
DFR1	TACTGCAGGTGAGGCTGAAA	Reverse cassette primer
IPP1	TGGTTCTTCATCTCCGGTTC	Forward cassette primer
IPP1	GGCCTTGTAGGAGGCAAGAT	Reverse cassette primer
ALG7	TGCATTGGAATTTTGGCTTT	Forward cassette primer
ALG7	ACGAAGTAAAGGGCTGGACA	Reverse cassette primer
RNR2	GTCGAAAACCCCTTCGATTT	Forward cassette primer
RNR2	GCGAAAGCCCACATAAAGAG	Reverse cassette primer