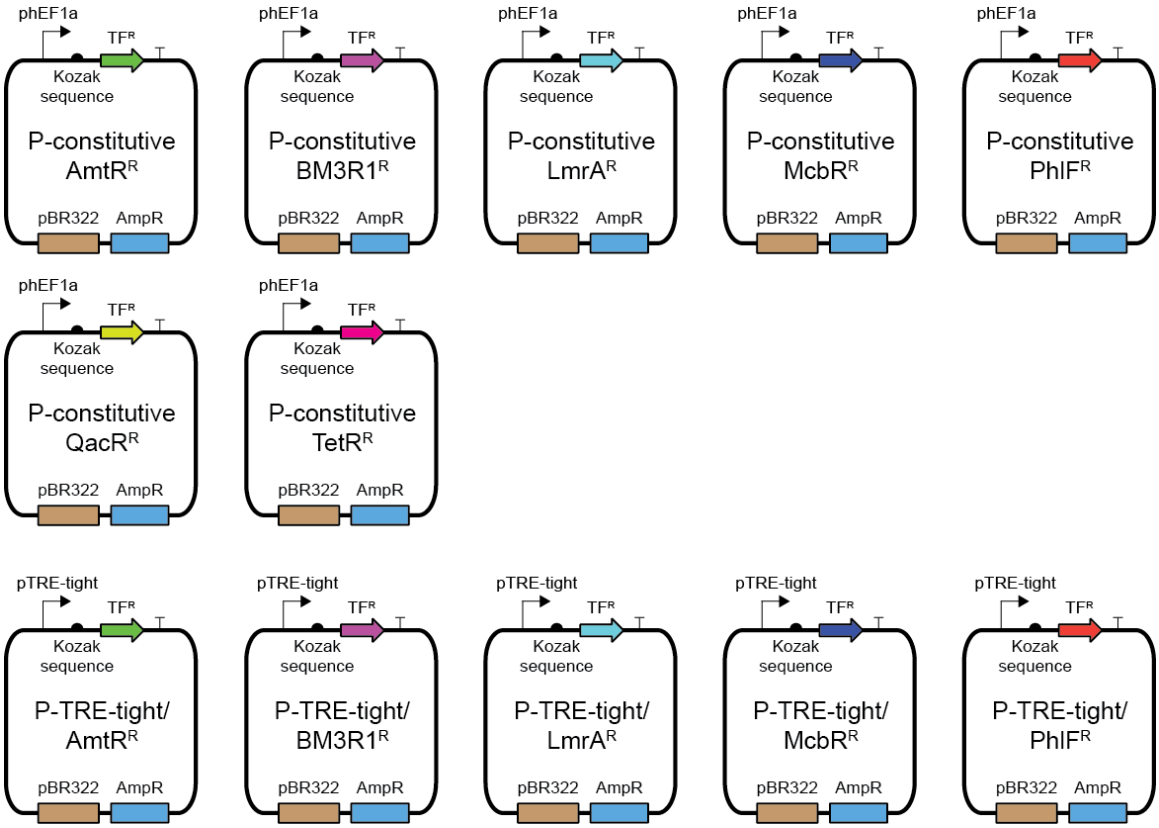
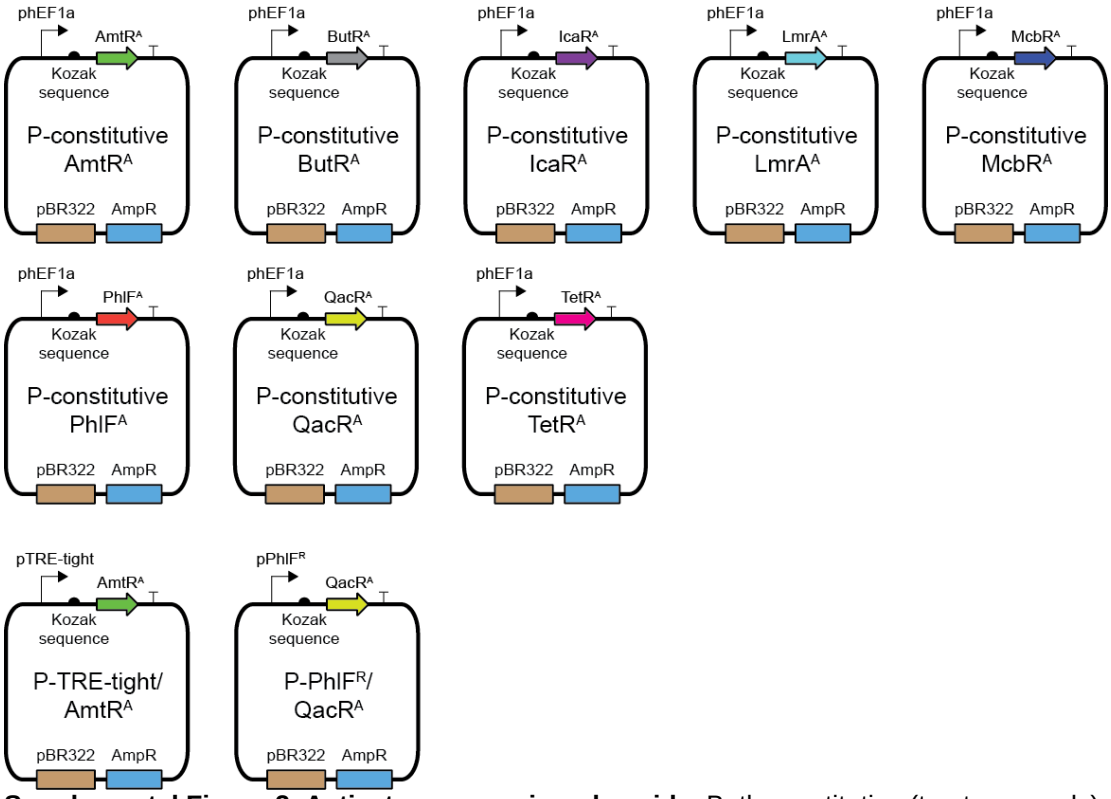
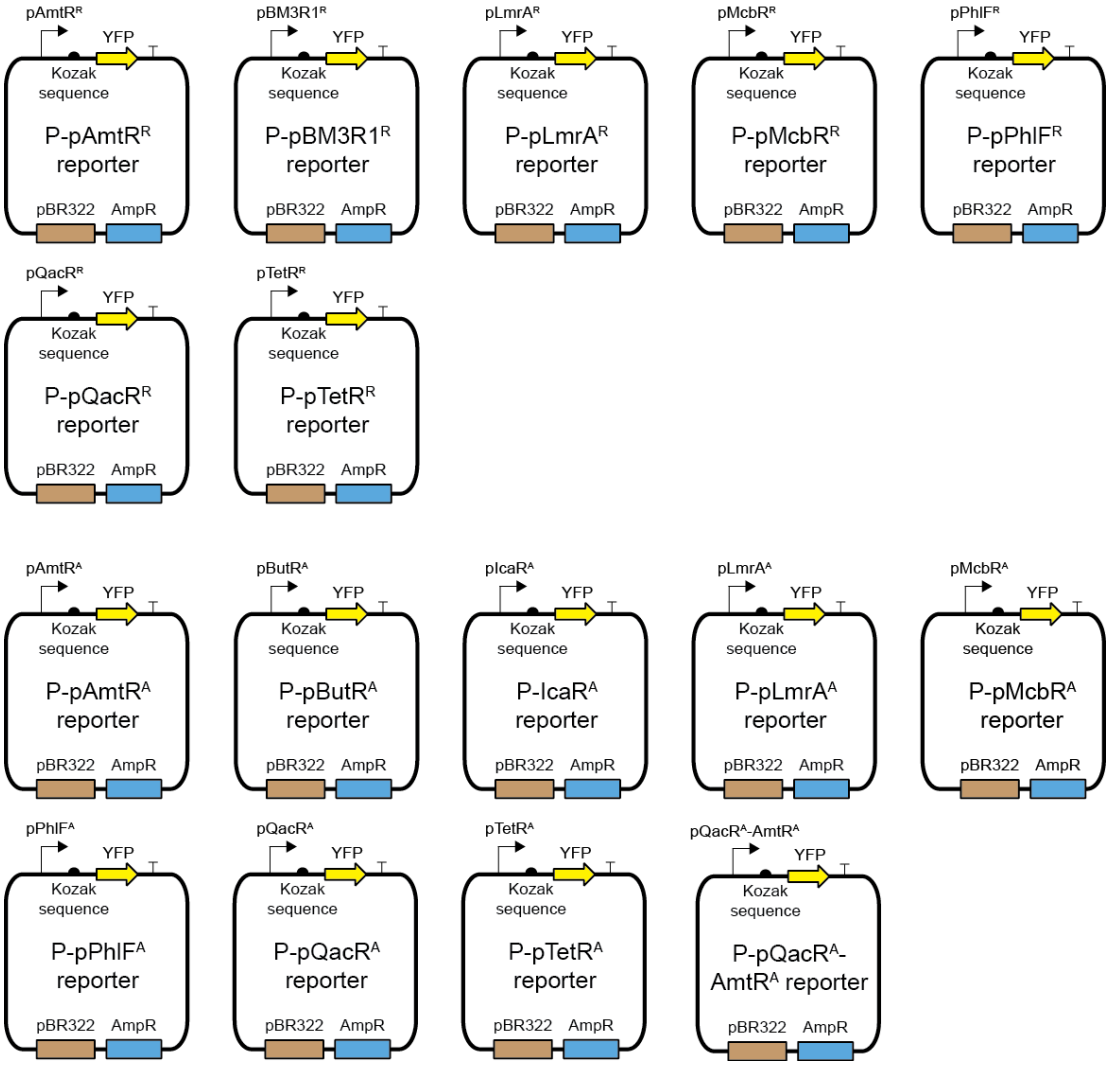
Supplemental Information for Stanton *et al.*



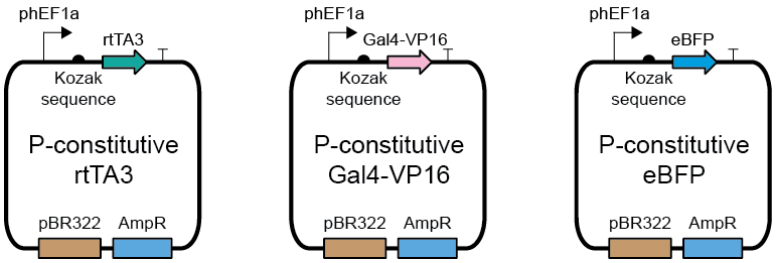
Supplemental Figure 1. Repressor expression plasmids. Both constitutive (top two panels) and inducible expression (bottom panel) vectors are illustrated for each repressor. In the case of the constitutively expressed repressors, expression is controlled by the hEF1a promoter, whereas inducible expression is mediated by either the TRE-tight promoter.



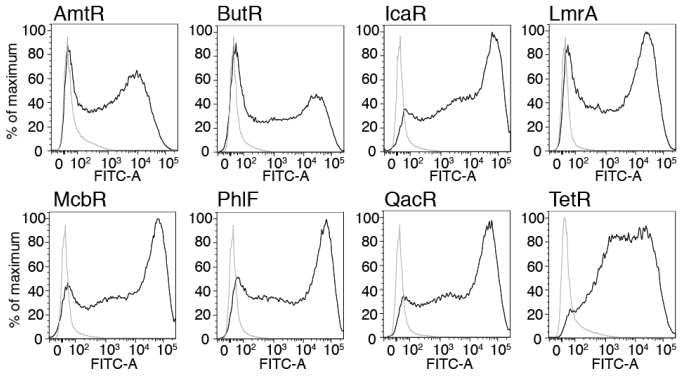
Supplemental Figure 2. Activator expression plasmids. Both constitutive (top two panels) and inducible expression (bottom panel) vectors are illustrated for each activator. In the case of the constitutively expressed activators, expression is controlled by the hEF1a promoter. Inducible expression is mediated by either the TRE-tight promoter (for the $AmtR^A$ gene), or the $PhlF^R$ promoter (for the $QacR^A$ gene).



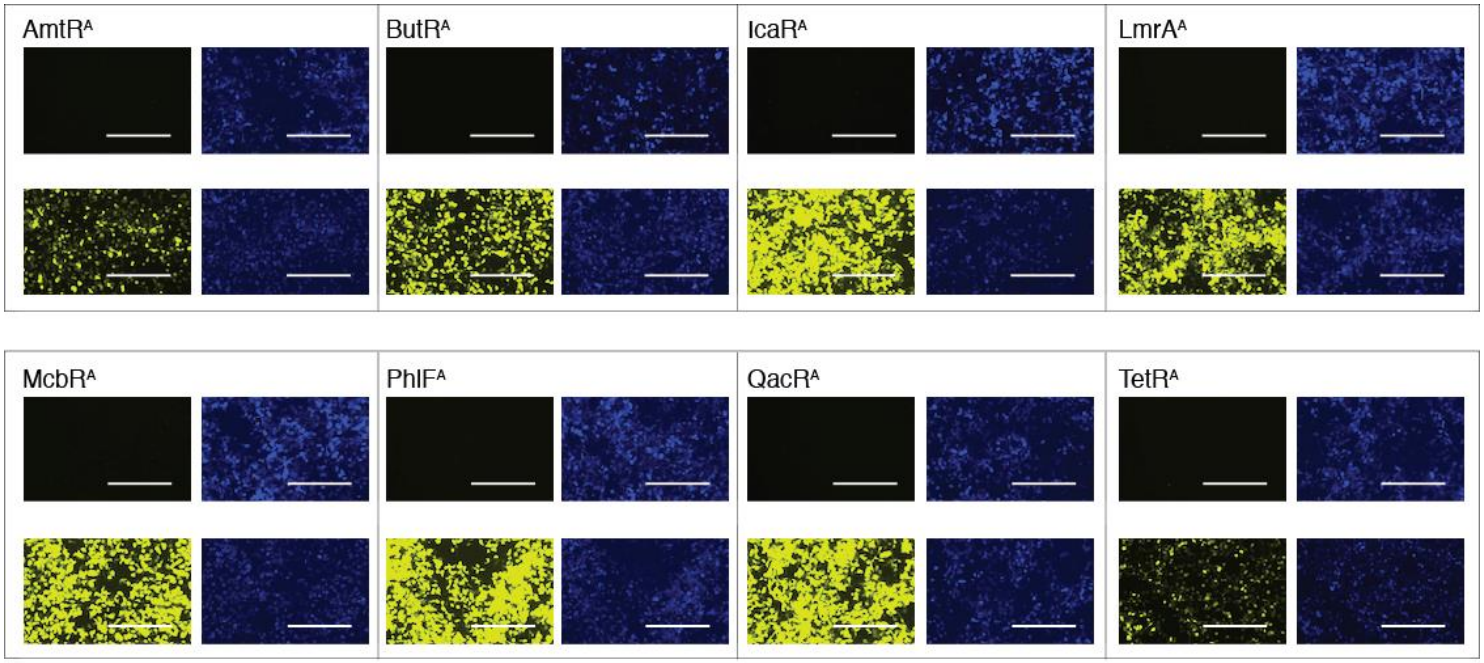
Supplemental Figure 3. YFP reporter plasmids. YFP reporter plasmids are illustrated for the repressors (top two panels) and activators (bottom two panels). In each case, YFP expression is controlled by the transcription factor indicated by the promoter. For the P-pQacR^A-AmtR^A reporter, expression is controlled in tandem by both the QacR^A and AmtR^A activators.



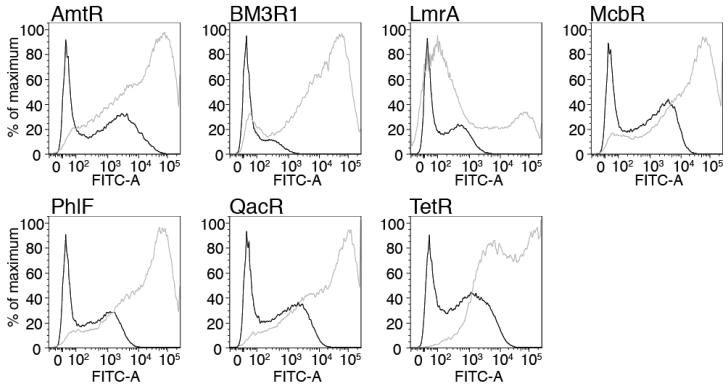
Supplemental Figure 4. Constitutively expressed accessory and control plasmids. Plasmid maps are illustrated for mammalian accessory and control plasmids for the rtTA3 and Gal4-VP16 activators, as well as for the eBFP transfection control plasmid. In all cases, expression is controlled by the hEF1a promoter.



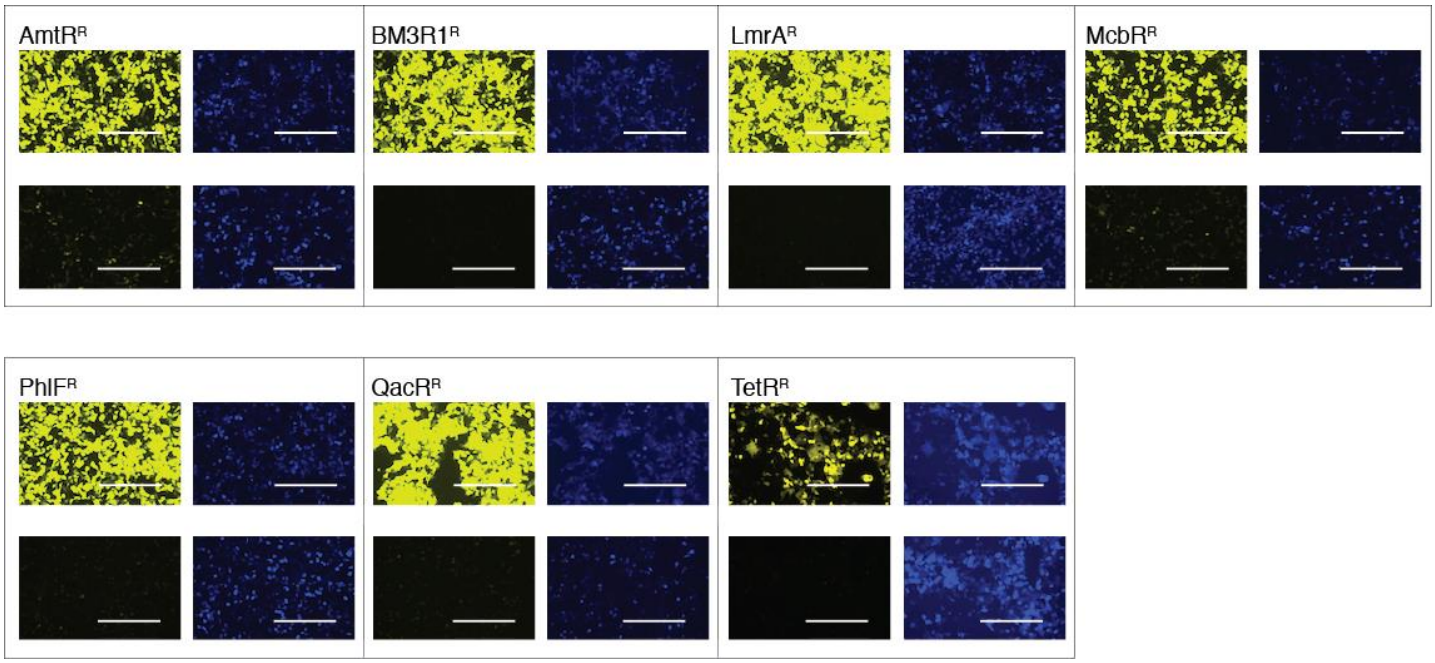
Supplemental Figure 5: Activator fluorescence histograms. Representative histograms of HEK cells transfected with the reporter only (grey peak) or cells co-transfected with the activator and reporter (black peak) are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Transfections contain the indicated YFP reporter plasmid, a plasmid constutitively expressing eBFP, and a plasimd constitutively expressing the cognate activator (present only in the case where the transfections correspond to the histograms colored in black). Histograms correspond to the microscopic images presented in Figure 1c.



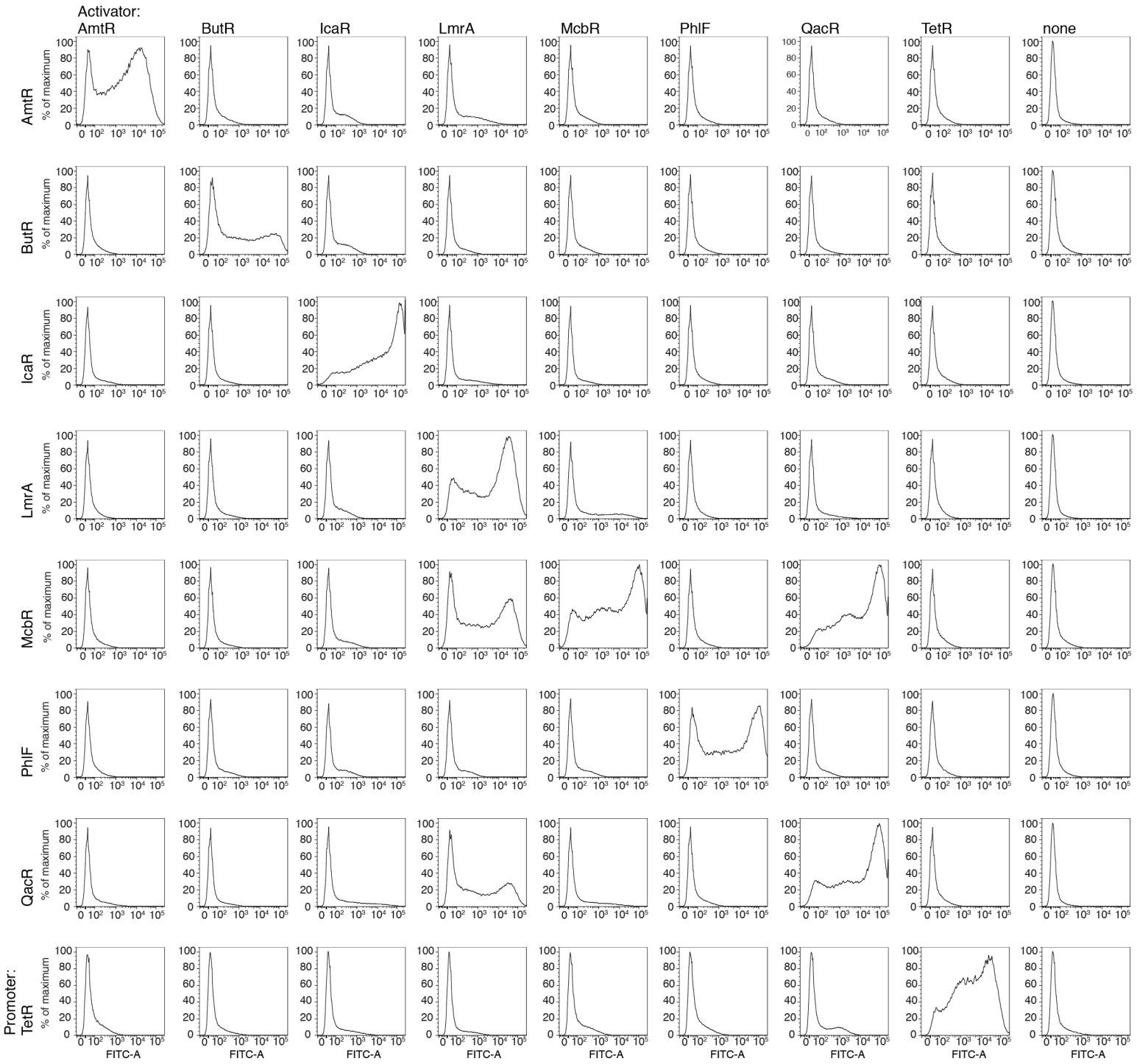
Supplemental Figure 6: Microscopic fluorescent images of activators in HEK cells. Microscopic images of cells transfected with the reporter only (top panel) or the co-transfected reporter and activator (bottom panel) are shown. For each activator, cells are visualized using a YFP filter (left panel) and a BFP filter (right panel, both 10x magnification). BFP serves as the transfection control; cells were co-transfected with a plasmid constitutively expressing eBFP. Images were taken 48 hours post-transfection. White bars correspond to 400 µm.



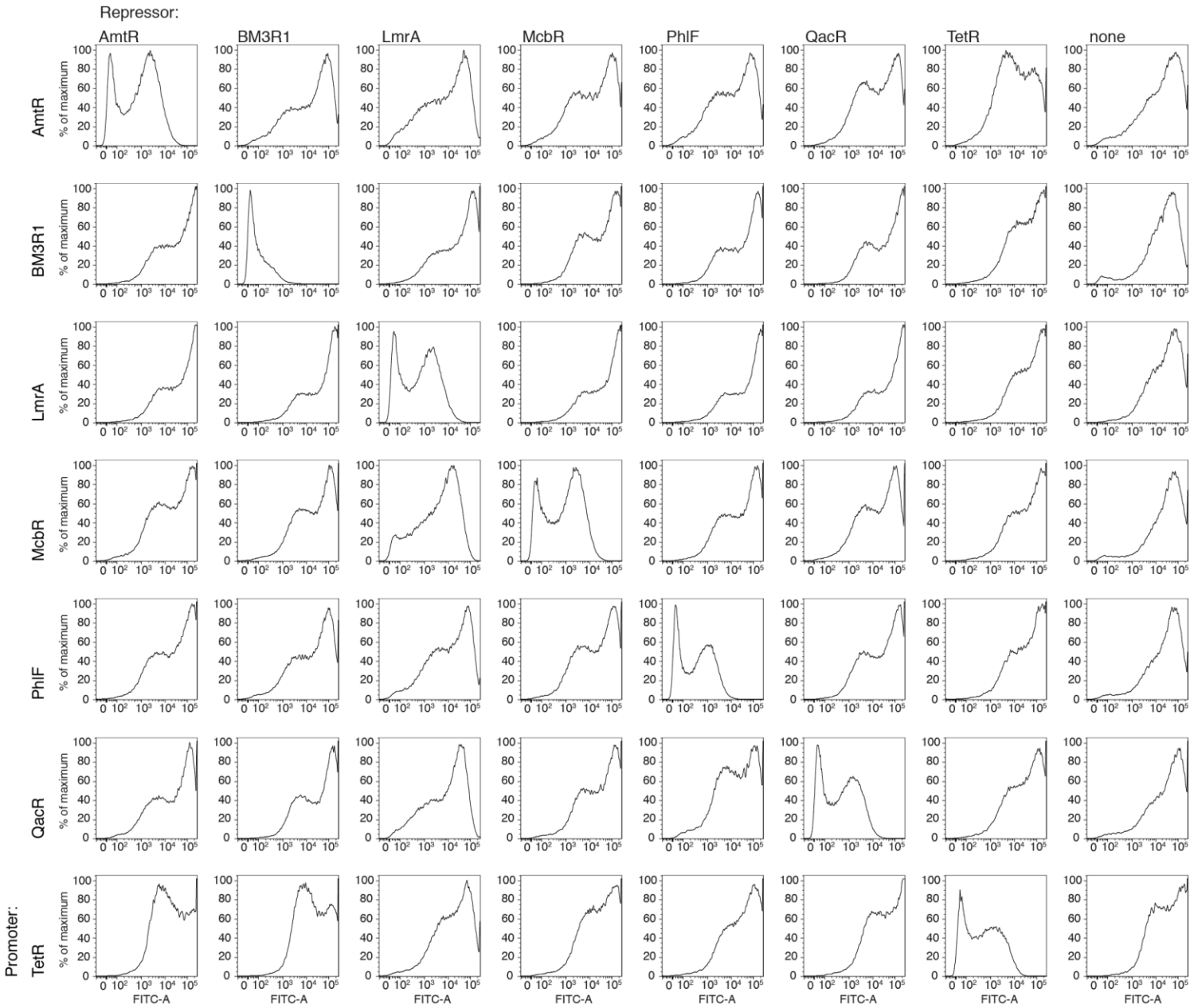
Supplemental Figure 7: Repressor fluorescence histograms. Representative histograms of HEK cells transfected with the reporter only (grey peak) or cells co-transfected with the repressor and reporter (black peak) are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Transfections contain the indicated YFP reporter plasmid, a plasmid constutitively expressing eBFP, a plasmid constitutively expressing the Gal4-VP16 fusion protein, and a plasimd constitutively expressing the cognate repressor (present only in the case where the transfections corresponding to the histograms colored in black). Histograms correspond to the microscopic images presented in Figure 1d.



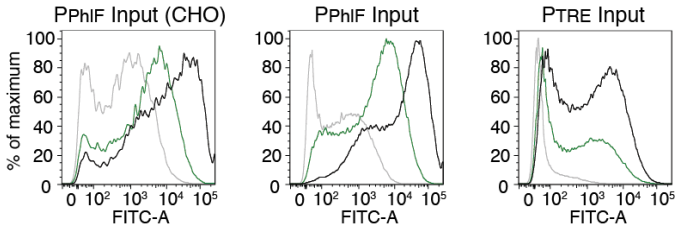
Supplemental Figure 8: Microscopic fluorescent images of repressors in HEK cells. Microscopic images of cells transfected with the reporter and Gal4-VP16 (top panel) or the co-transfected reporter, Gal4-VP16, and repressor (bottom panel) are shown. For each repressor, cells are visualized using a YFP filter (left panel) and a BFP filter (right panel, both 10x magnification). BFP serves as the transfection control; cells were co-transfected with a plasmid constitutively expressing eBFP. Images were taken 48 hours post-transfection. White bars correspond to 400 µm.



Supplemental Figure 9. Activator orthogonality matrix histograms. Representative histograms for HEK cells transfected with the indicated activator/promoter pair are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. In all cases (except the right-most column), cells were transfected with the YFP reporter plasmid indicated, a plasmid constitutively expressing eBFP, and a plasmid constitutively expressing the indicated activator. The last column corresponds to cells transfected with the reporter and eBFP plasmids only. Histograms correspond to the matrix illustrated in Figure 2a.



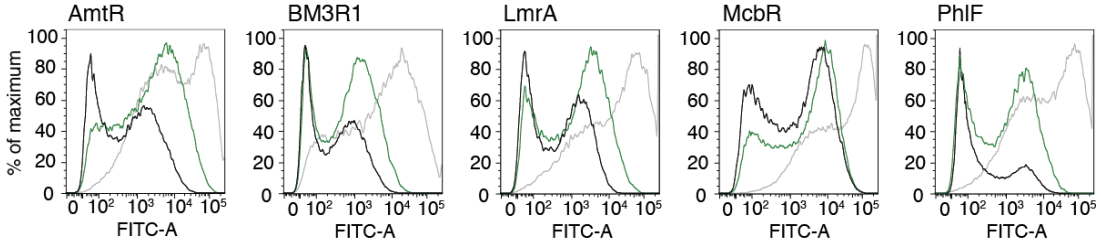
Supplemental Figure 10. Repressor orthogonality matrix histograms. Representative histograms for HEK cells transfected with the indicated repressor/promoter pair are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. In all cases (except the right-most column), cells were transfected with the YFP reporter plasmid indicated, a plasmid constitutively expressing eBFP, a plasmid constitutively expressing the indicated repressor, and a plasmid constitutively expressing the Gal4-VP16 fusion protein. The last column corresponds to cells transfected with the reporter, eBFP, and Gal4-VP16 plasmids only. Histograms correspond to the matrix illustrated in Figure 2b.



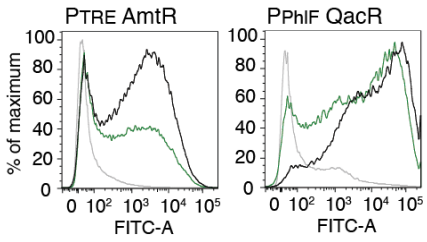
Supplemental Figure 11. Inducible input promoter histograms. Representative histograms for CHO cells (left panel) and HEK cells (middle and right panels) transfected with either the PhlF or TetR-inducible system are shown. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Cells are transfected with a YFP-reporter plasmid, a plasmid constitutively expressing either the PhlF repressor or rtTA3 activator, a plasmid constitutively expressing eBFP, and a plasmid constitutively expressing a Gal4-VP16 fusion protein in the case of the PhlF-inducible system. Grey, green, and black histograms correspond to cells containing 0, 1, or 30 µM DAPG, respectively (for the left and middle plots). Grey, green, and black histograms correspond to cells containing 0, 0.5 µM, or 2 µM Doxycycline, respectively (right plot). Histograms correspond to the curves illustrated in Figure 3b.

Supplemental Table 1. Input promoter response curve parameters

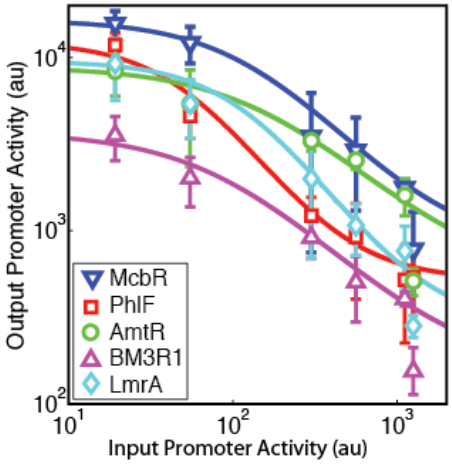
Name	Cell line	*K*	*n*	y_{max}	y_{min}	Fold-Change
P_{TRE}-YFP	HEK	0.1	1.4	1248.6	17.7	70.5
P_{PhlF}-YFP	HEK	1.4	4.7	13125	242.7	54.1
P_{PhlF}-YFP	CHO	4.9	1	4983.8	342.4	14.6



Supplemental Figure 12. Repressor induction curve histograms. Representative histograms for HEK cells transfected with Doxycycline-inducible repressors including AmtR, BM3R1, LmrA, McbR, and PhlF are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Cells were transfected with the YFP-reporter plasmid indicated, a plasmid constitutively expressing the rtTA3 activator, a plasmid constitutively expressing eBFP, a plasmid expressing the P_{TRE} repressor indicated, and a plasmid constitutively expressing the Gal4-VP16 fusion protein. Grey, green, and black histograms correspond to cells containing 0, 0.5 µM, or 5 µM Doxycycline, respectively. Histograms correspond to the curves illustrated in Figure 4b.



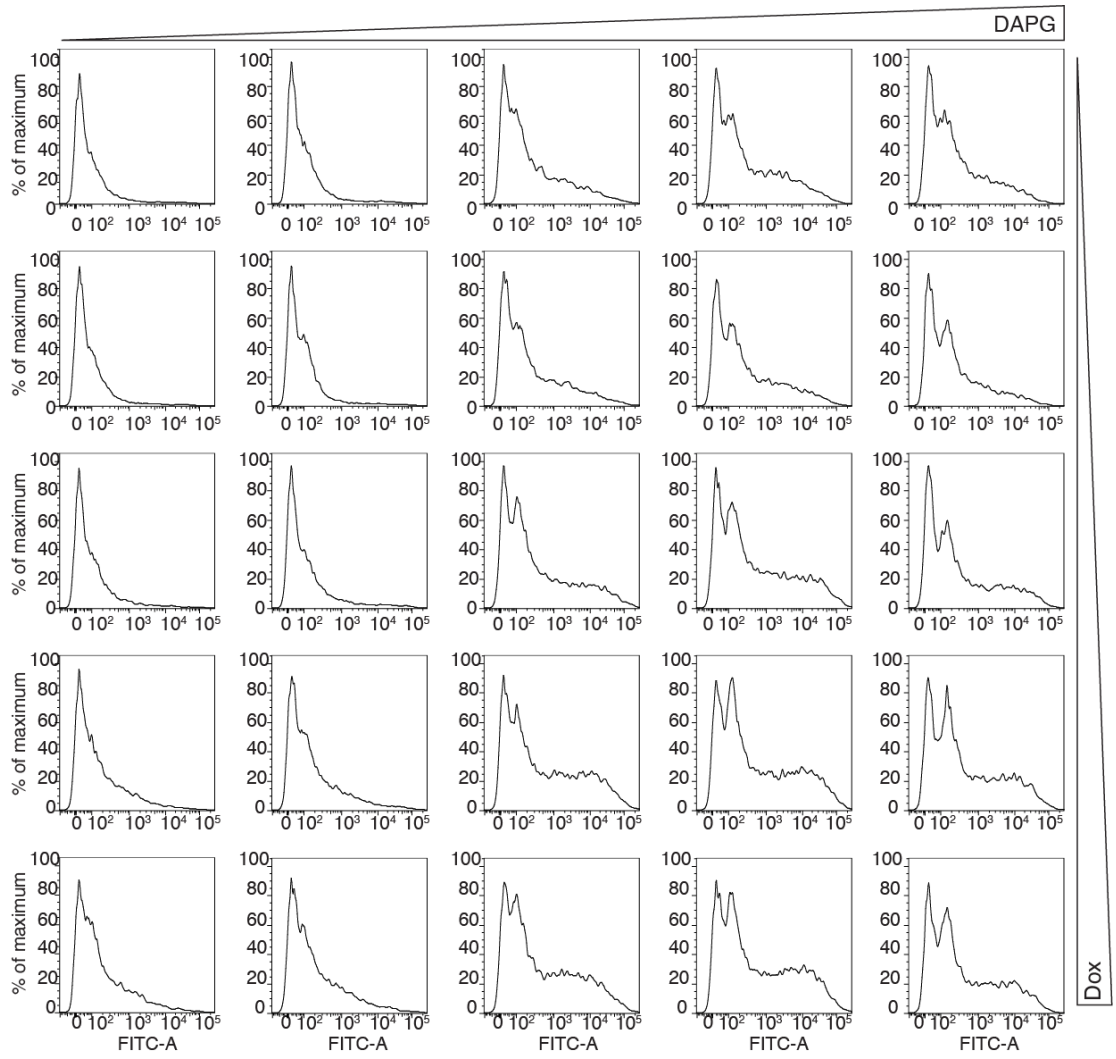
Supplemental Figure 13. Activator induction curve histograms. Representative histograms for HEK cells transfected with either the Doxycycline-inducible AmtR (left) or the DAPG-inducible QacR (right) activators are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Cells were transfected with the YFP-reporter plasmid indicated, a plasmid constitutively expressing the rtTA3 activator (left histogram only), a plasmid constitutively expressing eBFP, a plasmid expressing the inducible activator indicated, a plasmid constitutively expressing the PhlF repressor (right histogram only), and a plasmid constitutively expressing the Gal4-VP16 fusion protein (right histogram only). Grey, green, and black histograms correspond to cells containing 0, 0.05, or 5 µM Doxycycline (left panel) respectively, or 0, 1, or 30 µM DAPG respectively (right panel). Histograms correspond to the curves illustrated in Figure 4d.



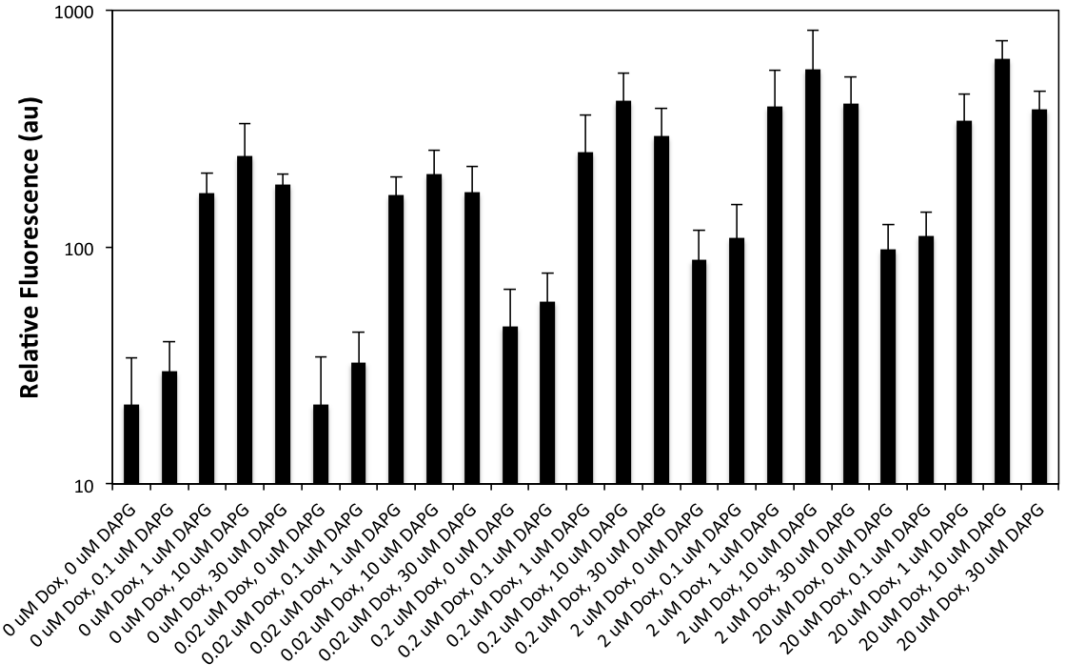
Supplemental Figure 14. Renormalization of NOT gates based on promoter activity. The data for each NOT gate was fit using the hill equation, where values along the x-axis were modified into units of promoter activity.

Supplemental Table 2. Transcription factor response curves parameters (REU)

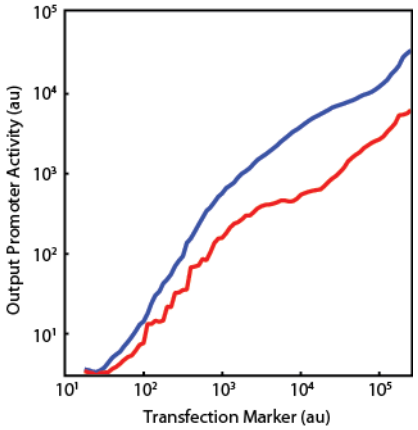
Name	Inducer	*K*	*n*
$McbR^R$	Dox	6.21	0.64
$PhlF^R$	Dox	5.79	1.05
$AmtR^R$	Dox	22.88	0.67
$BM3R1^R$	Dox	7.13	0.67
$LmrA^R$	Dox	6.08	0.61
$AmtR^A$	Dox	0.12	1.37
$QacR^A$	DAPG	2.06	1.44



Supplemental Figure 15. Synthetic enhancer fluorescent histograms. Representative histograms for HEK cells transfected with the Doxycycline-inducible AmtR activator, the DAPG-inducible QacR activator, and the corresponding hybrid reporter are illustrated. The y-axis corresponds to the % maximum cells, while the x-axis details the FITC-A fluorescent signal in arbitrary units. Cells were transfected with the hybrid YFP-reporter plasmid, a plasmid constitutively expressing rtTA3, a plasmid constitutively expressing eBFP, a plasmid expressing the AmtR inducible activator, a plasmid expressing the QacR inducible activator, a plasmid constitutively expressing the PhlF repressor, and a plasmid constitutively expressing the Gal4-VP16 fusion protein, for a total of 7 plasmids per transfection. From left to right across each column, DAPG concentrations correspond to 0, 0.1, 1, 10, and 30 µM DAPG. From top to bottom down each row, Doxycyline concentrations correspond to 0, 0.002, 0.02, 0.2, and 2 µM Doxycycline.



Supplemental Figure 16. Synthetic enhancer standard deviation. The relative fluorescence of cells containing varying inducers is illustrated. Data correspond to the average FITC-A geometric mean values obtained from flow cytometry of three transfections performed on different days. Error bars are based on the standard deviation of these three independent replicates.



Supplemental Figure 17. Comparison between copy number and output promoter activity. The activation of the output promoter for the Fuzzy AND gate present in Figure 4e and 4f is illustrated under non- and maximal inducing conditions, and is shown as a function of transfection efficiency. Each curve illustrates the moving average of bins for the different transfection efficiencies for both uninduced (blue) and fully induced (red, 20 µM Doxycycline and 30 µM DAPG) conditions.

Supplemental Table 3. Mammalian Part Sequences

Part	Sequence
VP16	GCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGA
DD-tag	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCATGCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGTGGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCAGGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGA
NES	GCGTTAGCACTTAAATTAGCTGGTTTGGACATAGGCGGC
NLS	CCCCCCAAGAAAAAGCGGAAAGTG
Gal4-VP16	ATGAGCGAGCTGATTAAGGAGAACATGCACATGAAGCTGTACATGGAGGGCACCGTGGACAACCATCACTTCAAGTGCACATCCGAGGGCGAAGGCAAGCCCTACGAGGGCACCCAGACCATGAGAATCAAGGTGGTCGAGGGCGGCCCTCTCCCCTTCGCCTTCGACATCCTGGCTACTAGCTTCCTCTACGGCAGCAAGACCTTCATCAACCACACCCAGGGCATCCCCGACTTCTTCAAGCAGTCCTTCCCTGAGGGCTTCACATGGGAGAGAGTCACCACATACGAAGACGGGGGCGTGCTGACCGCTACCCAGGACACCAGCCTCCAGGACGGCTGCCTCATCTACAACGTCAAGATCAGAGGGGTGAACTTCACATCCAACGGCCCTGTGATGCAGAAGAAAACACTCGGCTGGGAGGCCTTCACCGAGACGCTGTACCCCGCTGACGGCGGCCTGGAAGGCAGAAACGACATGGCCCTGAAGCTCGTGGGCGGGAGCCATCTGATCGCAAACATCAAGACCACATATAGATCCAAGAAACCCGCTAAGAACCTCAAGATGCCTGGCGTCTACTATGTGGACTACAGACTGGAAAGAATCAAGGAGGCCAACAACGAGACCTACGTCGAGCAGCACGAGGTGGCAGTGGCCAGATACTGCGACCTCCCTAGCAAACTGGGGCACGGATCTGGCGCCACCAACTTCTCTCTGCTGAAGCAGGCCGGCGACGTGGAGGAGAACCCAGGCCCATCTAGAATGGCCCCCCCGACCGATGTCAGCCTGGGGGACGAGCTCCACTTAGACGGCGAGGACGTGGCGATGGCGCATGCCGACGCGCTAGACGATTTCGATCTGGACATGTTGGGGGACGGGGATTCCCCGGGTCCGGGGATTTACCCCCCACGACTCCGCCCCCTACGGCGCTCTGGATATGGCCGACTTCGAGTTTGAGCAGATGTTTACCGATGCCCTTGGAATTGACGAGTACGGTGGGACGCGTATGAAGCTACTGTCTTCTATCGAACAAGCATGCGATATTTGCCGACTTAAAAAGCTCAAGTGCTCCAAAGAAAAACCGAAGTGCGCCAAGTGTCTGAAGAACAACTGGGAGTGTCGCTACTCTCCCAAAACCAAAAGGTCTCCGCTGACTAGGGCACATCTGACAGAAGTGGAATCAAGGCTAGAAAGACTGGAACAGCTATTTCTACTGATTTTTCCTCGAGAAGACCTTGACATGATTTTGAAAATGGATTCTTTACAGGATATAAAAGCATTGTTAACAGGATTATTTGTACAAGATAATGTGAATAAAGATGCCGTCACAGATAGATTGGCTTCAGTGGAGACTGATATGCCTCTAACATTGAGACAGCATAGAATAAGTGCGACATCATCATCGGAAGAGAGTAGTAACAAAGGTCAAAGACAGTTGACTGTATAA
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pCMV mini	AGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGAT
5X-Gal4 binding sites	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCCTCCG
phEF1a	TTGGCTCCGGTGCCCGTCAGTGGGCAGAGCGCACATCGCCCACAGTCCCCGAGAAGTTGTGGGGAGGGGTCGGCAATTGAACCGGTGCCTAGAGAAGGTGGCGCGGGGTAAACTGGGAAAGTGATGTCGTGTACTGGCTCCGCCTTTTTCCCGAGGGTGGGGGAGAACCGTATATAAGTGCAGTAGTCGCCGTGAACGTTCTTTTTCGCAACGGGTTTGCCGCCAGAACACAGGTAAGTGCCGTGTGTGGTTCCCGCGGGCCTGGCCTCTTTACGGGTTATGGCCCTTGCGTGCCTTGAATTACTTCCACCTGGCTGCAGTACGTGATTCTTGATCCCGAGCTTCGGGTTGGAAGTGGGTGGGAGAGTTCGAGGCCTTGCGCTTAAGGAGCCCCTTCGCCTCGTGCTTGAGTTGAGGCCTGGCCTGGGCGCTGGGGCCGCCGCGTGCGAATCTGGTGGCACCTTCGCGCCTGTCTCGCTGCTTTCGATAAGTCTCTAGCCATTTAAAATTTTTGATGACCTGCTGCGACGCTTTTTTTCTGGCAAGATAGTCTTGTAAATGCGGGCCAAGATCTGCACACTGGTATTTCGGTTTTTGGGGCCGCGGGCGGCGACGGGGCCCGTGCGTCCCAGCGCACATGTTCGGCGAGGCGGGGCCTGCGAGCGCGGCCACCGAGAATCGGACGGGGGTAGTCTCAAGCTGGCCGGCCTGCTCTGGTGCCTGGCCTCGCGCCGCCGTGTATCGCCCCGCCCTGGGCGGCAAGGCTGGCCCGGTCGGCACCAGTTGCGTGAGCGGAAAGATGGCCGCTTCCCGGCCCTGCTGCAGGGAGCTCAAAATGGAGGACGCGGCGCTCGGGAGAGCGGGCGGGTGAGTCACCCACACAAAGGAAAAGGGCCTTTCCGTCCTCAGCCGTCGCTTCATGTGACTCCACGGAGTACCGGGCGCCGTCCAGGCACCTCGATTAGTTCTCGAGCTTTTGGAGTACGTCGTCTTTAGGTTGGGGGGAGGGGTTTTATGCGATGGAGTTTCCCCACACTGAGTGGGTGGAGACTGAAGTTAGGCCAGCTTGGCACTTGATGTAATTCTCCTTGGAATTTGCCCTTTTTGAGTTTGGATCTTGGTTCATTCTCAAGCCTCAGACAGTGGTTCAAAGTTTTTTTCTTCCATTTCAGGT
pTRE-tight	TCCCTATCAGTGATAGAGAACGATGTCGAGTTTACTCCCTATCAGTGATAGAGAACGTATGTCGAGTTTACTCCCTATCAGTGATAGAGAACGTATGTCGAGTTTACTCCCTATCAGTGATAGAGAACGTATGTCGAGTTTATCCCTATCAGTGATAGAGAACGTATGTCGAGTTTACTCCCTATCAGTGATAGAGAACGTATGTCGAGGTAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGC
pQacR^{A}-AmtR^{A}	TTCTATCGATCTATAGATAATGATTTCTATCGATCTATAGATAATCATTTCTATCGATCTATAGATAATCATATAGACCGTGCGATCGGTCTATAGTTATAGACCGTGCGATCGGTCTATAAGTATAGACCGTGCGATCGGTCTATACGGGTCTCAGCTAGCTAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATC
eYFP	ATGGTGAGCAAGGGCGAGGAGCTGTTCACCGGGGTGGTGCCCATCCTGGTCGAGCTGGACGGCGACGTAAACGGCCACAAGTTCAGCGTGTCCGGCGAGGGCGAGGGCGATGCCACCTACGGCAAGCTGACCCTGAAGTTCATCTGCACCACCGGCAAGCTGCCCGTGCCCTGGCCCACCCTCGTGACCACCTTCGGCTACGGCCTGCAGTGCTTCGCCCGCTACCCCGACCACATGAAGCAGCACGACTTCTTCAAGTCCGCCATGCCCGAAGGCTACGTCCAGGAGCGCACCATCTTCTTCAAGGACGACGGCAACTACAAGACCCGCGCCGAGGTGAAGTTCGAGGGCGACACCCTGGTGAACCGCATCGAGCTGAAGGGCATCGACTTCAAGGAGGACGGCAACATCCTGGGGCACAAGCTGGAGTACAACTACAACAGCCACAACGTCTATATCATGGCCGACAAGCAGAAGAACGGCATCAAGGTGAACTTCAAGATCCGCCACAACATCGAGGACGGCAGCGTGCAGCTCGCCGACCACTACCAGCAGAACACCCCCATCGGCGACGGCCCCGTGCTGCTGCCCGACAACCACTACCTGAGCTACCAGTCCAAGCTGAGCAAAGACCCCAACGAGAAGCGCGATCACATGGTCCTGCTGGAGTTCGTGACCGCCGCCGGGATCACTCTCGGCATGGACGAGCTGTACAAGTAA

eBFP	ATGAGCGAGCTGATTAAGGAGAACATGCACATGAAGCTGTACATGGAGGGCACCGTGGACAACCATCACTTCAAGTGCACATCCGAGGG CGAAGGCAAGCCCTACGAGGGCACCCAGACCATGAGAATCAAGGTGGTCGAGGGCGGCCCTCTCCCCTTCGCCTTCGACATCCTGGCTA CTAGCTTCCTCTACGGCAGCAAGACCTTCATCAACCACACCCAGGGCATCCCCGACTTCTTCAAGCAGTCCTTCCCTGAGGGCTTCACA TGGGAGAGAGTCACCACATACGAAGACGGGGGCGTGCTGACCGCTACCCAGGACACCAGCCTCCAGGACGGCTGCCTCATCTACAACGT CAAGATCAGAGGGGTGAACTTCACATCCAACGGCCCTGTGATGCAGAAGAAAACACTCGGCTGGGAGGCCTTCACCGAGACGCTGTACC CCGCTGACGGCGGCCTGGAAGGCAGAAACGACATGGCCCTGAAGCTCGTGGGCGGGAGCCATCTGATCGCAAACATCAAGACCACATAT AGATCCAAGAAACCCGCTAAGAACCTCAAGATGCCTGGCGTCTACTATGTGGACTACAGACTGGAAAGAATCAAGGAGGCCAACAACGA GACCTACGTCGAGCAGCACGAGGTGGCAGTGGCCAGATACTGCGACCTCCCTAGCAAACTGGGGCACGGATCTGGCGCCACCAACTTCT CTCTGCTGAAGCAGGCCGGCGACGTGGAGGAGAACCCAGGCCCATCTAGAATG
Kozak sequence	GCTGAGCCACC
rb glob PA Terminator	TTCACTCCTCAGGTGCAGGCTGCCTATCAGAAGGTGGTGGCTGGTGTGGCCAATGCCCTGGCTCACAAATACCACTGAGATCTTTTTCC CTCTGCCAAAAATTATGGGGACATCATGAAGCCCCTTGAGCATCTGACTTCTGGCTAATAAAGGAAATTTATTTTCATTGCAATAGTGT GTTGGAATTTTTTGTGTCTCTCACTCGGAAGGACATATGGGAGGGCAAATCATTTAAAACATCAGAATGAGTATTTGGTTTAGAGTTTG GCAACATATGCCCATATGCTGGCTGCCATGAACAAAGGTTGGCTATAAAGAGGTCATCAGTATATGAAACAGCCCCCTGCTGTCCATTC CTTATTCCATAGAAAAGCCTTGACTTGAGGTTAGATTTTTTTTATATTTTGTTTTGTGTTATTTTTTTCTTTAACATCCCTAAAATTTT CCTTACATGTTTTACTAGCCAGATTTTTCCTCCTCTCCTGACTACTCCCAGTCATAGCTGTCCCTCTTCTCTTATGGAGAT
AmtR[A]	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGGCTGGCGCCGTGGGCAGACCCAGAAGATC TGCTCCTCGGAGAGCCGGCAAGAACCCCCGGGAAGAGATTCTGGATGCCAGCGCCGAGCTGTTCACCAGACAGGGCTTTGCCACCACCA GCACCCACCAGATTGCCGACGCTGTGGGCATCAGACAGGCCAGCCTGTACTACCACTTCCCCAGCAAGACCGAGATCTTCCTGACCCTG CTGAAAAGCACCGTGGAACCCTCCACCGTGCTGGCCGAGGATCTGTCTACCCTGGACGCCGGACCCGAAATGAGACTGTGGGCTATCGT GGCCAGCGAAGTGCGGCTGCTGCTGAGCACCAAGTGGAACGTGGGCCGGCTGTACCAGCTGCCCATCGTGGGCTCTGAGGAATTCGCCG AGTACCACAGCCAGCGCGAGGCCCTGACCAACGTGTTCAGAGATCTGGCCACCGAGATTGTGGGCGACGACCCCAGAGCCGAACTGCCC TTCCACATCACCATGAGCGTGATCGAGATGCGGCGGAACGACGGCAAGATCCCTAGCCCTCTGAGCGCCGACTCTCTGCCCGAGACAGC CATTATGCTGGCTGACGCCTCCCTGGCTGTGCTGGGAGCACCTCTGCCTGCCGACAGAGTGGAAAAGACACTGGAACTGATCAAGCAGG CCGACGCCAAGGCGTTAGCACTTAAATTAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAG CTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCC TGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCAC TGGGCATCGACGAGTACGGCGGACCCCCCAAGAAAAAGCGGAAAGTGTGATGAG
ButR[A]	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGAGCAAGGCCGCCAAGAGCAGCCGGAACAC CTCTCCTGATGCCCCTGAGAGCGCCGCTGGAAATAGAGCCGCCGCTCAGCGGCTGAAGATGCGGAGAGAACTGGCCGCTGCCGCCATGG AACTGTTCGCCAGCAAGGGCTACAAGGCCACCACCGTGGATGAGATTGCCGCTGCTGCTGGCGTGGCCAGACGGACCTTCTTCCGGCAC TTCCGGTCCAAAGAGGAAGCCATCTTCCCCGACCACGACGACACCCTGATTAGAGCCGAGGCCGTGCTGAATGCCGCCCCTCCTCACGA ACACCCCCTGGATACCGTGTGCCGGGGCATCAAAGAAGTGATGAAGATGTACGCCGCCAGCCCTGCCGTGTCCGTGGAACGGTACAGAC TGACCAGAGAGGTGCCCACACTGAGAGAGCGCGAGATCGCCTCCGTGGCTAGATACGAGCGGCTGTTCACCAGATACCTGCTGGGCCAC TTCGACGAGCACGCCCACCACGATGGCAACGACGATCCTCTGCTGGCCGAAGTGGCTGCCTCTGCCGTGGTCACAGCCCACAACCACGT GCTGAGAAGATGGCTGAGAGCCGGCGGACAGGGCGACGTGGAAACACAGCTGGATCACGCCTTCGCCATCGTGCGGAGAACCTTCGGCA CAGGCATCGGAGCCGGCAGAGATACACTGCCAGCTGCCGGACCTGCCACAGTGTCTGCTCAGGGCGAAGTGCTCGTGACCGTGGCAAGA ACCGACGCCCCTCTGGACGAAGTCATGCGGACCATCGAGAAGGCCCTGCGCGAGAGATCTGCGTTAGCACTTAAATTAGCTGGTTTGGA CATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCG ACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGC GCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGACCCCCCAAGAAAAAGCG GAAAGTGTGATGA
IcaR[A]	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGAAGGACAAGATCATCGACAACGCCATCAC CCTGTTCAGCGAGAAGGGCTACGACGGCACCACACTGGACGACATCAGCAAGAGCGTGAACATCAAGAAGGCCAGCCTGTACTACCACT ACGACAACAAAGAGGAAATCTACCGGAAGTCCGTCGAGAACTGCTTCAACTACTTCATCGACTTTCTGCTGCGGAACCACGACGATAAC TACAGCATCGACGGCCTGTACCAGTTCCTGTTCAAGTTTATCTTCGACGTGGACGAGCGGTACATCAAGCTGTACGTGCAGCTGAGCAG CGCCCCTGAGGCCCTGAACAGCGAGATCAAGCACCATCTGCAGGAAATCAACACCACCCTGCACGACGAGCTGATCAAGTACTACGACC CCACCCACATTGCTCTGAACAAAGAAGATTTCATCAACCTGATCCTGCTGTTCCTGGAAACCTGGTACTTCCGGGCCAGCTTCTCCCAG AAATTCGGCGTGATCGAGGACAGCAAGAACCGGTTCAAGGACCAGGTGTACAGCCTGCTGAACGTGTTCCTGAAGAAGGCGTTAGCACT TAAATTAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACG TGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCAC GACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGG ACCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
LmrA[A]	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGAGCTACGGCGACAGCAGAGAGAAGATCCT GAGCGCCGCCACCCGGCTGTTCCAGCTGCAAGGCTACTACGGCACCGGCCTGAACCAGATCATCAAAGAGAGCGGAGCCCCCAAGGGCA GCCTGTACTACCACTTCCCTGGCGGCAAAGAGCAGCTGGCCATCGAGGCCGTGAACGAGATGAAGGAGTACATCCGGCAGAAAATCGCC GACTGCATGGAAGCCTGCACCGACCCCGCCGAGGGCATCCAGGCCTTTCTGAAAGAGCTGAGCTGCCAGTTCTCCTGCACCGAGGACAT CGAGGGCCTGCCTGTGGACTGCTGGCCGCCGAGACAAGCCTGAAGTCCGAGCCCCTGAGAGAGGCCTGCCACGAGGCCTACAAAGAAT GGGCCAGCGTGTACGAGGAAAAGCTGCGGCAGACCGGCTGCAGCGAGAGCAGAGCCAAAGAGGCCAGCACCGTCGTCAACGCCATGATC GAGGGCGGCATCCTGCTGAGCCTGACCGCCAAGAACAGCACCCCCCTGCTGCACATCAGCAGCTGCATCCCCGACCTGCTGAAGAGAGC GTTAGCACTTAAATTAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACG GCGAGGACGTGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTC ACACCCCACGACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGA GTACGGCGGACCCCCCAAGAAAAAGCGGAAAGTGTGATGA

McbR^{A}	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGGCCGCCAGCGCCAGCGGCAAGAGCAAAAC AAGCGCTGGCGCCAACCGGCGGAGAAACAGACCCAGCCCTAGACAGAGACTGCTGGACAGCGCCACCAACCTGTTCACCACCGAGGGCA TCAGAGTGATCGGCATCGACCGGATCCTGCGCGAGGCCGATGTGGCCAAGGCCAGCCTGTACAGCCTGTTCGGCAGCAAGGATGCCCTC GTGATCGCCTACCTGGAAAACCTGGACCAGCTGTGGCGCGAAGCCTGGCGGGAAAGAACCGTGGGCATGAAGGACCCCGAGGACAAGAT TATCGCCTTCTTCGACCAGTGCATCGAGGAAGAACCCGAGAAGGACTTCCGGGGCAGCCACTTCCAGAACGCCGCCTCCGAGTACCCCA GACCCGAAACCGATAGCGAGAAGGGCATTGTGGCCGCCGTGCTGGAACACAGAGAGTGGTGCCACAAGACCCTGACCGACCTGCTGACC GAGAAGAACGGCTACCCTGGCACCACACAGGCCAACCAGCTGCTGGTGTTTCTGGATGGCGGCCTGGCCGGCAGCAGACTGGTGCACAA TATCAGCCCCCTGGAAACCGCCAGAGATCTGGCCAGACAGCTGCTCTCTGCCCCCCCTGCCGACTACTCTATCGCGTTAGCACTTAAAT TAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCA ATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTC TGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGACCCC CCAAGAAAAAGCGGAAAGTGTGATGA
PhlF^{A}	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGGCCCGGACCCCCAGCAGAAGCAGCATCGG ATCTCTGAGAAGCCCCCACACCCACAAGGCCATCCTGACCAGCACCATCGAGATCCTGAAAGAGTGCGGCTACAGCGGCCTGAGCATCG AGTCTGTGGCTAGAAGGGCTGGCGCCTCCAAGCCCACCATCTACCGGTGGTGGACAAACAAGGCCGCCCTGATCGCCGAGGTGTACGAG AACGAGAGCGAGCAGGTCCGAAAGTTCCCCGACCTGGGCAGCTTCAAGGCCGATCTGGACTTCCTGCTGCGGAACCTGTGGAAAGTGTG GCGGGAAACCATCTGCGGCGAGGCCTTCAGATGCGTGATCGCTGAGGCCCAGCTGGACCCTGCCACACTGACCCAGCTGAAGGACCAGT TCATGGAACGGCGGAGAGAGATGCCCAAGAAACTGGTGGAAAACGCCATCAGCAACGGCGAGCTGCCCAAGGACACCAACCGGGAACTG CTGCTGGATATGATCTTCGGCTTCTGCTGGTACAGACTGCTGACCGAGCAGCTGACCGTGGAACAGGATATCGAGGAATTCACCTTTCT GCTGATCAACGGCGTGTGCCCCGGCACCCAGAGAGCGTTAGCACTTAAATTAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCA CCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGAC ATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTT CGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGACCCCCCAAGAAAAAGCGGAAAGTGTGATGA
QacR^{A}	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGAACCTGAAGGACAAGATCCTGGGCGTGGC CAAAGAGCTGTTCATCAAGAACGGCTACAACGCCACCACCACCGGCGAGATCGTGAAGCTGAGCGAGAGCAGCAAGGGCAACCTGTACT ACCACTTCAAGACCAAAGAGAACCTGTTCCTCGAGATCCTGAACATCGAGGAATCCAAGTGGCAGGAACAGTGGAAAAAAGAACAGATC AAGTGCAAGACAAACCGCGAGAAGTTCTACCTGTACAACGAGCTGAGCCTGACCACCGAGTACTACTACCCCCTGCAGAACGCCATCAT CGAGTTCTACACAGAGTACTATAAGACCAACAGCATCAACGAGAAGATGAACAAGCTCGAGAACAAGTACATCGACGCCTACCACGTGA TCTTCAAAGAGGGCAATCTGAACGGCGAGTGGTGCATCAATGACGTGAACGCCGTGTCCAAGATCGCCGCCAATGCCGTGAATGGCATC GTGACCTTCACCCACGAGCAGAACATTAACGAGCGGATCAAGCTCATGAACAAATTCAGCCAGATCTTCCTGAACGGGCTGAGCAAGGCGTTAGCACTTAAATTAGCTGGTTTGGACATAGGCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCGACGCTCTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGCGCCCTGGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGACCCCCCAAGAAAAAGCGGAAAGTGTGATGA
TetR^{A}	ATGGGAGTGCAGGTGGAGACCATCAGCCCAGGAGATGGCAGGACATTCCCCAAGCGCGGGCAGACTTGCGTGGTGCACTACACCGGCAT GCTGGAGGACGGGAAGAAAGTGGATAGCTCCAGGGACCGCAACAAGCCCTTCAAGTTCATGCTGGGAAAGCAGGAAGTGATCCGCGGGT GGGAGGAAGGAGTGGCCCAGATGAGTGTGGGCCAGCGGGCTAAACTGACTATTTCACCTGACTACGCCTATGGAGCTACCGGCCACCCA GGGATCATTCCCCCTCATGCCACCCTGGTGTTCGATGTGGAGCTGCTGAAGCCAGAAATGAGCCGGCTGGACAAGAGCAAAGTGATCAA CAGCGCCCTGGAACTGCTCAACGAAGTGGGCATCGAGGGCCTGACCACCCGGAAGCTGGCTCAGAAACTGGGCGTGGAACAGCCCACCC TGTACTGGCACGTGAAGAACAAGAGAGCCCTGCTGGACGCCCTGGCCATCGAGATGCTGGACCGGCACCACACCCACTTTTGCCCCCTG GAAGGCGAGAGCTGGCAGGATTTCCTGCGGAACAACGCCAAGAGCTTCAGATGCGCTCTGCTGTCCCACCGGGATGGCGCCAAAGTGCA CCTGGGCACCAGACCTACCGAGAAGCAGTACGAGACACTGGAAAACCAGCTGGCCTTCCTGTGCCAGCAGGGCTTCAGCCTGGAAAATG CCCTGTACGCCCTGAGCGCCGTGGGCCACTTTACACTGGGCTGCGTGCTGGAAGATCAGGAACACCAGGTCGCCAAAGAGGAAAGAGAG ACACCCACCACCGACAGCATGCCCCCTCTGCTGAGACAGGCCATTGAGCTGTTCGATCATCAGGGCGCCGAGCCCGCCTTTCTGTTCGG CCTCGAGCTGATCATCTGTGGCCTCGAAAAACAGCTGAAGTGCGAGTCCGGCAGCGCGTTAGCACTTAAATTAGCTGGTTTGGACATAG GCGGCGCCAGCGCCCCTCCCACCGATGTGTCCCTGGGAGATGAGCTGCACCTGGACGGCGAGGACGTGGCAATGGCCCATGCCGACGCT CTGGACGACTTCGACCTGGACATGCTGGGCGACGGCGATAGCCCTGGCCCTGGCTTCACACCCCACGACTCTGCCCCTTACGGCGCCCT GGACATGGCCGACTTCGAGTTCGAGCAGATGTTCACCGACGCACTGGGCATCGACGAGTACGGCGGACCCCCCAAGAAAAAGCGGAAAG TGTGATGA
AmtR^{R}	ATGGCTGGCGCCGTGGGCAGACCTAGAAGATCTGCCCCTCGGAGAGCCGGCAAGAACCCCAGAGAAGAGATCCTGGATGCCAGCGCCGA GCTGTTCACCAGACAGGGCTTTGCCACCACCAGCACCCACCAGATTGCCGACGCTGTGGGCATCAGACAGGCCAGCCTGTACTACCACT TCCCCAGCAAGACCGAGATCTTCCTGACCCTGCTGAAGTCCACCGTGGAACCCAGCACCGTGCTGGCCGAGGATCTGTCTACACTGGAC GCCGGACCCGAGATGAGACTGTGGGCCATCGTGGCCTCTGAAGTGCGGCTGCTGCTGAGCACCAAGTGGAACGTGGGCCGGCTGTACCA GCTGCCTATCGTGGGCTCCGAGGAATTCGCCGAGTACCACAGCCAGCGCGAGGCCCTGACCAACGTGTTCAGAGATCTGGCCACCGAGA TTGTGGGCGACGACCCTAGAGCCGAACTGCCCTTCCACATCACCATGAGCGTGATCGAGATGCGGCGGAACGACGGCAAGATCCCTAGC CCTCTGAGCCGCGACTCTCTGCCCGAGACAGCCATCATGCTGGCTGATGCTAGCCTGGCTGTGCTGGGAGCCCCTCTGCCTGCCGACAG AGTGGAAAAGACCCTGGAACTGATCAAGCAGGCCGACGCCAAGGCCAGCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
BM3R1^{R}	ATGGAAAGCACCCCCACCAAGCAGAAGGCCATCTTCAGCGCCAGCCTGCTGCTGTTCGCCGAGAGAGGCTTTGACGCCACCACCATGCC CATGATTGCCGAGAACGCCAAAGTGGGAGCCGGCACCATCTACCGGTACTTCAAGAACAAAGAGAGCCTGGTCAACGAGCTGTTCCAGC AGCACGTGAACGAGTTTCTGCAGTGCATCGAGAGCGGCCTGGCCAATGAGAGGGACGGCTACAGAGATGGCTTCCACCACATCTTCGAG GGCATGGTCACCTTCACCAAGAACCACCCCAGAGCCCTGGGCTTCATCAAGACCCACAGCCAGGGCACCTTTTCTGACCGAGGAAAGCCG GCTGGCCTACCAGAAACTGGTGGAATTCGTGTGCACCTTCTTCAGAGAGGGCCAGAAACAGGGCGTGATCCGGAACCTGCCCGAGAATG CCCTGATCGCCATCCTGTTCGGCAGCTTCATGGAAGTGTACGAGATGATCGAGAACGACTACCTGAGCCTGACCGACGAGCTGCTGACC GGCGTGGAAGAATCTCTGTGGGCCGCTCTGAGCAGACAGAGCGCCAGCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
LmrA^{R}	ATGAGCTACGGCGACAGCAGAGAGAAGATCCTGAGCGCCGCCACCCGGCTGTTCCAGCTGCAAGGCTACTACGGCACCGGCCTGAACCA GATCATCAAAGAGAGCGGAGCCCCCAAGGGCAGCCTGTACTACCACTTCCCTGGCGGCAAAGAGCAGCTGGCCATCGAGGCCGTGAACG AGATGAAGGAGTACATCCGGCAGAAAATCGCCGACTGCATGGAAGCCTGCACCGACCCCGCCGAGGGCATCCAGGCCTTTCTGAAAGAG CTGAGCTGCCAGTTCTCCTGCACCGAGGACATCGAGGGCCTGCCTGTGGGACTGCTGGCCGCCGAGACAAGCCTGAAGTCCGAGCCCCT GAGAGAGGCCTGCCACGAGGCCTACAAAGAATGGGCCAGCGTGTACGAGGAAAAGCTGCGGCAGACCGGCTGCAGCGAGAGCAGAGCCA AAGAGGCCAGCACCGTCGTCAACGCCATGATCGAGGGCGGCATCCTGCTGAGCCTGACCGCCAAGAACAGCACCCCCCTGCTGCACATC AGCAGCTGCATCCCCGACCTGCTGAAGAGAGCCAGCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA

McbR^{R}	ATGGCCGCCAGCGCCTCTGGCAAGTCTAAGACCAGCGCTGGCGCCAACCGGCGGAGAAACAGACCCAGCCCTAGACAGAGACTGCTGGA CAGCGCCACCAACCTGTTCACCACCGAGGGCATCAGAGTGATCGGCATCGACCGGATCCTGCGCGAGGCCGATGTGGCCAAGGCCAGCC TGTACAGCCTGTTCGGCAGCAAGGATGCCCTCGTGATCGCCTACCTGGAAAACCTGGACCAGCTGTGGCGCGAAGCCTGGCGCGAGAGA ACCGTGGGCATGAAGGACCCCGAGGACAAGATTATCGCCTTCTTCGACCAGTGCATCGAGGAAGAACCCGAGAAGGACTTCCGGGGCAG CCACTTCCAGAACGCCGCCTCCGAGTACCCCAGACCCGAAACCGATAGCGAGAAGGGCATTGTGGCCGCCGTGCTGGAACACAGAGAGT GGTGCCACAAGACCCTGACCGACCTGCTGACCGAGAAGAACGGCTACCCTGGCACCACCCAGGCCAACCAGCTGCTGGTGTTTCTGGAT GGCGGCCTGGCCGGCAGCAGACTGGTGCACAATATCAGCCCCCTGGAAACCGCCAGGGACCTGGCCAGACAGCTGCTCTCTGCCCCCCC TGCCGACTACTCTATCGCCAGCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
PhlF^{R}	ATGGCCCGGACCCCCTCTAGAAGCTCTATCGGCAGCCTGAGAAGCCCCCACACCCACAAGGCCATCCTGACCAGCACCATCGAGATCCCT GAAAGAGTGCGGCTACAGCGGCCTGAGCATCGAGTCTGTGGCTAGAAGGGCTGGCGCCTCCAAGCCCACCATCTACCGGTGGTGGACAA ACAAGGCCGCCCTGATCGCCGAGGTGTACGAGAACGAGAGCGAGCAGGTCCGAAAGTTCCCCGACCTGGGCAGCTTCAAGGCCGATCTG GACTTCCTGCTGCGGAACCTGTGGAAAGTGTGGCGGGAAACCATCTGCGGCGAGGCCTTCAGATGCGTGATCGCTGAGGCCCAGCTGGA CCCTGCCACCCTGACACAGCTGAAGGACCAGTTCATGGAACGGCGGAGAGAGATGCCCAAGAAACTGGTGGAAAACGCCATCAGCAACG GCGAGCTGCCCAAGGACACCAACCGGGAACTGCTGCTGGATATGATCTTCGGCTTCTGCTGGTACAGACTGCTGACCGAGCAGCTGACC GTGGAACAGGATATCGAGGAATTCACCTTTCTGCTGATCAACGGCGTGTGCCCCGGCACCCAGAGAGCCAGCCCCCCCAAGAAAAAGCG GAAAGTGTGATGA
QacR^{R}	ATGAACCTGAAGGACAAGATCCTGGGCGTGGCCAAAGAGCTGTTCATCAAGAACGGCTACAACGCCACCACCACCGGCGAGATCGTGAA GCTGAGCGAGAGCAGCAAGGGCAACCTGTACTACCACTTCAAGACCAAAGAGAACCTGTTCCTCGAGATCCTGAACATCGAGGAATCCA AGTGGCAGGAACAGTGGAAGAAAGAACAGATCAAGTGCAAGACAAACCGCGAGAAGTTCTACCTGTACAACGAGCTGAGCCTGACCACC GAGTACTACTACCCCCTGCAGAACGCCATCATCGAGTTCTACACAGAGTACTATAAGACCAACAGCATCAACGAGAAGATGAACAAGCT CGAGAACAAGTACATCGACGCCTACCACGTGATCTTCAAAGAGGGCAATCTGAACGGCGAGTGGTGCATCAATGACGTGAACGCCGTGT CCAAGATCGCCGCCAATGCCGTGAATGGCATCGTGACCTTCACCCACGAGCAGAACATTAACGAGCGGATCAAGCTCATGAACAAATTC AGCCAGATCTTCCTGAACGGGCTGAGCAAGGCCAGCCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
TetR^{R}	ATGAGCCGGCTGGACAAGAGCAAAGTGATCAACAGCGCCCTGGAACTGCTGAACGAAGTGGGCATCGAGGGCCTGACCACCCGGAAGCT GGCTCAGAAACTGGGCGTGGAACAGCCCACCCTGTACTGGCACGTGAAGAACAAGAGAGCCCTGCTGGACGCCCTGGCCATCGAGATGC TGGACCGGCACCACACCCACTTTTGCCCCCTGGAAGGCGAGAGCTGGCAGGACTTCCTGCGGAACAACGCCAAGAGCTTCAGATGCGCT CTGCTGTCCCACCGGGATGGCGCCAAAGTGCACCTGGGCACCAGACCTACCGAGAAGCAGTACGAGACACTGGAAAACCAGCTGGCCTT CCTGTGCCAGCAGGGCTTCAGCCTGGAAAATGCCCTGTACGCCCTGAGCGCCGTGGGCCACTTTACACTGGGCTGCGTGCTGGAAGATC AGGAACACCAGGTCGCCAAAGAGGAAAGAGAGACACCCACCACCGACAGCATGCCCCCTCTGCTGAGACAGGCCATTGAGCTGTTCGAT CATCAGGGCGCCGAGCCCGCCTTTCTGTTCGGCCTCGAGCTGATCATCTGTGGCCTCGAAAAACAGCTGAAGTGCGAGTCCGGCAGCGC CAGCCCCCCCAAGAAAAAGCGGAAAGTGTGATGA
pAmtR^{A}	TTCTATCGATCTATAGATAATGATTTCTATCGATCTATAGATAATCATTTCTATCGATCTATAGATAATCATTTCTATCGATCTATAGA TAATGTTTTCTATCGATCTATAGATAATAGTTTCTATCGATCTATAGATAATCGGGTCTCAGCTAGCTAGGCGTGTACGGTGGGAGGCC TATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGTCTCGGAATTCGAC
pButR^{A}	GTGTCACTTTGACAGCAGTGTCACGAGTGTCACTTTGACAGCAGTGTCACCAGTGTCACTTTGACAGCAGTGTCACCAGTGTCACTTTG ACAGCAGTGTCACGTGTGTCACTTTGACAGCAGTGTCACAGGTGTCACTTTGACAGCAGTGTCACCGGGTCTCAGCTAGCTAGGCGTGT ACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGTCTCGGAATTCGAC
pIcaR^{A}	TTCACCTACCTTTCGTTAGGTTAGGTTGTGATTCACCTACCTTTCGTTAGGTTAGGTTGTCATTCACCTACCTTTCGTTAGGTTAGGTT GTCATTCACCTACCTTTCGTTAGGTTAGGTTGTGTTTCACCTACCTTTCGTTAGGTTAGGTTGTAGTTCACCTACCTTTCGTTAGGTTA GGTTGTcgggtctcagctagctAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGTCTCGGA ATTCGAC
pLmrA^{A}	GATAATAGACCAGTCACTATATTTGAGATAATAGACCAGTCACTATATTTCAGATAATAGACCAGTCACTATATTTCAGATAATAGACC AGTCACTATATTTGTGATAATAGACCAGTCACTATATTTAGGATAATAGACCAGTCACTATATTTCGGGTCTCAGCTAGCTAGGCGTGT ACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGTCTCGGAATTCGAC
pMcbR^{A}	ATAGACTGGCCTGTCTAGAATAGACTGGCCTGTCTACAATAGACTGGCCTGTCTACAATAGACTGGCCTGTCTAGTATAGACTGGCCTG TCTAAGATAGACTGGCCTGTCTACGGGTCTCAGCTAGCTAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCG TCAGATCGGGTCTCGGAATTCGAC
pPhlF^{A}	ATGATACGAAACGTACCGTATCGTTAAGGTGAATGATACGAAACGTACCGTATCGTTAAGGTCAATGATACGAAACGTACCGTATCGTT AAGGTCAATGATACGAAACGTACCGTATCGTTAAGGTGTATGATACGAAACGTACCGTATCGTTAAGGTAGATGATACGAAACGTACCG TATCGTTAAGGTCGGGTCTCAGCTAGCTAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGT CTCGGAATTCGAC
pQacR^{A}	TATAGACCGTGCGATCGGTCTATAGATATAGACCGTGCGATCGGTCTATACATATAGACCGTGCGATCGGTCTATACATATAGACCGTG CGATCGGTCTATAGTTATAGACCGTGCGATCGGTCTATAAGTATAGACCGTGCGATCGGTCTATACGGGTCTCAGCTAGCTAGGCGTGT ACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGAACCGTCAGATCGGGTCTCGGAATTCGAC
pTetR^{A}	ACTCTATCATTGATAGAGTGAACTCTATCATTGATAGAGTCAACTCTATCATTGATAGAGTCAACTCTATCATTGATAGAGTGTACTCT ATCATTGATAGAGTAGACTCTATCATTGATAGAGTCGGGTCTCAGCTAGCTAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCG TTTAGTGAACCGTCAGATCGGGTCTCGGAATTCGAC
pAmtR^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTTTTCTATCGATCTATAGATAATACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTT AGTGAACCGTCAGATCGCGACACTTTCTATCGATCTATAGATAATGGGTCTCGGAATTCGAGC
pBM3R1^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTCGGAATGAACGTTCATTCCGACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAG TGAACCGTCAGATCGCGACACCGGAATGAACGTTCATTCCGGGGTCTCGGAATTCGAGC
pLmrA^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTGATAATAGACCAGTCACTATATTTACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGT TTAGTGAACCGTCAGATCGCGACACGATAATAGACCAGTCACTATATTTGGGTCTCGGAATTCGAGC
pMcbR^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTATAGACTGGCCTGTCTAACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGTGA ACCGTCAGATCGCGACACATAGACTGGCCTGTCTAGGGTCTCGGAATTCGAGC
pPhlF^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTATGATACGAAACGTACCGTATCGTTAAGGTACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGA GCTCGTTTAGTGAACCGTCAGATCGCGACACATGATACGAAACGTACCGTATCGTTAAGGT
pQacR^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTTATAGACCGTGCGATCGGTCTATAACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGT TTAGTGAACCGTCAGATCGCGACACTATAGACCGTGCGATCGGTCTATAGGGTCTCGGAATTCGAGC
pTetR^{R}	CGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTACTGTCCTCCGAGCGGAGTTCTGTCC TCCGGGTCTCAGCTAGCTACTCTATCATTGATAGAGTACGCCGATAGGCGTGTACGGTGGGAGGCCTATATAAGCAGAGCTCGTTTAGT GAACCGTCAGATCGCGACACACTCTATCATTGATAGAGTGGGTCTCGGAATTCGAGC