

SUPPLEMENTARY METHODS**Building Block Sequences**

Gcr1 site: 5'-GATCGTAGAGCTTCCACTAC-3'
3'-CATCTCGAAGGTGATGCTAG-5'

Mig1/Mig2 site: 5'-GATCGTAGCCCCGGATTTAC-3'
3'-CATCGGGGCCTAAATGCTAG-5'

Spacer site: 5'-GATCGTAAGTAGATACATAC-3'
3'-CATTCATCTATGTATGCTAG-5'

Weak Mig1/Mig2 site: 5'-GATCGTAGCCCCACAAATAC-3'
3'-CATCGGGGTGTTTATGCTAG-5'

Reb1 site: 5'-GATCGTAAGATTACCCGTAC-3'
3'-CATTCTAATGGGCATGCTAG-5'

Rap1 site: 5'-GATCGTACACCTGGACATAC-3'
3'-CATGTGGACCTGTATGCTAG-5'

Gcr1 site (different for L2): 5'-GATCGTACAGCTTCCTCTAC-3'
3'-CATGTCTGAAGGAGATGCTAG-5'

Rgt1 site: 5'-GATCGTAGCGGAAAATCTAC-3'
3'-CATCGCCTTTTAGATGCTAG-5'

CSRE site (bound by Sip4 and Cat8): 5'-GATCGTACCGGACGGATTAC-3'
3'-CATGGCCTGCCTAATGCTAG-5'

Hap2/Hap3/Hap4/Hap5 site: 5'-GATCGTACCACCAATCATAC-3'
3'-CATGGTGGTTAGTATGCTAG-5'

Adr1 site: 5'-GATCGTAATCTCCA ACTTAC-3'
3'-CATTAGAGGTTGAATGCTAG-5'

Gcn4 site: 5'-GATCGTAATGACTCATTTAC-3'
3'-CATTACTGAGTAAATGCTAG-5'

Nrg1 site: 5'-GATCGTATGAGGACCCTTAC-3'
3'-CATACTCCTGGGAATGCTAG-5'

Cbfl site: 5'-GATCGTATCACGTGCTTTAC-3'
3'-CATAGTGCACGAAATGCTAG-5'

Met31/Met32 site: 5'-GATCGTAGCCACAGTTTTAC-3'
3'-CATCGGTGTCAAATGCTAG-5'

Xbp1 site: 5'-GATCGTAACTCGAAGGTAC-3'
3'-CATTGGAGCTTCCATGCTAG-5'

Smp1 site: 5'-GATCGTACTATTTTTAGTAC-3'
3'-CATGATAAAAATCATGCTAG-5'

Msn2/Msn4 site: 5'-GATCGTATCACCCCTTATAC-3'
3'-CATAGTGGGGAATATGCTAG-5'

Thermodynamic Model

All calculations were performed using the Matlab package from The Mathworks, Inc. (Natick, MA). To model gene expression we implemented, a thermodynamic model of polymerase occupancy that was proposed by Shea and Ackers²⁹ and modified by Buchler et al³⁰. We assume the promoter has $N-1$ binding sites for particular transcription factors (TFs) plus one binding site for RNA polymerase (RNAP). A state of the promoter is specified by giving the occupancy σ_i , either 0 or 1, of each site. The model calculates a Boltzmann weight for each state of the promoter using:

$$W(\sigma_1, \dots, \sigma_N, \sigma_{1,1}, \dots, \sigma_{N,N}) = \exp\left(-\sum_{i=1}^N q_i \sigma_i - \sum_{j=1}^N \omega_{i,j} \sigma_{i,j}\right) \quad (1)$$

where $\sigma_{i,j}$ represents the number of instances of protein i and protein j bound to each other in that configuration (see below), q_i represents the change in free energy of protein i binding to its respective site plus the natural log of the concentration of that factor, and $\omega_{i,j}$ is the change in free energy of protein i and protein j interacting. We assume the existence of a protein that binds to the Spacer building block in this model for the L1 libraries. To model protein-protein interactions we only allow two TFs to interact if there is no other TF bound between them on the DNA. RNAP is allowed to interact with all proteins bound to the promoter. In our notation q_{TF} and ω_{TF} are equal, respectively, to $\ln(q_{TF})$ and $\ln(\omega_{TF})$ in the notation from³⁰.

To calculate the probability that RNAP was bound to the promoter and therefore the predicted expression of a given promoter we used the equation:

$$Expression = \alpha \times P(pol) = \alpha \left(\frac{\sum W \times \delta(pol)}{\sum W} \right) \quad (2)$$

where α is a scaling factor whose value is the least squares estimate and $\delta(pol)$ is a delta function that is zero when RNAP is not bound and one when it is bound. The summations are over all possible states of the promoter.

Parameter Fitting

To fit the parameters in this model, for all incarnations, we used the `nlinfit` tool in Matlab. The only modification was that the chi-squared value was weighted so that longer promoters (>2 building blocks) had an expected error of 0.25 and shorter promoters had an expected error of 0.45. These two groups had significantly different biological replicate variance ($P < 10^{-5}$, rank sum test). Each model was fit with 20 random starts with energies ranging from -3 to 3. Confidence intervals were calculated using the `nlparci` routine.

We started our analysis of the L1 library with the simplest plausible model by constraining most parameters to remain neutral ($=0$) and then removing constraints to make the model more complex. First the interactions between TFs and RNAP ($\omega_{TF-RNAP}$'s) were fit leaving all other parameters fixed at the neutral value of zero. The parameter values were stable when determined over the random starts. The model had Mig1 and RNAP interacting unfavorably when both are bound to the promoter. Both Gcr1 and Spacer interact favorably with RNAP, but only when their sites are in one particular orientation. This model has an R^2 of .44 indicating that we can explain 44% of the variance in expression, and 68% of the available variance, with only interactions between TFs and RNAP.

We next allowed the parameters corresponding to the DNA-protein interactions (q_{TF} 's) to vary along with the RNAP-TF interactions. After fitting this model the q values remained close to zero while the ω values were nearly identical to the previous model and the fit was not significantly better than the model with only RNAP-TF interactions. DNA-TF and TF-RNAP parameters are tightly linked in the model and are hard to deconvolute, when there is only one type of site for each factor, when only expression is measured. The q values are more informative when analyzing the relative binding affinities of variant sites of the same TF (e.g. weak site library) or varying concentrations of TF.

To analyze the possible effects of TF-TF interactions on the data from library L1, we again fixed the DNA-protein interactions at a neutral value and fit one of the six types of TF-TF interactions (ω_{TF-TF}) at a time. In these models we only let proteins interact if no other protein was bound between them on the promoter. The only significant TF-TF interaction we found was a favorable interaction between two Mig1 proteins, suggesting possible cooperativity between Mig1 monomers. When Mig1-Mig1 interactions are included the magnitude of the unfavorable Mig1-RNAP interaction is decreased to compensate for the cooperativity. This was the most complex model we could reliably fit to the data, yielding an R^2 of 0.49.

To fit a thermodynamic model to the L1-Weak library, we took the parameter values found in the L1 library and held them constant. We then added a parameter, q_{weak} that describes the affinity of Mig1 for the weak Mig1 site. Since the final value of Mig1's interaction with the strong site was zero, the new parameter q_{weak} represents the natural log of the relative affinity of Mig1 for the strong site versus the weak site. We then found the value of q_{weak} that minimized the sum of squared errors in the L1-Weak library, given the parameters in the L1 library. The fit had an R^2 of 0.44. Setting q_{weak} to 0, which gives the weak and the strong site the same affinity to Mig1 gave an R^2 of 0.38. Setting q_{weak} to 100, which essentially eliminates Mig1 binding to the weak site, also gave an R^2 of 0.38.

Libraries L2-L5 were fit in the same manner with the exception that the Mig1 parameters in the L2 library were held fixed at the values obtained from the L1 library. All significant parameter values and confidence intervals are shown in Supplementary Table S8.

SUPPLEMENTARY NOTES

29. Shea, M.A. & Ackers, G.K. The OR control system of bacteriophage lambda. A physical-chemical model for gene regulation. *Journal of molecular biology* **181**, 211-230 (1985).
30. Buchler, N.E., Gerland, U. & Hwa, T. On schemes of combinatorial transcription logic. *Proceedings of the National Academy of Sciences of the United States of America* **100**, 5136-5141 (2003).

SUPPLEMENTARY FIGURES AND LEGENDS

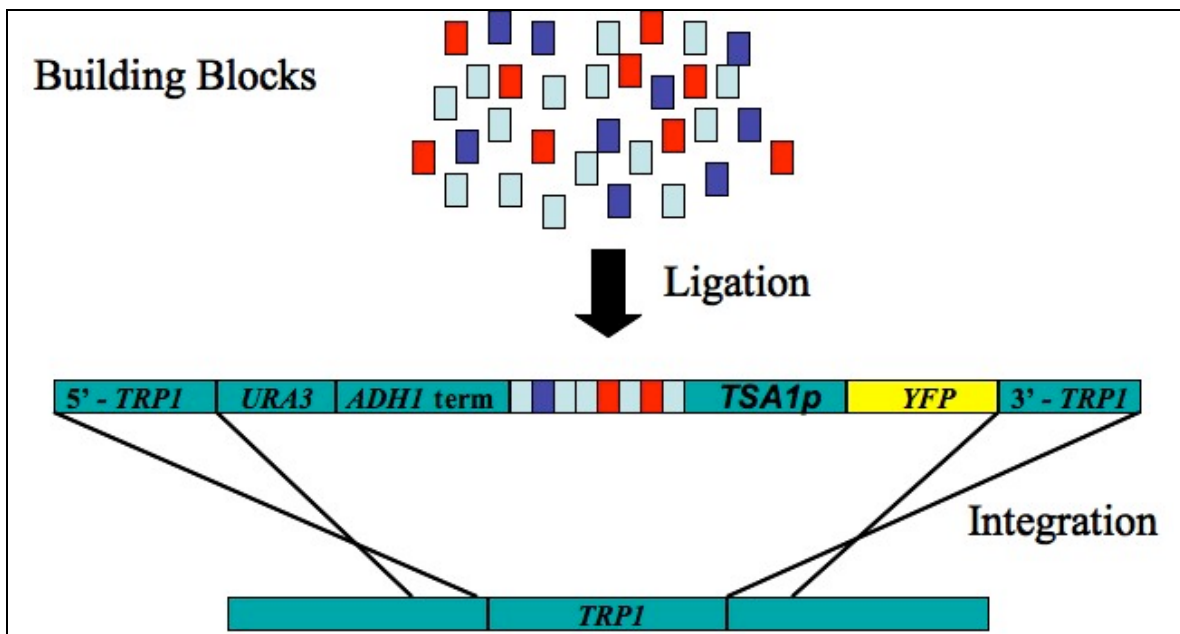
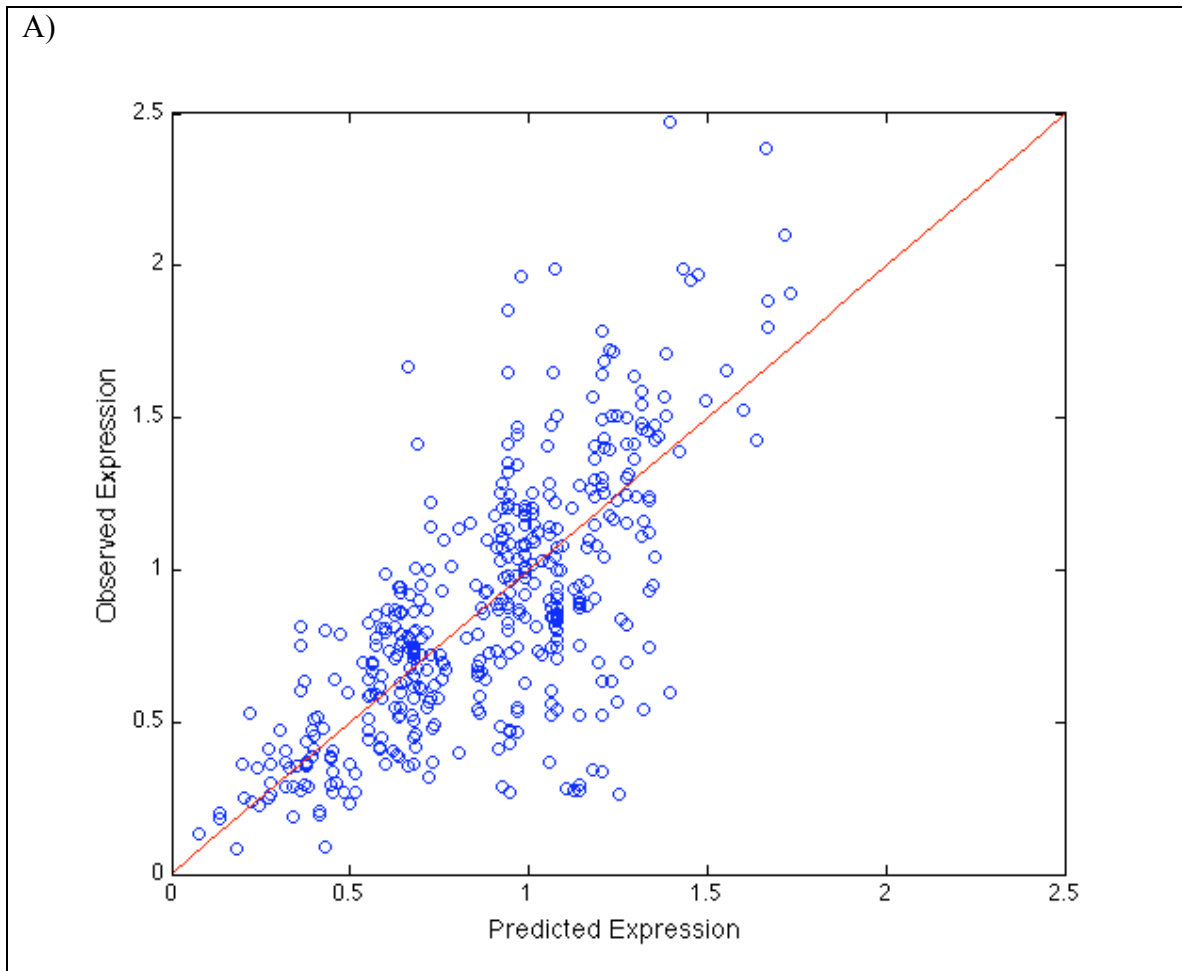


Figure S1. Construction of the synthetic promoter library. Building blocks are ligated together and then inserted into a construct upstream of 140bp of the *TS1* promoter and yellow fluorescent protein (YFP). The construct also contains *URA3* for selection and the *ADH1* terminator to prevent read through from *URA3*. The construct is tailed with homology to the *TRP1* locus. The construct is then integrated into the yeast genome.



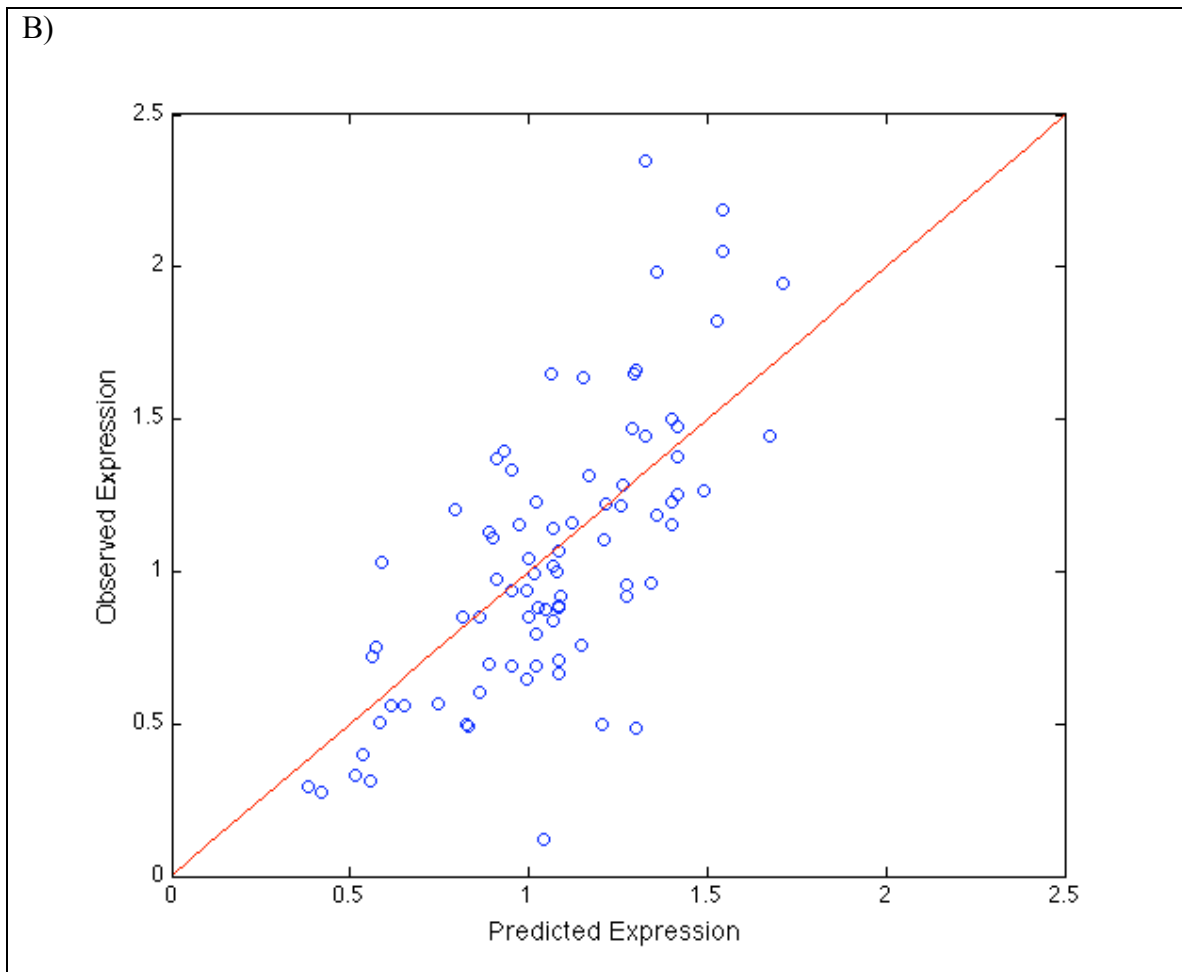


Figure S2. Thermodynamic model accurately predicts expression of promoters. A) Measured expression versus expression predicted by the model for the original library. One data point is not shown (1.45, 3.56) in order to accurately show the majority of the data. The R^2 is slightly higher at 0.5 when the outlier is removed from the data set. B) Observed expression versus predicted expression for L1-Test library. The red line represents perfect agreement between the model and the measured expression and blue circles represent promoters.

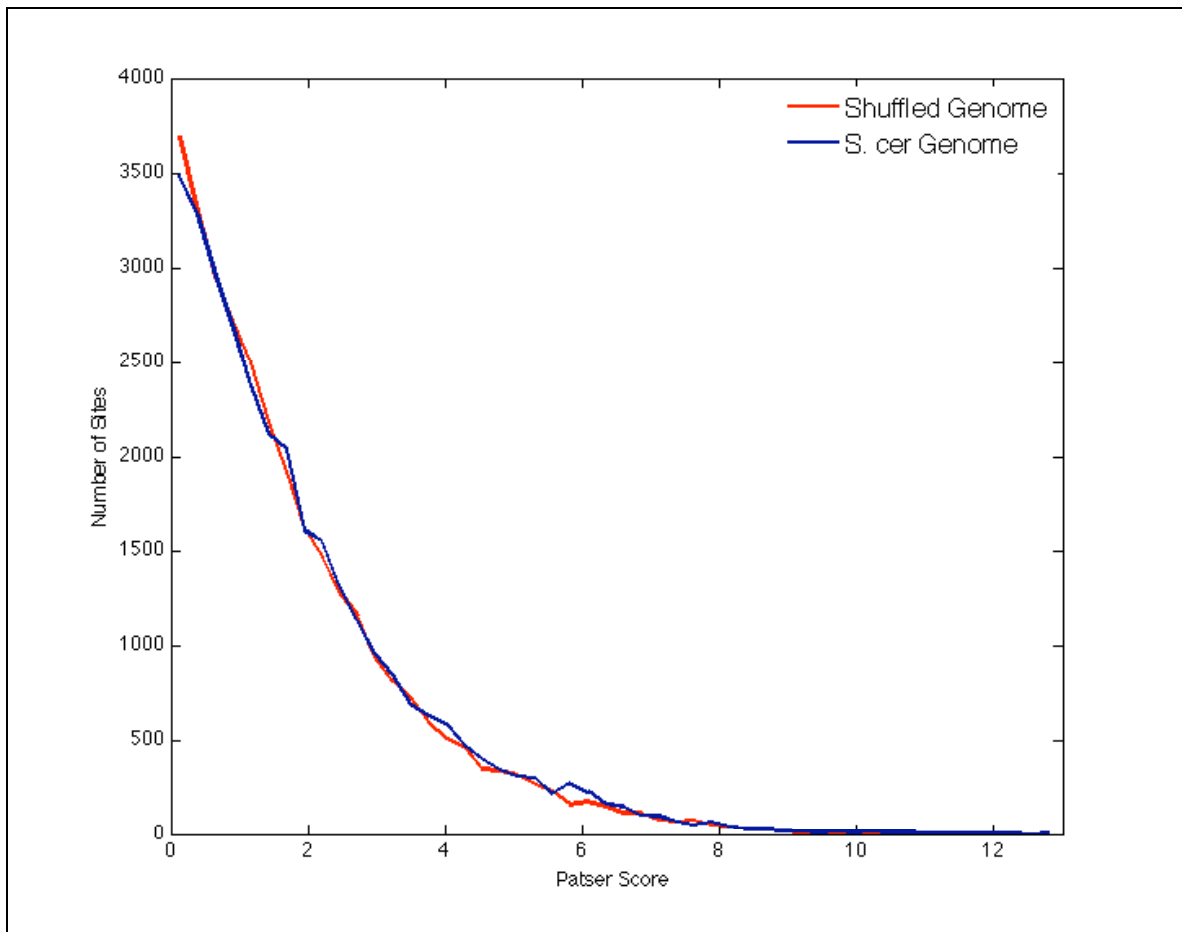


Figure S3. Weak Mig1 sites are over-represented in the *S. cerevisiae* genome. The distribution of Patser scores for Mig1 sites in yeast genomic promoters is shown in blue. The average over 1000 random shuffles of genomic promoters is shown in red. There is an over-representation of weak sites, between scores of 5-7, in the real genome compared to the shuffled genome. The significance cutoff for the Mig1 weight matrix is 7.11.

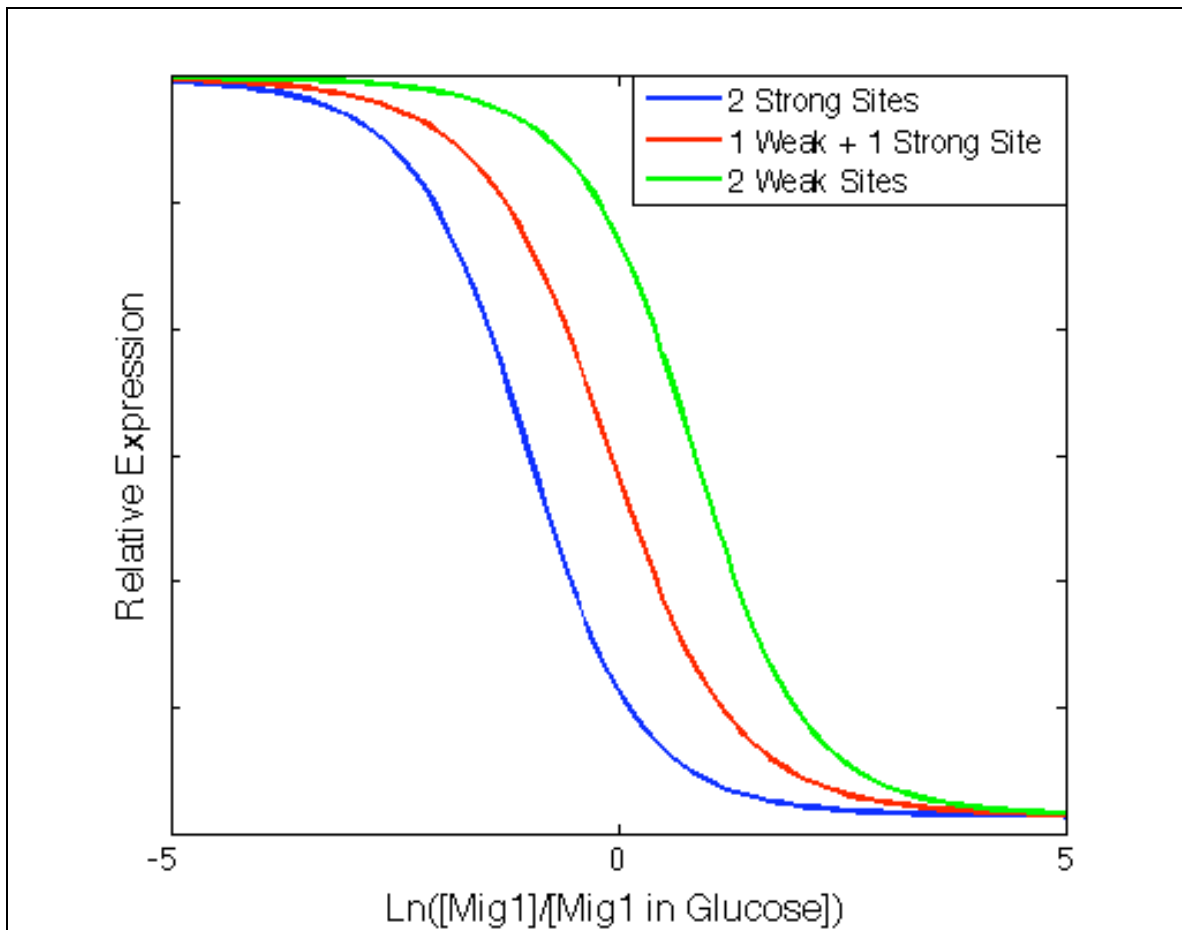


Figure S4. The presence of one weak and one strong Mig1 site makes a promoter sensitive to Mig1 concentrations. Simulations based on the thermodynamic model in which Mig1 concentrations are varied are shown for promoters with two strong Mig1 sites (blue), one strong and one weak site (red) and two weak sites (green). The steepest point on the line for one weak and one strong site is centered over the active Mig1 concentration in glucose (value of 0 on the x-axis).

SUPPLEMENTARY TABLES

Table S1. Promoter sequence and expression for the L1 library. (M = Mig1/Mig2 site, G = Gcr1 site, S = Spacer, and ' = reverse orientation).

G S'M'M'M'	0.447620287511464
G M	1.20055238794652
S'G'M'M G'S S M'	0.458294551190656
G	0.847467290908133
S G	0.365413492223309
G'G'S'M'M'G'M'	0.316274133541453
M M'M'S M'G	0.228175141603089
S'G'M'M'	0.695858793067153
M'G'S'G'M'S M'S	0.579599920792577
M G'S'G'	1.36265915589998
S G S'G	1.24241128748374
S'M M'M	0.333969344759386
G M'M'	0.872202509310859
G	0.839321145166296
M M'	0.808799776020135
M'S G'	1.08344552068728
G	0.707373025568831
G M'	0.47265555538719
G M'S'M'S'G'S'	1.7091357514921
S G'M G'M'	0.718339494742555
G M	1.28298403692948
M M G	0.637781634560182
M G'M G'G	0.917681577006397
M G S'G'G'	1.31363132875034
M'	0.535362280686132
S'	1.04471681841313
M M S S'S'	0.958201792433845
M S'S'S'G'G'	1.90896456585332
G	0.798397324826234
G'M'	1.25267315187539
G'S'S'S'M'	2.10036210470245
S'M'S'G S'	1.88642739478047
G'G'M'M'	0.999006187601364
G S'	0.746463805678074
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S S'S M'	1.29616214448592
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S M'G'S M' 0.492376220633272
G G 1.47681516761477
S M'S G M' 0.614817298074919
M S 1.03030664601966
S G'M'M' 0.358887561364816
M'G S'M'G' 0.978591266358717
S 1.03994716808538
S'G'G'M' 1.47984231509879
G'S G'M'M' 0.611742337660786
G G S' 1.16329819262501
M S 0.486683746905207
G' 0.522010857988931
M'S'M'G' 0.93064736444509
S'M'S G'M G' 1.09097752046749
G 0.917447143946
M M M 0.285953305374535
M G' 1.20818652186598
M'M'M' 0.197304809843939
M'G S'M 1.09816090013945
M M G 0.828283004995956
G S'M'G'S'M M' 1.09550025165222

S'G'G'M' 1.46218121746817
G G 0.562469276107833
S G 0.902213115527653
M M' 0.987325307697556
S G G M'S M'M 0.814573520084786
M 1.04542025506283
G M S M'S S G'M' 0.789812502345732
S M G'M' 0.635049100910196
M S' 0.63433771916076
M S G G' 0.268190556483897
M'S'M G'S'S'M' 1.40521535301264
G' 0.951854459444019
S M S'G' 1.18024092975223
S G' 1.20482982969493
S G M M' 0.849874229908567
G M'M S 0.774104133764418
G S M M'G 0.592307245687616
M'S'S' 1.96958038561962
M G M' 0.764471277632602
M M G'M' 0.368563521048412
S M M'G 0.589354608158587
S M G S'M 1.15179874766533
M M'M S M M G M' 0.135434787788466
S G'M'M' 0.784869781971922
G M'G G' 1.96736919071835
G S' 0.930673971440587
M M M G' 0.285416628584413
M S'G M 0.665058222791231
M G'M' 0.446413914102339
G' 0.292770111618592
M'M' 0.857143004337631
M M M M S G'S M' 0.20250283769461
M M'S M' 0.473522440622204
M G'M' 0.741997054760495
M G'S G'M'M' 0.595563214001826
G S' 1.24037723468494
G M M S'M' 0.478457396438706
S M'S' 0.340196470182269
M 1.13438075378706
G M S G' 0.927037507572071
M S M'G' 0.415549152741549
M 1.31885759407728
G'S M' 1.05178463660146
M'M'M'G' 0.29568621882921
S'M'S'G S' 1.79999550988196
M S G'M' 0.721129754242849
G S G'M S'G 0.698749608814011
S S'G'G'M'M' 0.725821987045644
G M' 1.08300018797303
G'S M' 1.14855550776356
M M G S' 0.672888953772181
M S'M' 0.398398294515532
M G M'M' 0.410248737759835
G'G'M'G' 0.283613596880127
G' 0.905293387616389
G G'S' 1.56970465337533
S'G M' 1.25436097083959

M'G M'M'G' 0.299528511683306
M'M'G'M' 0.379529217105741
G 0.944909889359302
S M'M'G'M'M' 0.412109580720559
M'M'S'G'S'M' 0.668123451663197
M M M 0.371195897272516
G G'M S' 1.50464751933098
G'M M' 0.864325560216852
M S'G S'G 1.38652037692665
M M' 0.360380161630454
S'G'S S'M M 0.604308239358615
S G'M' 0.846476455049547
S'M'G M'S' 0.908661928109042
S G G M'S M'M 0.60554423814438
G S'M' 1.68556562556112
M S S'S' 1.98877507426942
S G M G G 0.875872345308762
G'S'M G' 1.41434217386682
M 0.887919116701699
M G S' 1.15030809050128
S S' 1.45815783967804
S S'S M M G 0.36761606733887
M'G'M S'S' 1.56989514657174
G M G S G G 0.951432887782851
G'G'S'M' 1.5892086116441
M G' 1.19681392338824
M G M'G 0.721755540664501
M'M'G' 0.733740121577145
M M G M M S'S'G' 0.639858198750691
G'M'M'M'S'G' 0.363845735661924
M G G' 0.870408013902182
M G S' 1.36605229018867
G S'S M 0.964189312916304
G' 0.750196467915192
M'G'M M' 0.518337848640274
M'M'G' 0.721719894899036

Table S2. Promoter sequence and expression for the L1-Test library. (M = Mig1/Mig2 site, G = Gcr1 site, S = Spacer, and ' = reverse orientation).

G S'G'	1.18692120459076
S S S G	0.644737550191625
G G'S'G	0.962608962811718
G G'G	0.919369388382621
G S G	1.23045650035527
G S S'	1.64612295630456
S S G G'G	0.874302396966993
S'G S S'	1.82087780716009
G S G'	0.889297493528319
G'G S	0.884429844988617
G S S	0.993677766893347
S G G S	0.850313816632332
G S'G G G'	2.35140955512649
G G'G S	1.01616584131415
G S G G'	0.839121183701243
G'S'G	1.98427808982128
S S G'	0.999867643151912
G'S G'	0.757014417451855
G G'S	1.06533621663618
G'S S M'S	1.3956481839203
S M G	0.699214234229816
S'S S'	2.05235229261104
M S M'S'S'	1.15913972173485
G S'M G S'	1.50331268526786
S M G M	0.504873082112155
S'M'S G'G'	0.954903486192111
G'G'S'	1.4773261867023
M M S	0.401918678597687
G S'S'	2.18626411219597
M S'S'M M S'	0.490445546143858
G S'M G S'	1.22707668578177
G'M'G'S S	1.04246955421627
M'S'M	1.2008787057423
S'M'G'S'	1.26761022817271
G'G'G'	1.2218995653145
G'G'G'G'	2.99087133235525
S'G'M G	1.10372917814443
M S'G'S	0.501229000836544
S'S G'G'M M M	0.331247222024653
S'S G M'S'G	1.15306263789272
S M'M G	0.723746893612571
S G G S'G	1.28547595437335
G'S M	1.3329906501713
G G'G'	1.63658880457189
S G G	0.794329418836378
S G G'	0.708575392549742
G'G'M G'M'	0.566811741316768
G'S'G'	1.25592035495917
M'M'S M'	0.273066295605316
S S'S	1.46914344950471
S'M'M	0.848827725141502
S'G'G'M G	1.21665748370822
G'S'M M'	0.600296924112325

M G'G'S	0.935469955518117
M'M S'S'	1.14406288113037
G G'G S'G	1.44336225585193
S'G S'G G S'	1.94330057865617
S M'G'S	0.935205893939952
M'G'S	1.15415429841333
S'G G	0.483424186019835
G'M'G'	0.119174783829008
G'G'G'M	1.64693878773982
M'M S	0.752608111434069
G'S'G'	1.37611577120762
M G'M'G'S'M	1.03011607776619
M'S G M'G S'G	0.975199363920483
S G G	0.687176472944846
M M S S G'	0.31500158073627
S S M'	1.37141485982759
M S S G'G'S	0.688055546099791
S G M	1.13156733194913
S'S'M'S G'S'	1.44263645232422
M'M'G'S	0.55768966204837
M'M'S	0.558817594369768
G G G	0.879030501208031
S'S S G	0.921583106318357
M G G S'M	1.11115399136
S G M'S'	1.31525220626098
G S'S M M'G'	0.498796157984957
S G G'	0.666843092070611
G S'G	1.6634524608417
M M G M'G'	0.29394833925826
G M G G G	0.849393743505233

Table S3. Promoter sequence and expression for the L1-Weak library. (W = Weak Mig1/Mig2 site, M = Mig1/Mig2 site, G = Gcr1 site, S = Spacer, and ' = reverse orientation).

S'W G'	1.72670294647254
S'G'S'W S S W S'	1.66830008543503
W'G	0.758693970366839
W G W W S S G'	1.23560774901837
S'S G S'G G W'G'	2.14164188556653
S G S S W	1.71374876591924
G'W'	0.860303867783762
W W S'	1.56744021792436
G G'W S'	1.52652128643121
G'W'S'	1.08752568374181
W'	0.935372553328467
W	1.13627608024928
W G G'	0.730293927870806
W	1.25724880762019
W'S'S'G'	1.36118028159422
W W G'S	0.959935581869779
G W W G'S'	1.15002065054256
W'G'W	0.965646744406241
W G W G S'	1.02876563409108
W G'G'S'W W W	0.746797457099623
G S G'W	0.898085723722636
W	1.18124974777889
W	1.11132172699585
W	1.19626488604646
W'S'G	1.4763910908376
W'	0.824687912456754
W'	0.793251198729001
W	1.17227842257616
S W'W'S'	0.767087591322862
G S W'	0.712344804420765
G S'W S W'	1.04867317797652
S S G W S	1.10070381980669
G W	1.30306227445329
S'G W'W'G S S G	0.708517246758352
S W'W	0.844556513514892
W G'S'W	1.55765443139168
W'	1.03445455508176
S S'G W'S	0.978992970635083
W	1.45486720328
W W G W S'	1.42330356143592
S'S'G W'S'S G'	0.994500009901671
G'W	1.93187332018035
W'S G'G'	0.72230937471333
W'G	0.765212072749439
G'S G'W	1.05726711425076
W S'G'	1.54723198818728
S G W'W'G'W	0.759443463510853
S'W'	1.44843153115572
G'W	1.33167201395127
G'G'W'	0.751851164301529
W G	0.79130019503075
G G'W G	0.951246969665241

W'S'G' 1.1825456593061
W'S G'S'S W'G 0.815494880291542
W'S G' 0.682220396781245
G W'G'G'W'S G S 0.947571406773636
G'W S W G 0.762927473200529
G W 1.25643308373934
W'W'G S' 0.856931271986472
W 1.29292374023015
W G'S W W G'W W' 0.753948565815301
W 1.24999847394835
S S G W W 0.962722261796259
S'W'S'G S 1.39145691707955
S'G'W'S W 0.909093434386689
W'G'G' 0.849305363015679
G W'G'W S'S'G'S 2.11839738780113
S'W' 1.63363968528949
G W S'W' 1.48123767866266
S S G'W W S G 1.00295044462592
S W G' 1.07682960342717
G'W'S S G' 0.250195706204701
W' 1.00242800244957
G W'G G' 0.865989475518864
S'G W G' 1.09724212109359
G G'W S'G' 1.53055734340817
G W'S'S S 1.33042700431755
G W'G S'S'S S 1.96695204878994
W 1.3572072247138
W'W'W 0.596025160832924
G'W W 1.26593726940813
S G'W W W G' 0.790846970692505
W W' 1.03984409791593
G'G'W' 1.02674098389796
W' 0.973360069709593
W W'G G 0.716916407958625
G'W W 1.32536321188929
W W' 1.05412982854326
W W'G G' 0.698908839996717
W'W' 0.875803350676883
W 1.12383103629863
S S G'W' 0.814861720076453
W'S G G 0.439748492463479
G W' 0.874354335320802
W G W'G W 0.810898266186639
G W S'G'S' 1.57763100502107
G'W'S S 0.887066322553658
S'S'W S'S' 2.59456091330509
S'S'W' 1.43373315457978
W' 0.964454300299838
S W'S'G 0.871358514956407
G'W'S'W 1.13288578793701
W'S' 1.43883099616864
W'S S 1.02913463209956
W 1.42844772572262
W'G 0.795999495495543
S W W' 0.950166410155673
G G'G'W 0.98162989187442
W G S' 1.36513903549532

W' 1.01419118486625
W 1.06526118856968
S'W' 1.45960893109734
W'G 0.828554732639631
W'S' 1.41505860455348
W'S W 1.0687579704428
G'S'S'W'S' 1.98069683439298
W W'W'W'G'G 0.636558293981464
S S'W 1.88652760303259
W W G W 1.05766291201679
W G'G 0.790088388629316
W' 1.01187189070352
W'G' 1.40441845581561
W'S 0.601665484120866
W W G G' 1.09206384383713
G'W W G'W' 0.677019872272961
S W G' 1.00200928082278
W' 1.01311964760519
W W' 0.304316851221692
W G'S G'G'W 1.23385856453102
G'W 1.37510513025397
W W 1.40463759885509
W' 1.01752190917136
S G S W'W'G G 0.604986019694284
W'S W 0.920397805831686
G'S'S'W'G' 1.25715856597138
W 1.24569452296303
G G S W'G' 0.745313435546435
S G'W 1.25027787206033
W 1.33752571661626
W'G 0.745324476403259
W'G' 0.81371316880838
G G W G 0.795414728442139
S G W' 0.750189833264397
S'M S'S'G W'S' 1.86713768958984
M'W M'S S W 0.478807838117687
S M'G'W G'G 0.79727923278982
W W S'G 1.42373631377035
G W M' 0.910840570341892
S M W' 0.572064372611508
W M'S G'M 0.842376467758806
G'G'W 1.45632124938011
G'M M'S G W'W' 0.181493614016753
W 1.37456122847443
G'W M'G 0.484427389648501
G S S W' 1.32115855052925
G W'G G'G' 0.989890592888999
M'G'W G' 0.798754124663887
G M W M 0.256526759507146
W'G'S'M 1.3317586448839
W'M S G'S 0.558079178476161
W'G' 0.876849983485114
M S'W'S S 0.984607657302968
W 1.44889416523457
W'M'W'G G'G S 0.551242272498607
W'S 0.992087261518786
W M'W'M 0.159453848637969

W 1.40380499350166
M W'M 0.257302209372953
M'S G'W M G'S' 0.845275046574828
M'M'W 0.398280596368068
W' 1.04631116135498
S'W S'G G' 0.341321457866482
S G M W' 0.369998873549807
M'W'G'W'M' 0.245456392288184
W 1.4940640089152
S W M' 0.760811799406671
M W M M S M W G 0.123761084478111
S W'G 0.81603547538558
W S'G' 1.17163748820556
S'W'G 1.25671723946004
S W S 1.61785683422638
M'W'M'G 0.317509081973247
W 1.48313889960438
M'W'S' 0.999888564181455
W'S'G' 0.759902424966446
G'G'W'S'G W 1.25953877010645
W M G'S 0.826554212192215
W M M 0.35678520808692
W'M'G G G M' 0.993551786978466
G W' 0.904702960752613
W G'M' 1.01529651710556
W 1.4502584145108
M G'S S'W' 1.38625541923027
G'M W 0.637882214467499
G'W' 1.04144536919547
S'W W'M 0.16677051773457
S'W' 1.69312091466725
G W M 0.917284900734406
G W'G 0.726008378989527
G G'S M W G'M' 0.632888312993927
S S W W G S G M 1.24072712384032
G G'W G' 1.2566534703928
W'M'W W 0.138218731888162
S'M'W W G'G' 0.786681777957117
G'W'S'M 1.03777870394074
W'W'G 0.425454100967422
S W 1.3156048343044
S'W'S' 1.68064598872221
M'W' 0.780537101210862
W G'S'M' 1.05406527124123
W' 0.873818286173892
W'S' 1.20383169111155
W 1.25351103949239
G M'W M 0.339047159052876
G'M S G'W 0.630581975449236
W G W S'G G W 1.33242117628181
M'W S S 1.02164044044582
M'W' 0.859060003550776
W G'G'S'M'S 0.809295267491546
W'S G' 0.701262798956823
W G 0.952535934535592
G W G'G'G'W' 1.56292730850991
M S'G G W' 0.727306300611562

S W' 0.973046830410812
W' 0.879319723826138
M'G'W G'M M 0.419713953455871
G'M'W 0.74440219647575
W 1.14815313329792
M G'S M'W'S' 0.570209933188107
W'G W'S' 0.872078570073549
G'W S'S' 2.26333800085313
G G'G W' 0.804497587765413
W 1.3994255346947
S'W' 1.67335686209942
G M'W W M 0.383701798110519
M'W 1.68443105894435
M'S'W'M G 0.435645521582418
G'G W'S 0.687408150193402
M W'S'G' 0.74705619126173
M'W 0.953741706717076
G G'S W'G 0.579215076665875
M'M W'G'M 0.214100214972501
S M S G W'W' 0.386885404225383
W' 1.00102494425096
S'M'G S W M' 0.633053498152128
G G W'S' 1.06529990237432
W 1.34266410703076
W'S' 1.3460770376456
W W M' 0.641662490542715
W G'G' 1.6194420467308
W G W' 0.832533403999207
G G'S W S'M G 1.08560991931961
G'G'M'W W M 1.48539893825281
W 1.38433441419092
W G W G' 0.886119378307632
M'W G S'G 0.92689305697669
G'W S S G' 0.814533933014883
W W'S G S G 0.410498575532899
M S'S'S'M W' 0.915504487002386
W' 0.981756511105603
W S W'S M' 0.514992607840066
W' 0.91325798225341
M W'G S W' 0.453230242777274
W 1.39630673937965
S W'G G W'S'G 0.955446519828463
S'W'W'S 0.41759499479555

Table S4. Promoter sequence and expression for the L2 library. (M = Mig1/Mig2 site, G = Gcr1 site, B = Reb1 site, P = Rap1 site, and ' = reverse orientation).

G G M'G	1.74622040885104
P B	3.1551442942669
B B'M M'	0.417761011117396
P P'P	4.05172397214597
B P	3.77078257884771
M P	1.88868597476434
G'P B M	3.03088749390547
G M'	1.2403905194347
M'G	1.16467021779076
P'	2.20319653798963
B P'	3.93486139614627
B'	2.54461444494088
P'	2.39191377375694
B	2.70877975149784
B'P M M'	1.49795056014239
B P'	3.85696817266654
P B	1.49515195530366
B P'M'B'M'	1.7014129502536
M'	1.34482559223193
M	1.05861268704311
P'P'P	3.96767795422718
M'B'	2.2802881098587
B'P'P P'G'	5.65663820759208
M B'B'	2.87280881126492
B'P'G	4.5162912653445
B M	2.28511681749567
P	2.23575391658275
M G M G'B B'	4.61058122720788
B G'B'	3.19878642210716
M'B G'P B	4.3883871025578
P M P'P B G M P P'	4.47694440212245
P'B M'	2.59851579718806
B'B'	3.0695749300776
P B B B G'	4.11768316977451
B P'M'B M'B	2.3968173957704
G'G'	1.12850331315052
P'M P M'	1.05241598037804
B'G'M'B'M'	1.48227378491074
G	1.22207049340135
G'P	2.84112692108781
G'M G'M M	0.327205927959695
P B G	4.2749835252008
M'M	0.942017194245698
P M B P M'	2.44580297048634
G G	1.61552416201291
M	1.10662883846846
P	2.40810725862248
B'B G G'	2.35651850036175
B M	2.39252308938502
G	1.36095082690336
B G M'G	2.55583116144535
G M B P	3.9696197365178
M'B	2.33574637697604

M B'P'P' 3.84526649061987
P P'G B 4.75982971860746
P'P'G'M B'G'B 6.73478316004022
G'B' 2.95095485045558
M G M 0.536632720612627
M'G' 0.867233715695598
B' 2.78130714037945
M B 2.38124940537912
P'P P 5.7220575687497
B' 2.75992700048833
B B'P'G'P' 5.68750160704078
B 2.5178012782203
B P P'M 2.36467663034882
B'M'B'B' 2.8836841693972
G G'B' 3.8712829206201
M B M'B B' 1.43280563183979
P' 2.51117010229643
M M' 0.64627370215815
B B'P' 3.51420137209746
B 3.05808153812291
G' 0.803927141511408
P M 1.46410146247943
G P G M'G M 1.23884890181247
B 3.70504185250344
B' 2.83756960368189
M'B' 2.55458581923371
G G' 1.87011811919928
G B 2.89272802568553
G G B'P B' 4.00808677450936
G P M G P 4.96072126636951
G P 2.46807014542497
P 1.96941624957684
G' 0.867348703180836
B'P'P'M B 3.43720412211375
B M'M'P P 2.57851749319732
G'B B M 2.18500770694115
G 0.989652181350995
P'G G 6.19323807683705
M G'M' 0.331959269590655
B 2.66424876502255
G' 0.631866803803109
B'G'P B 4.03399726942973
B B B M P' 3.27857663710598
M'M G G 1.40325476039294
M'B B 3.16014660740521
B P'G'M'G'B'P 5.2848306651466
B B 3.83658342943517
G P' 2.98678219426881
M'P' 2.35919347403811
P'B B B G'M' 2.68241782902937
P' 1.74916809563556
B B'M'B'P'M 1.57967558706638
P P' 4.10285191186803
G G' 2.0354321408819
G G 1.68873752092038
M B'P'P' 3.62647495077206
M B 4.19127410312347

B 2.99400304178575
M' 1.43841138123244
B'P' 3.78803119098776
B P M'B'P B' 3.22523663440661
P G G 3.68199856119862
M'B P'B' 3.56387321073678
P'M B'B'G'B'B' 3.25850255433892
M P' 2.19070411379698
M'G' 0.895982896562057
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M P 2.11861585967273
G'M P G' 2.10652600359987
P'M P B' 3.18972983749142
M'G'M'B'P' 2.22173060785147
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B 3.38184766866577
M 1.19241636945147
P'M G' 1.53330163151117
B 2.78518599378208
P' 1.95811097286998
B'B G'M'P B P' 4.64787849852799
B B' 3.27625171716131
M' 1.28458378881831
B G'M M G'G' 0.826090146419379
P'M'B M' 1.90939207172818
P G M M B'G B'B' 2.59979735651634
B B' 3.244156901815
P 2.08035068920718
M B M' 1.54546615649311
M'M'B'M'B 1.71625331102299
P 2.12823600942612
G'M 1.07457020523805
G'M' 1.32341381301655
P M'P 2.38169878445997
P P'B'M' 2.6101065713339
G'G'M 1.43228493870915
M'P'G'B B 4.48864969771345
P 1.92488117276739
M B' 2.21849119463293
G B'B M 2.69004305103675
G'B B' 3.32989811856463
B' 2.42861134203927
P' 1.78369454750181
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G' 0.819526022218351
B M' 2.51389576076888
B'G 2.81046443610214
P' 1.93668527136826
B'P B' 3.06678767221726
P P' 3.45028584787868
B M' 2.44625176620359
M'B 2.30273800620682
P 1.966104769286
G'M'B P'G P' 4.65705988173501
P G 2.19369837214472
G B'P M B' 2.89826585421153
B G M'G 2.69979401832114

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M B 2.88398607395606
G' 0.837090059526089
M M P M'P 0.679857479809956
B P'B'P' 3.94494146867619
B'G M' 2.15918072180333
B P' 3.68501021308839
M'P' 2.22958926412857
G B'P M B' 2.54781522145718
M'P M'B 1.84248218963424
M M B' 0.715296440291525
P'B'M' 2.37654634655414
M P'G B'B' 6.08324264071427
G'P 2.34441389340205
B 2.60130669860029
M 1.15204965811773
G B'P'P M M M G 0.389131869518445
G'P' 2.66565474007712
M B'M B' 1.56309444205972
G P' 2.57476265683222
P'G'B' 3.54070014723914
M 1.08466605460597
G'B P M G 2.43156728911545
B'P'G M 3.01854085576253
G' 0.746855049999044
B P M' 2.88382187337971
G'M 1.14151992556837
B M' 2.33514449408974
P P' 3.10467367263054
B' 2.41780302950262
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P 1.93315455792555
P'B'G M G' 2.5927186130822
B'B G'P M M 1.19101676320162
M P'M B B' 4.82632156374193
G'M'B' 1.70346674609125
M B' 2.25138158193468
P' 1.88266641708593
B'P B'M' 2.32656545678226
B G'B'G P'G'M' 4.03794516994539
G G' 1.87356527291432
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P' 2.11523189337685
G' 0.859312780853847
P P' 3.68442102379559
M G B'P M' 2.78237781273457
B 2.86971012699269
P B'M'P M'B B'G 2.24507833435258
M P B'B 3.28711749032938
B B' 3.1052363095977
B'M'P'P'G' 4.55149779825626
P M' 1.6136583722471
M'B'P'P M'M 1.17707297329438
M 1.220239589233
M B 2.854874002662

M'M' 0.947560146869109
M 1.27758922607317
G 1.00007598220371
P B'B'P 4.09399369294909
P B'M'G B 3.23405256797885
B' 2.33822190468971
M'P B'P 3.47425889800455
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P B G'G 5.59768994725814
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B P'B'P' 4.3721055068568
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B' 2.67453659421227
G B P' 4.28391334593686
G' 1.9417617438811
G P M'M' 0.5633344865745
P'M'B G M'B' 2.17862782928412
B'G P 4.54990210199102
G P M P M 1.83377618040948
P' 1.88615846956329
B M'B G 3.45513396706196
P'P'P' 3.65005942152809
B G 4.14542013797107
G'B M' 2.76368139731607
M'G 1.30167702002076
M'P'G M G B P'P P'M' 3.79425767964102
G M 1.30732396949386
B'P 1.79563873530544
G'B P G P'P M G'M P' 3.95959927431854
G'B M B G B' 3.09474532573192
P G' 1.95231032520828
G M'B'P 3.41601553717577
B'M'B' 2.80152587892939
M'P M M G 0.685613945713512
B' 2.64834360197676
B G'B 3.69127219034298
P'P P P B 5.44155194337538
B' 1.52136656304314
P P 3.65135554195596
B' 4.72792582153248
B'P' 3.70931999654108
M B 2.79077669479823
M P 1.97979764005151
B' 2.50084564996825
P'M G P G M' 1.60716534135094
G G P'G M'M 2.24000387931988
M G'B' 2.47610975675544
M'B G 2.81620384971352
P B P'B 4.07520962554065
B' 2.49608352038495

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M' 1.52056697085497
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M M' 0.775746317158811
B 2.7443110131967
B 2.38607256253542
G'M'P'B G P 2.23392323070159
M G P'M P'G'B'M P'B 2.41214204608188
G 1.09813664765046
G 1.13233413865191
G'M'B'P'M'P M 1.23772698189771
P M 1.52956411336859
M 1.17976364809524
G P 3.28087297087432
P'M' 2.01025865846842
P' 2.86027384347206
B G'P'B'B M' 3.0579938423713
B'B'G 3.19726324759924
P'P'M' 2.51628313774685
P'B G' 3.90786370380201
G'B'P'M' 2.36045696469563
B'G M 1.63544633363973
B 3.16064130287451
B'P G' 3.21192887777369
M'G P'G 4.17473701296478
G' 0.890836628698294
M'B G 3.11530352754778
B M' 0.767905545371683
P' 2.06016456272651
M'G'M'B'P' 2.56022817812929
P' 2.07972638025033
G P 2.78118545825872
B' 2.71277932154455
G'B M' 2.86985231063941
M P G 2.2505133601623
G'M'P G'B 4.51078956683179
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B' 2.79025711057325
G'B'P'M' 2.73255877159152
G B'P' 3.92076514058352
G' 1.03463474619697
G' 0.835657205069743
B P 4.59721752536999
M P'G 2.74495085399177
M'B' 2.85810689058774
M 0.977130329618273
P M B M' 1.35413475756843
B B B' 3.73129822948519
P 1.89585131512743
G'B'M'M' 1.93765752170725
P' 2.59089793885351
G'M'B'P'M'P M 1.2402746380067

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P P 3.36692150011585
G B'M M M 0.487311642671792
G B 2.85863985021348
G'B 2.99082811225031
M'M G M 0.515210947710986
P M'P'G'B'M' 2.2691393590638
P'G' 2.09566669911605
G'B B P 1.65709830117157
M B'G P'B 3.8470793358476
P 1.98139345399567
M'P M P'G B' 2.58507652637914
G M B P G'M G'M P 1.73320920308937
G 1.13964922613768
B M'G G' 1.98875977011133
G' 1.14829093178393
M'G'M' 0.712459307614463
B 2.82311286701666
B'B' 3.86448049481915
G G 1.8411545542591
G B' 2.83626078124736
B 2.87131545786939
B' 2.69270911627087
G 1.12651390294515
B 2.85525439186912
P G'M P P' 4.15801420456941
P'B B'M 2.62331760262
M'B' 2.32707246685263
G' 0.830262901273896
G G' 1.84747629949107
P' 2.17949479525703
G M'P' 2.55413115607376
G'M'M'G' 0.50658542588654
G'G M'M'B P'B P'B' 3.65165200957406
B B M B M 1.76684718584407
B 3.14951275073654
B'B'P M'G'B 3.42538043212269
B 2.96491684650664
M'P'M' 1.67899966982982
G'M P' 2.51204832993407
P'P G'B'B' 4.10295060707602
B'B' 3.19669942860502
M'G B'P' 3.83332492050717
P'P G M'B' 3.40883803470881
G P'M' 2.26748034218549
M B'B'G G M' 2.08039922519238
M'G 1.2787799173792
M' 1.35489124152511
B 2.95895479423887
B 2.7210164822206
G B' 2.48180054373008
P 1.94888936488866
G'G'G' 2.3463894677411
M' 1.43865826218292
M M P' 1.24826769848814
P'P'P 4.37024226198591
M' 1.40620399908634

P'B G'B M' 3.62831232347151
P' 2.35818323907623
P 2.13449088808593
P'P'M P'P'P'M P' 3.58289521016115
B'P 3.39910355255735
B P M' 3.19598429563135
G 1.35451909450141
G' 0.89104837740618
B'P P' 4.01819007223444
P G G'M' 2.97387357256606
M P 1.58328138032405
P'B' 1.04457679180708
G G'P M'B B' 3.51387685286775
M B'B 3.44048415238966
B 3.99638337685359
P' 2.32158673943013
G' 0.701971269168915
B B'M 2.36724409444351
G 1.35988892596538
P M G G' 2.91029976584538
M P'M M B G 1.28561918104906
B G' 3.24282228499107
P 2.15522804889039
G 1.26882368327821
M G'G'M M P' 2.55784719542912
M G P'B 3.68565773279694
G'G'M'B G 3.42727235742691
M' 1.16220373315431
M'P' 2.50820680116643
M'P'P'G M 3.55020400901181
B' 2.73574778657861
G' 0.974680011460773
G'G'P' 3.99023247136476
G 1.23843607546357
B' 2.46054136871136
G'P'M'B G'B 4.09034860241469
G 1.25661333964175
M P B 3.68785649515134
B 3.01489464589603
B' 2.57148240315771
M'G'M' 0.41983025875242
M B'P G P 4.65355441488653
B 3.30766176638278
M B 3.03193785984746
B'P'P'M'B'B'B 2.87177230947961
G' 0.973580862653876
M B'P B 3.8636761899101
P'B B B' 3.66065872231999
B 2.8810231007931
G 1.00061353126661
B 3.03357393577336
B 3.10058390331335
M'B' 2.41615848187357
B B 3.75599310873537
B' 2.58890966971174
P' 2.25046731167764
B' 2.54843721915914

B 2.81960409845164
M P'M M B G 0.939276003874376
P B'M' 2.53974417025489
B'G B'M' 2.80448544183377
B' 2.6044797829196
M'B' 2.4076290966527
M'P M'B 2.08108100176965
B' 2.73186981432257
G' 0.716484911192174
B M'M G' 0.769003715975551
B' 2.82814626475229
M P'B 3.14726089330992
P 2.05052132669995
B' 2.63680838903526
B' 2.82453192632201
P B'P 4.18150542627826
G 1.26952107264986
M'P' 2.30856689384806
P B' 3.23986291626266

Table S5. Promoter sequence and expression for the L3 library. (A = Adr1 site, C = CSRE site [Cat8/Sip4 binding site], H = Hap2/Hap3/Hap4/Hap5 site, R = Rgt1 site, and ' = reverse orientation).

R'R C'A'C'	3.06846827092209
H	0.650860779392194
A'R'R'	2.07002306439377
R C'H'R A H	1.80772641374624
A	0.91556688340331
H'C'A H'R'H	2.33137394458419
H'	0.732000341122374
R R'C'H H R	7.0155436978092
R'	1.89286629467161
R'A'H	0.930869962626582
C'C'H C'H	4.93561914194002
A'H'A C A A'A	0.666532239965774
A A H H'	1.30121185662302
C'H A R	3.24138356380733
A'C C H	2.5887067928835
A	2.90881026778655
R'H H'	3.24395404679644
H A C A	1.12541294435989
C'	2.29398128922322
H A	1.28268977541635
H'A R R'	2.37398293526907
A'C'H	1.67799084680059
A'H C'	2.3714138435271
H	0.920931663122747
A'A C H'R'	2.94165972095919
A'C R'H	5.50526555868785
A H'H H'	0.764152228127734
C R'R	2.60512402846363
A R C'A	5.17431285004008
H'H	0.951340396577406
R R A'R C	3.01723200887257
C H A H'R H'	1.85896222023074
C'A	1.65321796247253
R'H'R	2.91987370692509
A'R	1.42753794890764
A H A'H'H'R'R	2.47438945846091
H'	1.04080916436947
H'H'C'C'H'A'R'	2.55699401324954
A R R C'R	3.40765200561713
C H C	3.99343664162484
R'	2.19772508819366
C'R'C'R'R'	4.33049489438325
R'	1.95083616284324
A'A R H	0.856356506313354
R'	2.1382036956241
A'H C	2.01611767056479
R'	2.16298398873861
H'	0.760474554883584
H'H'H	0.837445204026702
C'	1.90638097886391
C	1.95582475937731
R'A A C'R A A'H	0.718667641713281

H'R'A'C 2.48647708370747
C'A' 1.63087426252752
H'C'A A C 1.86218218508491
C'C H 3.46167008359968
A'H' 0.690105644489776
R A 1.49937830993398
A 1.62539043643536
H A'C'A'H H 0.655452826818363
R'A'A 0.938569691362963
C C 3.11183833372445
R H'A' 0.939211608180624
C'H A R 2.53923204606187
R'C'R A'H' 2.71783693343066
A H A'H'H'R'R 2.40768166573266
H'C' 4.18810839007064
H' 0.778258359379654
C A 1.18099261876081
H'A H 0.71023509018456
C' 1.9104363365478
H'A 0.8267572612567
H H'H'A'R H 0.8649757117648
H 0.874612770664966
C'C' 2.81024362224377
R 1.40842092421309
C A C H' 1.97058147881796
A A 0.674244497992417
R H' 1.61780049505526
A'H' 0.812261820436855
A'C'R A'A C'H'A'R C 2.50723064225801
R' 1.84345304794853
R A H 0.68012733992161
A' 0.813843069995775
H 0.869766307212715
H'R H'A 0.789096222483925
C' 1.84159496160175
C'H'H'H'H'H'R H'A C' 4.30609547253546
C'C' 2.58539745560912
A 0.770863170451006
H A'R' 1.91273400457978
H'C' 1.60907028974968
H' 0.567240603266025
A H 0.440780733778224
H H'H 0.961133143739877
C A H' 1.10520003688814
R C H A 1.6032396812394
C A'H'R'A A' 0.600023453148548
R A 1.05914627667992
C'C H'C 5.26772661566136
A'H C 2.07066364220512
H'H'H'H'A R R C'H' 2.56911014253649
R'R'C 2.47195268742922
H'A'R' 1.71275048914105
H'A'C 3.25860284389788
A H R 1.62306944814526
R 1.45537008774084
R'C'H'R H'A 5.83826282470052
H'A' 2.25356237190382

H 0.954117271884427
C' 2.00742436299081
R' 1.88149001548581
R'H'A'H C 2.5295097549083
H'C H'A 1.09430586997706
A'R' 1.697611404835
R A'C'A A A'H' 0.72194703336369
A'C'C' 2.48840322395054
H 0.873097758565381
C'R'H'R'C'A'H'R 6.10210877636115
R' 1.97764337321807
C'R'A 2.11825591402685
H'C H'H'C A A R' 1.69520688544923
C'C 2.66634283498863
H'C 1.69617989017398
H C'C' 3.41646693552585
A' 0.984550893894709
A H 3.71541336959958
C'C H' 3.57812019412133
R C H'H'H 2.0207086738522
A C A'H' 0.926568027092163
H A 1.28208536712409
H'R H'A 1.12407332905201
R C R R H H'A 3.18727061180022
R 1.4016306375783
C'R' 2.69598773001366
R'A A'H R 1.60156525788248
A H C'A'C 4.28719152774977
H'A R H'A 1.07070890067758
A H C C' 3.53910412436655
H A H' 4.8433350410215
H 0.895426909326471
H'R C'A H' 1.60012692652672
C'H'R' 2.79378926735707
A 0.846982592194952
R' 1.97211914493789
R' 1.99920123026867
A'C R 2.15979934802043
H'H' 1.11735932143292
R' 1.8555701048657
C'R'A'H C 3.5111808274476
R'C 2.36571663715358
H'A C 1.66904683445115
R A H'A C'A' 1.06068826140031
R'R' 4.99700879257503
H A A H' 0.592969827743536
H 0.941246932213094
C'H'H'H 3.80829739098346
A A C' 1.51168745140798
R'C'R'A'R'C'H' 2.17848207904259
A'C C' 2.38422216558469
R'A' 5.16055287614851
R'H' 1.87691915198983
H' 1.01313984179058
C C'R A R' 2.70318212801195
R 1.62818546151438
A' 0.863438917047991

C A'A'H C H C' 3.09198224582295
C R' 2.36938155684974
A 0.81410565794645
C H' 1.74161256114876
A' 0.868209644869045
A'R C C R R A H'R 5.03026401455915
R'A'C'A' 1.4442079417683
A'H H A'H' 0.620482316475159
R 1.58869365504956
C H R'C A'A' 1.48043765803737
A H'C 2.15024817258282
R'A'C A' 1.3708827005111
A'C'H A 1.24530142218084
C'R R C'H'C' 6.00223596320527
H 0.948231160327037
R'H'A A R' 1.56978963254926
H R 1.93388593232696
C 1.63977884739083
R'C'H C' 5.15475793917961
H' 1.1356331082854
C C R A 2.66472214374581
A R'C R' 3.05395430072005
C'C' 3.01590331273602
A'A' 0.65474172355896
H'A'C 1.78610523734808
R' 1.9573940369908
C A'R' 2.07438963542929
C'C'H A 2.83613962755339
H' 1.02101769658526
R' 2.07373012615177
A'A' 0.633301256271229
C'H' 2.08947391019049
C' 2.04581598125943
C R'C R 3.60627726669477
A R'A' 1.40874463116739
C R 4.03213721454284
A'C' 1.48281532856952
A H'R' 2.19048937122104
A'H H H H'R 3.24518277781985
H' 1.01808437460772
A'R C 2.15848067782626
C R C H H H H 5.944106659493
H H'R' 3.86416190543871
R' 2.08840227114854
A'C H'C 3.07366813436111
C' 1.90234412137111
H'R C'A H' 1.48841972490814
R A H 0.785447787409855
H R'A 4.85940166064742
R'H' 2.0660476990988
C' 1.94938814593952
H'H 0.879663160204208
C'R R 2.6207492042977
C C H A H 1.43605322461638
H A C'C' 2.93697906557746
R'A A' 0.953965396667241
R R'H'C'H' 4.15864692785311

C 1.8343846109364
H' 1.36394327851242
H 0.994736536985019
H C 2.46649495440146
C A R A 1.13423672466173
R'R'R'H H' 5.50285599547726
C C R'A'C' 2.66298783750711
H C' 2.87799688118686
H'H'A'C' 1.69301152449721
H A R A H'C'A 1.1844337830658
H' 0.946550809146962
R' 2.01494557093121
A H 0.746130555892344
C' 2.17176612537061
A R A' 1.07832039444867
H' 1.10637494041255
A A 0.705366095787702
A'R' 1.77512900029355
A A' 0.78710960737482
C 2.00896676191862
C'H A R 2.74729361830201
H H C'A 1.60582040363838
H A'R C'A' 1.54398320048815
C' 2.15766070895242
H A' 1.00552847677651
R' 1.83198995713247
H R 1.84353046536165
C C'A H'C 3.21802879511028
R'A'H'R H H 1.60828749019259
A R'A R 1.49958877050971
C H' 2.03691343676155
A'A' 0.637996223574957
H C R C A A'H A' 1.40906748165842
H'C' 2.09185383763483
H 0.955694970643674
C'H R'H R 3.57639357245849
R C R 2.72675209340896
H C' 2.61557354739179
R'C C A'R 2.85009170135671
A'H' 0.976490438518685
A'C'H' 2.33697033600256
H 0.978426758423089
R'C' 2.39802744530381
H 0.951723544111241
R'A'H 1.17298218896138
C'H'R' 3.15381420292594
H'C A'R'H'A'H' 1.04890870108376
A'H' 1.11339071790531
C A'C C A'H'C'R' 4.05683052236999
H'A'A' 0.58361758164175
H C R 2.87455971742096
C 1.78971997173171
H'R C H'A'R'R R 2.68795515728691
R A' 1.15343103270485
R C' 6.73219432096263
A R' 1.72407381666348
A'H H R'A 1.24325827504216

A'A'H 0.438245161053583
R C' 2.32199995263855
C'R'R' 2.49563858417558
A'C'C 2.43776474154135
A'C'H A 1.14659891683829
H A' 4.37894801531252
A'C'H'C'H' 2.48373217453603
R R'H' 2.87129769502251
C 1.72106186747688
A'A R 1.13442992339137
R R A'A 0.561676686291105
R'H 2.39260706656577
A C R H'H' 6.29610421589859
R'C A C H' 3.55303633658668
C 1.89897752422536
R'R'A' 1.83162552702732
A A 0.705347927798044
A R 1.32348296949859
C' 1.9449426146566
H 0.887707141573108
C H R C A'H 1.90682432650806
C 1.84550682140828
H'A C H'R'R 3.97743109610197
C H' 2.24784137503003
H 0.931575305032954
R'A'C'R' 2.32946655673487
A'H C 1.98812897235908
H 0.930509792920933
C'H H' 1.60853870103664
C'A C'H 1.46702084316661
C'R 2.29973969252448
A H'C 2.35300161258509
H'H'R'A H 0.561331017474704
R C C A'H'C R'A 3.29293985308546
H'A R'H' 1.87301063133805
C'A C' 2.19370987593821
A 0.932064125447434
A'H R C R 2.87554401446325
A'C 1.76076136410629
H R H'R' 2.79714521154009
A H R'R'A R'H A'A' 0.844510745677962
R H'A'A'H A'A'R' 1.55723595966681
A' 0.821864444766191
C C'R H'H 3.55143063032863
A'H R'C'A' 1.74562776264641
C'R H A' 2.23580856279659
A'H C 2.14662191116909
H 1.02077848437911
H R R C'H A R R A' 2.74766302044857
C 1.61123389459103
R' 1.94077475584674
R A'R' 1.78006476144782
H H'H 0.545199307771383
R R' 2.28847685129686
H H'A 0.988245097100028
H'H'A'H R C'H A 1.68359999420282
A'A'R 1.16488489842824

C' 2.10397703639186
A'A'H C 1.81747645485406
R R A C A 0.896676080745839
H'H'H A'R' 2.1838076759578
H H H'A'C' 1.72598726175248
C 1.67862553125375
R' 1.82832559889101
A' 0.690161251027008
A C' 1.4601443196635
A'A' 0.692903800395158
C' 2.19033951178332
H A C A 0.775521823259198
C 1.76855073311718
C'H A R'A C'A'A' 0.735411462001904
R A'H'A 0.58611588217838
A'A'C'H R' 2.88536378159999
A'H C'R R 3.21929507992783
H'A' 3.66246954636994
R'A' 1.67828053011327
A'R' 1.76284364422286
H C'C' 3.08759270838876
C' 1.92342317880158
R'H'R' 2.46464666901613
R'A H A'A' 0.47239233861769
R C 2.08326889394773
A' 3.6285772277453
R'A C A R' 1.72487023432915
C'R' 2.58000737223201
C'H 1.45317221636208
R C'A'A'A'C'H 0.816124312900298
A A' 0.77515629646484
H'R'A'C 2.30729916020359
A' 0.927628149051726
C H C' 3.54987742065375
R'C' 2.64216674085419
H H A' 0.860076790983603
C 1.55623300021792
C'R 2.19177560660605
R'A C'A'C'R 2.38223019573748
A A R C'R H A 2.04132423472945
C' 1.85228543518827
A'H C 1.98601831262023
H'A'H'C'R' 2.46242157387649
A R'C'H 2.58081810007075
C'A'A'R'A'H'C' 1.57443218767241
R'C A A H'R 1.96959752533068
H'C'A H'R'H 1.81419770725937
C'R'A C'R 2.58898740469919
R H'H'C A C H 1.30874991308408
H C'H 1.71004787573032
A' 0.81616607281121
A H'A'H'C C' 2.89169801126006
H 0.735813289945107
A' 0.74493309176628
R C 2.05653625218465
H C'R C' 3.70921211553808
A'R'A' 1.21929339852979

C'A C'C R' 3.20520714733954
H C R A H 1.40197828352632
R A H R H C' 2.86147389641817
H'R'H C H'R'A R 2.99329504734874
R'C' 2.3543533967252
A H C'A'C 3.93099552176282
C 1.67918282308131
R'A R'A' 1.39697785763141
H R'H 2.34101636567321
C R R H 2.44896554033224
A'A'H C'C'C'A 2.28795505883888
C H 1.61751394642763
C'A R A' 1.07509735847607
A A'R A'R R 1.50556192509614
A' 0.593688700091882
H'H'R'A H 0.809823283128197
H R' 2.26598157876194
A'A A' 0.511080214062028
A' 0.894813711579875
H C R A H 1.44284177077042
C'R' 2.38889453573706
R'A'H R'A 1.40073988776039
A'R C 1.92838978993141
R'A R' 1.84045599544714
C'A H' 1.29220025471751
C'R 2.25196185667765
C'C C R'A'H'A'A' 1.43584390089262
C R'R' 2.51059054421984
H'H'H C'H' 2.30897561318685
C'R R H 2.58186098117757
R'A R' 1.83129257344263
H R 1.79488991602444
A' 0.635422471177157
C'C' 2.70272256185468
R'A A A 0.511228351763201
C H'R'R'C A A' 1.78962081856947
H H 1.0543933846848
C C'R H H 3.49583211813946
C A H 0.816151938384944
A'A A 0.525566003027401
H'A A C A 0.837105712443796
A 0.834034873209765
R 1.57599969893564
A A'C 1.48185861522242
R C'C 3.32304681163098
C' 2.01058129174177
A'R' 1.79611653913132
H'H 1.02119898901585
C'A'A R'C 2.06590872216216
A'R'A'A'R H 0.676059032572977
A'C C H 2.35183742940045
R'R'A'R'R' 2.42887767187113
C'C'A'C 2.66802710471016
A A'C 1.48827563153847
C'H'A' 1.35751721599958
A C A H'H 0.842873932372105
A 0.822395766810794

C' 1.06644084384798
C'C' 2.83546442495477
A'C 1.77979295087934
C' 2.01112609661558
C R A'C'H A'C H' 2.13221114735978
A'C 1.6472568614471
H'C 1.87294775107157
C'H'H'C 3.55116632771278
H H 0.829272072388884
A A' 0.645013153927309
A 0.947749150239766
A'C'H'C'H' 2.5396800951517
R' 2.04942097732711
H C'R C' 3.95964582223256
C R' 2.65182233832729
C 1.70159207590998
A'H' 1.13314398012194
R C R H 2.81815017411701
H H C A 1.04066274966345
H A'R'C R' 3.05178996809316
H'R' 2.01510679094235
H'R'R'C'A'C' 1.7781446939717
A'C' 1.87944450259356
R 1.55947204067213
H'A C' 1.83995838029383
H'H R'R 2.86976771887425
H A H C 2.18058316583424
C'A' 1.49350791947505
H C'A'H R 2.04083444756343
H'R'C A 1.98969684500031
H 0.859449569400517
A 0.887712883872768
H 0.887145288452049
R A' 1.25383782577575
C'R A' 1.97053355664759
H 0.911243726950269
C C'R C'R' 4.56420191430873
R'R 2.33966503636036
R R'A'A 0.888662436548189
C'R C 3.34805768966953
H'C R'C 3.85111637560944
R A R'A'H 0.755495894741673
H'A'R'C 2.53157779230705
A 1.01566311490016
C' 2.19105548868145
A'C'A 1.20038647546033
H R'R' 2.92550453090757
H'R R A'H'R 2.67954933774497
C'A' 1.47450112219825
A H'C 2.23415061445017
C 2.10105568652325
H'C' 2.02359209829056
A'C' 1.75570648248348
C C'A 1.91094355806238
C H C'R' 3.64750841682651
A' 0.918948075464944
H'C R'A H'H 1.29790034553862

H' 1.01195509667328
C 2.163763915073
C'A' 1.57892832805999
R C H A 1.79954264246317
A'A H A'R'H 1.2474529854463
H'C'H A A'C 1.51255918473854
C' 1.88888059743688
A'H 0.590885370150264
H' 1.06744695549534
H R' 2.45187115645159
R R H 1.94434121147234
H' 1.0163742564493
R A'H' 1.05945579253385
H' 1.02817536789494
R'A C'A'C'R 2.63255270234903
A'C H'A 0.727211889524183
C R C C H'A' 3.91000092569035
C'H R' 3.19208578927132
A' 0.801445892699856
C' 1.90515198659011
A'H A H A' 0.579963948361053
A C A'R 1.63943282674094
A'R'A' 1.46935549824573
A'A'H' 0.656304519945089
H H A' 0.616869483562826
C' 2.11542990458809
R'R' 2.44162951704541
H'A H 0.576175756894727
H A'R' 2.08970148954746
R R R' 2.66380144861364
A H'A' 0.698766030203042
A'C'R'R' 2.54112100469115
R'H'R 2.71848586207748
C R'H'R'A' 2.55422919745175
H'H H A' 0.7917655314201
H C' 2.5644444735606
H'C'R H 3.1475195738846
A' 0.940509349015893
R'H' 2.01803834185366
H H A' 0.772779705563042
A'H' 0.740577719591297
A R C'R 2.12766162446227
A' 0.806374814273969
H' 0.790270451748545
H' 0.881557785618816
R'C' 2.14592374277903
H 0.649215422719177
A H C 1.88448745924018
A'R'H 1.71330210943761
R R A' 1.40388878574643
R' 1.72957807467709
R 1.39661421001518
A C 2.74841412236622
C'R H' 2.25887526147142
H' 0.912211990225386
A'A'A'H R' 1.74438190654954
H'R'A'A'R' 1.42113638283428

A H A'R R 1.69727130174717
C'A'R R 1.83773744119092
C'R 2.04666797929272
A R 1.55270817709577
R H' 1.52662975775349
R R R R C'H' 3.68141076097623
A C 1.59992216928667
H'R C'A 1.59842290278928
A'H'A'R'R' 1.75694056240118
R' 1.73792831334121
C'C'A' 1.92305153413315
R'A'R'A'C' 1.78551653633394
H'R'A'A'R' 1.59141158014487
C'H' 1.8528462534183
R'H'A' 1.09151877466229
A'C'H A 1.05832603383244
R A H C'A' 1.13938768311091
H C R A H 1.28165572002785
C A A 0.933911106888879
C H' 1.81653759077406
A'H C R' 2.56542988642261
C R' 2.24228075305807
H'R'A'C'A C'H'A' 1.16532589833566
R 1.56947158223771
C 2.02017504369599
C R'A' 1.79024940922302
C 1.86240650414619
A'R H 1.1130520656155
C A' 1.28732822798796
A 0.963166483210619
A'H C' 2.37717610986542

Table S6. Promoter sequence and expression for the L4 library. (C = Cbfl site, G = Gcn4 site, M = Met31/Met32 site, N = Nrg1 site, and ' = reverse orientation).

M'	1.48922967733588
C	2.21869372972083
M N	1.34794652109378
M G G'	4.8597518739255
G N	3.10700753110878
C'C G'G'C'N'N G'N	2.2133101478789
G'N C'	3.45120836251751
C N'	1.84006984338629
N'	0.699322064208447
G'N'G	2.57573810885469
N'N'C'M'	2.42606086451921
C'	2.3447245756499
M M M C M	6.68238307659576
G G M C	5.57503798356595
M G G N'M M	4.80029742357629
C'G'C'	5.29393354857477
N'N N'	0.470832244115827
G'M'	3.87789390720198
N'G M	3.69398848616025
G N'M'G'N'N'C'N'M'	2.48668287226563
G N'G M'N'	2.79158808494911
C C'C	3.1191985468612
C N'C	2.72406631783973
N'N'	0.484998296912998
G'C'C N'	3.2624779096692
M	1.64761144917112
G G'	4.10562127724675
G'N G'N'	2.84082150057271
M'	1.51976855595142
G'G'G M'N'N	3.34493514923433
G	3.65466588433364
C'	2.41232614803551
M'	1.38816169886635
M'M'N'	3.15350295975287
G'N M M N'N G'	3.65447850589967
C N C C N'	2.30188181562483
G'N N'M C G'M'C	6.50147469847314
C G N	5.14689502660726
M	1.62158024053243
G	4.02222374859661
M M	5.3435183073313
G M'N'	2.10554559704933
G'M M M N	6.73176089813791
G'G'G'G'N'	5.9211582366279
N G'	3.30221572783783
C N'C	2.9749963786772
G N'G C M	5.94413862851833
C'	2.43337438022023
G'	4.11084806238471
G'M N'N'	0.468785863605218
C C M	3.30752473181078
C M C C'	3.11129795477054
C C'N G'N M'M'	4.58306532247028

N C'N N'N M M' 2.85169735798199
G G 6.75222857877836
G'M C G 2.35111533889373
G C G N'C' 2.88572703912597
C'M'G'N G'G 4.4827600200369
M N M N C' 2.76488046680424
C N' 1.73583231752505
N 1.10631688024875
C 2.5741347235685
M M'C N' 2.92758712935927
G C'M G'N' 6.195195301167
M' 1.48944093580292
G'M N 2.88604820091786
G N 3.5537674832187
N'M'G' 3.27827947686019
G 3.67006458373242
C 2.29137403647665
M 1.60568381682556
M'N M'G' 4.36047650141081
M'N' 0.878838673662297
C'G'G'M C C C 3.09762326787735
N'N 0.703978361985594
M N 1.35297606375703
N'N N N'C 4.24084693958413
C 2.20395375567024
G'G'G'N' 4.57479800676652
C' 2.2912206684503
G' 4.1020545094404
C' 2.27831618775245
M G'C'N 4.39141446494047
M 1.82527185697636
M' 1.35552063000955
C C' 2.83381455019359
G'G C' 4.41531952978468
C' 2.31317497165609
N G' 3.41776517272793
C'M N M 4.94414655903896
N'M'N' 0.608229881797115
C C' 2.88395607376021
M'G C' 5.3511356080787
G'N'M 2.66277340595699
C C'N'G M N 4.34901408947997
N'N'C M'N 1.54473499525972
G 3.52254327665887
C'M 2.86672845127722
M C'N 2.52879991621366
C' 2.31789455160639
N'M 1.47500452508784
N C' 3.94341672047916
M C M'C N'C C' 3.5989439041986
C C 2.92780294489938
C C 2.58599236641255
C M'N'G'N'M' 3.02610432208797
N G' 3.98079559950652
N N'N'G N G' 2.10265353507374
N N'C N 1.69829124137772
G'G'N C'N M'N 1.29463810127931

N N'C C' 2.60073329652539
N' 0.758474027120337
N C 2.28072781428982
C' 2.28097506346534
G'C' 4.43270026963599
C M'N'G'N'M' 2.93192157474569
G C'M'N'C 3.32433193089788
G M C'C' 3.38121732152905
C'N'C'M' 3.20786157516851
C'M 3.38378470578419
N N 0.890721798044345
G N' 2.45873725125587
N' 0.758959494639246
G M'C N' 2.05153648153146
N'C M'N'C' 2.50085914265308
G'M'N' 1.74533300177911
M 4.18860623394107
G 2.28391623351347
C 4.61608746798859
C'M G C 4.37012581005065
M G N M G'G C N 4.54707158295448
M'M'M'N'C'N'G'N 2.75029099030833
C'C'C'C' 2.24238786518338
M'G G G G C'N 4.25921526911614
C'N C M N C'M' 3.15588247637834
G C C'C'N C N N' 1.03106113579536
N'N N G' 2.25953311211203
M N'N' 5.19806847334454
C N 2.16250456670023
C'C'G N' 3.47682629625746
N'G'N M'N'N G' 2.56395669053246
G G'G'M N'N C N'C 3.63803718584298
G 3.44961902376596
M 1.55730050671428
G N 2.7795330933093
C G'C' 5.03382817457377
G'N G' 3.94683763902049
G' 3.45151292633368
M'C M N'C' 3.28621010195227
N'M G'N'C 2.44098407155262
N 0.939731146275854
N M' 1.30811633269445
N' 0.65475658713643
N N' 0.709498923596154
G'G 4.82913602914245
N G'M G' 4.25144419859815
G'C M 5.50567955559095
M'M' 4.73046619601036
N'N' 0.457719099443748
C'C'C'M C'C'G'C'C' 3.74505377698415
M' 1.23209492683863
M'N 1.00908103963603
G'N N' 2.91943946325756
C' 2.177840376557
N'G G N' 2.24091367982942
C 2.23353399558428
C'N'G M'G C 4.89122599930065

C 2.13106779920401
M 4.07645815712451
G'M 4.48001522565345
N N M G 2.20550970754879
N 1.57662860500747
M 1.47937282795318
C'M N'N'M 2.00652399237288
G G' 5.16905439800058
G C C'C' 2.8301030502262
C' 2.02896270782672
C G 2.720122159214
C 2.02868030090066
N N'M'C'N'G'M 4.42181040880731
G'C' 4.84537237869269
G M 3.36654415378408
M'M' 4.66080356158445
N' 0.611354500530667
G N M N' 1.00141652587029
N G G'C' 4.72699787655257
N' 0.667861184136888
N' 0.765668441365484
M' 1.39607466332279
N C 2.36463222232502
M G'C C N C M'G'C 6.20467312818616
G G'C 6.14252847868626
M G M'M'N C' 5.40911152154318
N C'M 3.4643011833315
M 1.50190426247694
G 3.79346094720694
M'N G 3.33497611657269
G'N 2.30761309963312
G' 3.10794294473339
M' 1.10899302741258
G'M M G'N'M C G 4.6263275172332
M' 1.89076959196635
N M'N N'G'C G' 3.63623098532131
G' 3.61456028281367
C M' 2.97734153777125
N G' 3.31865431010773
G N M N' 1.10699619871293
C N'M 2.62076143574947
M N'G M 3.10643919290615
C M' 3.0828013415044
N N'M'C'N'G'M 4.03613269196365
C'N N'M' 1.13982830087442
C'C'N G'C N 4.07252628715367
N G 1.99478544424149
G'M'N' 1.8141903621219
G 3.24505533487851
N N G' 1.99880421622384
C G C N M 4.42972011518283
N' 0.763826763124376
M N'M'G 3.71341404406601
G' 3.75798853205974
C'C' 2.85932121229662
C M N' 3.33528567050118
C 2.03767499418663

N'G C M'M'C M'C'N C' 3.15811549387502
N'G' 2.86881672073114
G C 3.88158187542713
G' 3.56166023140179
M'N M'G 4.46619543032158
C'M G'C'N N G N 3.21758047571059
C N'N' 0.999653823045754
C'C' 2.5768950404436
C M C N'C 2.77414982964464
G' 3.943934104462
G N M'N' 0.924303614469261
N M'N' 0.474452638791616
M G G C N C C 3.41336837355985
M N 1.44300137523326
G'N'M'N C'N' 1.01721435446296
C'C G C'N G M G 4.46719784540652
M'C N'M N' 2.04928679801414
G' 3.7983322821419
N G M 4.02499727706438
M'C 3.24802345323415
N'G C C 4.07450835732694
C M'N' 2.1529442030342
C 1.88029711772339
C'M 2.75529406280921
N'C'M'N' 1.4911362157055
M C 2.54239192455675
N 0.964224915170171
M' 1.32149533686633
M 1.43038413969919
G'N'G N'C 2.71313367018096
N'G' 2.71868338519113
N' 0.566025076509093
C'C'C'N C N 1.99237267652217
C'N' 1.66509190629334
M'N 0.975097532691663
N'M' 0.852641906299816
M' 1.22069801268569
C'N'N N M 0.804394842039458
M N'M' 1.76762392108259
M' 1.19412014938839
M N G 2.33120635985222
M N'C' 1.96340828049307
M 1.3917356160067
G'C' 2.75564451239531
N G'N G'G 2.55137929109437
N' 0.454193126790032
G N'N 1.77519856188571
C'C'G N' 2.43552784600545
M' 1.26133377546956
C N'M 2.06048108798076
N' 0.563245103494185
C G N N M 2.29070256017276
M N'C' 1.98817662553444
N'N' 0.457945667152652
G'M 1.2742574742677
G N' 1.78138694360339
N' 0.392875569441805

N' 0.627205908120377
N'N 1.86785815379752
G N' 2.97723482716344
N'M C 2.35614582834874
C N'M'N' 0.901405152116902
C' 1.55132300463643
N N M N 0.57694118573664
C' 1.90997058699063
M'G N M 3.30885291901964
M' 1.06875972111214
M N 1.09155536964143
N'M'G' 3.34447687156339
N'C N N M'G N C' 2.32150456375053
M 1.38293648220007
N'M' 0.916020363139048
N'N 0.534246426317011
M M'G'N'C G'N 3.45230968427318
M' 1.27037716418097
C'M N'N'M 1.73406615817073
G'M G N'N' 1.53746381013919
M' 1.23093366372577
N N'G N 1.79669524588829
M'C'G G C N N C N 2.13143244457751
M' 1.17559330475121
N 0.945758929007043
G'C'G G 2.46307764903355
C'M' 2.46438979710389
M' 1.22464195921291
N' 0.633537976907306
C' 1.94829678406296
C'N G N C'N 2.54148756425849
C N G N 2.71385876426986
C M M G C N 2.69327294679394
C'N'M'G C'N 2.20561497850882
C M'N 2.20906592157638
N' 0.596906375613135
C' 1.89539623226836
C M C C' 2.30388436312683
G'N' 2.90541343962148
C M' 0.938949688604156
G N 0.995288105147932
N'C M 0.757572646527807
C N 0.729613839900994
M 1.44553801269826
M'C G'C'C'N N' 2.23585990084206
M C N C' 2.35035242005784
C 1.79734144022599
C C' 2.30648603568859
M' 1.23355631019527
C 2.12873401391045
M' 1.20216586646504
M 1.54500880936755
N' 0.631369118716221
N N G M'N' 1.21458691740867
C'G M'C'N N' 2.27029167997889
N N' 0.584173291881029
G M'M'C C'N 3.25882373316981

M' 1.2153515290253
C'C 2.3822185167898
M' 1.29331317105916
M 1.42598070809525
M'C 2.61979078366572
N M C N C' 2.39587410919071
C N'C 2.00904975380136
M'C 2.66549032199315
G N' 1.48960050583173
C' 2.00501854307163
M C'M C' 3.31665241992504
G 2.4179636518978
C'N G N C'N 2.43753649633427
M 1.31452033053295
M 1.56003602415042
M G G'N G C'M C' 3.35842351083065
C M 2.99208973777503
C'C 2.52746694787711
C' 2.04285550319314
N N'C'M' 2.52589154016122
C' 2.06120324988613
N 0.887785110712605
M' 1.2358733125597
N G N C' 2.59449700700073
G' 4.04526523040083
M'M'G G N N 3.47559154061095
N' 0.583728519778222
C' 1.87624858147704
C 2.04233605690519
C 1.94556727630547
G'N'G'C'C' 4.40398442275474
M'N'N'C 1.67692290589627
C 2.13410988416356
C' 2.01502004752959
G'N'M' 2.70689975471283
M' 1.35697152053779
C M'N'G'N'M' 3.40130857615494
M 1.50178070768305
N 0.888106627282314
C 1.99650943216234
C 2.94079892796019
C'C' 2.64163481978542
C C M N'C 3.08652767124917

Table S7. Promoter sequence and expression for the L5 library. (M = Msn2/Msn4 site, S = Smp1 site, X = Xbp1 site, and ' = reverse orientation).

M	1.42119081171958
S'	1.90800939784571
M	2.27900502870774
M'X X	2.36756910214284
M	2.40519124823312
X'	1.44156523689574
X X'S M	3.73436610310777
M'S'	3.2630001841947
S'	2.03255701199843
X'X	2.04336067443639
S	2.16381048497367
M'M	3.29598805374771
M'	1.61381527116414
X'	1.29564500697012
S'	1.79732400470833
X'	1.33524841029265
M'	1.01627446931713
X'	5.16336474665686
M S'	3.93573563978818
M'M'S X	4.91332586711492
S S M'S'	5.14946810021861
X'M'	2.4229792866815
M	2.38148544865754
X'S'	2.48664547590285
S'X	2.2239457897071
M	2.05248102338431
M	2.18281560117838
S	2.33265072444093
M'	1.73547841083616
M'X'M'	3.89747011835958
M	2.20169306168708
M'M S X'	3.61986869018581
M S'M'	2.77083569769647
X'S'X X	2.47227078547772
M	2.23138982924361
M	2.08350460238585
S'M M	5.31028984572195
M M'X'X X	4.85026402008864
X'	1.39357451663556
M'	1.79865912009492
X'M	2.88329090810071
M	2.38718461814534
M	2.37710932367417
M	2.39520570843683
S'	2.01209765196247
M X M'	4.59005213700849
X	1.22529137840001
M'	1.49193444797351
M	2.10684104408022
S'S'X'M	4.61716089072298
M'S	3.48162349943653
S'	1.98317569746965
M'S	3.47878807147426

X'M'S'X' 4.39757736566271
M X 3.14801272868981
M 2.27499313495387
S'X' 2.60520493458627
X M' 2.23723149012143
X' 1.3749905831763
S 2.41757149284069
M 2.50990742126569
S' 2.06221741798142
S' 2.02398798240466
X' 1.80901022561081
X'M M' 4.53199165311607
S S 2.91130035316649
X'X 2.01605923381464
M' 1.98359760680389
X X'X' 2.16033314927195
M S' 4.17564100707249
X 1.1459518059046
S M 1.54070106982163
M 2.26269249253154
S M X 4.14455236608461
M' 1.75916783511902
S'M 2.9683012297386
M X' 2.5093341316262
M X' 2.61962456470535
X 1.15164618862344
S 2.19626154340941
X'X 1.7212277625749
S'M 3.71681236881455
M'X 1.64837185838426
S'M X' 2.46523885502383
M S' 3.7491194165022
S'S' 2.60198477082648
M 1.53040803956783
S 2.58678344646525
M 2.15201564574214
X 1.11726317272319
X'X' 1.62291065056492
S 2.50642204392037
M 2.4091861795145
X S' 2.12859154134606
M M 4.03687513486127
S' 1.96920941609723
M 1.45951657834376
M'X' 2.59158749775957
M' 1.0153255210036
M 2.33184605195254
X S' 1.21717468914998
S' 2.31953929530526
S' 1.91239437036115
S' 2.14693628793759
S 2.46664463173108
S 2.54160164970319
X'X M S' 4.73949825263992
S'X' 2.1386055612131
S' 1.63824310188623
S' 1.59118494613466

X S'S'X 2.02816740044319
M' 1.55774585605877
M'X S'M X 2.54447767398304
X'M' 1.99188559539994
M'M'X' 3.01475586773297
S' 1.75514204488966
S M 1.66526641525554
M' 1.55870384149257
X'M M' 4.03298595504855
X' 1.20327078255291
M M' 3.30445417694922
X 0.989889784169548
S 1.89322746050444
X 0.95146052104519
X M' 1.82990342243163
M' 1.42918878214517
M' 1.39724250703379
M 2.01509575028347
M' 1.53194000489812
M 0.272062895800719
X 0.912115886830972
S M 3.11281277026762
S' 1.57189630889712
X' 1.14210265836008
M 1.72969398775914
M' 1.53036445571434
X 1.00945434634235
S 1.92133332786646
M 1.69141273184784
X 0.935567550939083
X X 1.14911550583352
S'X' 2.26404273841606
X' 1.215291346838
M'M' 2.60412386430374
M 1.52494226674851
M S M' 3.72451417409859
S'X 1.85015878279482
M'M 3.04527620241378
M 2.04903522503185
M 1.41473221674354
X 0.777584315690805
S'X' 2.06317081972678
M X X' 2.64660391008352
X 0.997444548029907
X 1.20151256342287
S 2.51832299003895
M S 2.93174111890431
X' 1.15042140717708
X' 1.17133290345251
X 1.15903715743495
M S' 3.57010399457465
M'M'X 3.28361099309882
M'S' 2.89125608681037
M' 1.82826985046642
X M' 2.03714836420859
X'X'X' 1.39134499288418
M'S' 2.58480111824914

M' 1.48407997401411
S'S' 2.75246311599427
M'X X S' 2.50340134776728
M X'X'S'S'X' 3.62677947458658
M X'X'S' 3.14075767786046
X 0.824270167677981
X S X 2.40171247650473
S S 3.18726145742301
X 1.13861153182253
M' 1.54410386723771
M' 1.6163533541642
S'M 3.33521790116099
M'M' 2.92611982510125
S'X 1.75827717021224
M'X 1.83653297009062
S 2.04142767514075
M'M X 3.25597077381104
X'X' 1.65559663436647
M' 1.20863121072001
M X 2.24959248977827
X M' 2.04650625378815
M'M' 3.14741804905219
X M 2.22526181703301
X 1.02255725015839
X'X' 1.75318748058396
M M X 4.08771852924718
X X'X' 2.07875861000917
M S 3.27385513961595
S'M' 3.09601422537621
M 2.11881908292602
M'X'X'S' 2.78577654634127
M'S 2.29900423946611
X' 1.19223944180104
X'X 1.57380109289257
M'X 2.07579012001058
M' 1.8190465989454
M X M' 4.01000404201436
M'X'X'M' 3.51618387738861
M 2.04111522344573
X M' 2.17927322459354
M'M'S X 3.64954792025757
M' 1.03173446071727
S 2.3306147326789
X'M 2.32880826209014
X 1.0291040170976
M'X'S X'X' 3.52847600385236
M' 1.81611668478034
X 1.07092042834065
M' 1.65976732349564
S 2.26426321419998
S X 2.35377491159036
X'X'X' 2.07088091901608
M M 2.72260517630145
S' 1.87730759043839
X 1.15501788934562
M 2.01779601711428
M M 3.310194880092

M'M' 2.51771117043532
M 1.80175169972072
M'M 1.87366914370431
X'X'X'S'X' 2.4883580942354
X 1.04011021948844
M'M' 2.86030980808453
X'M 2.25096156139874
S 2.13290277802022
S 2.29527595048726
X M 2.06699097979411
S'M' 2.45974541271828
M' 1.08031265440173
X S'M 2.85915655753943
S'X 1.82665719453806
X X'M' 1.98654079899002
M' 1.36997190402358
X'M 2.11318087477843
S' 1.02485038622936
M 1.92928549518755
X X'X'S X' 2.73707807991043
X' 1.09124403262735
M' 1.50058790999109
X X'M' 2.06831622287466
M'X'X 1.90293648139236
M'M' 2.49442857171211
X' 1.19136174445677
X'M 2.02303675954076
X M' 1.78248438032485
X'X S'X S'S 2.35388202435192
M'X 1.31689987751359
M' 1.454961256228
M' 1.43738305978069
M' 1.53507100073326
X 0.913488306407535
M X'X 2.51135505137204
X' 1.1597406021321
X 0.938542550125473
S'S' 2.93933634465906
S'X' 1.8942365934941
S' 1.84580021638304
X'M 1.79593757506825
S'X S' 2.62976947798944
M 1.77111749607835
S'M' 2.70543116064498
X' 1.54132643318047
M 1.98722439536835
M'X X 2.32376015980834
X'S'X M'X 3.29380748231338
M'M 4.03323330726581
M X 2.72597233812541
S' 1.86961608761766
M' 1.56447005305235
X 1.20719397669833
M 2.06527517095329
M'M' 2.63250982437941
M M' 4.26326696729111
X'M 2.21279842564737

X X'M' 3.10659687173093
X'S'X M'X 3.69919347660284
M' 1.93373422105448
X S 2.99058450368175
M'M 2.80330923451718
M S'S X M X 2.3595946498039
X 1.22352672440772
X X 1.71163410475098
M X'S'S'S' 2.61078807442205
S'M X' 3.94404883840784
X M M 4.37330743834183
M X S'S' 3.84039154480078
S' 1.90120642912294
X X M M 4.21620940363321
M 1.48718904861024
X' 1.06763727264292
M'M'S'X' 4.99649892099414
S'M X' 3.95888776767978
M 2.36704836162443
X X 1.81991761357867
M M 4.07102510406411
S' 2.09844508738354
M M 4.23546304715738
M 1.45373221459969
X M'M' 2.81856661269676
M' 0.999996047065071
M'M' 2.73137846102988
S 1.63826136387645
M M'S 4.77994279962296
M M 4.39312105040096
S 2.37726577330041
S M 2.14327548343788
M' 1.79464153692871
M'X 2.25501877434129
X' 1.39999734135802
M'S' 2.69078598785125
M S'X 4.29569975596725
M M X 4.79217153253465
M 2.36343495268524
S'X S M' 5.26664933193226
X'X'X' 2.58791420122477
S 1.52048188873445
X S 2.7963962903878
S S 3.52970569808064
M'S 3.34978414403756
M' 1.8580463935772
X X'M' 2.97993126253517
X' 1.48070881959445
X 1.33717151613319
S' 2.00876327919897
M 2.46650089673537
M M 4.09762572379836
X'M 2.34864831065703
M'X' 2.11961804258544
X' 1.50691688395981
X 1.21619386457795
M 1.98250638472825

M' 1.54078725999755
S' 1.7277737482705
S 2.13258917171387
M 2.14514124064018
X' 1.4499979538129
X M' 1.99774619251472
M' 1.41957136196162
X'M'S 3.19498161727629
M' 1.57122782929343
X' 1.50994584893222
X 1.25359453290446
M M' 3.75663332194714
S' 1.30813725747824
M' 1.35498671353744
X' 1.34917989473923
X 1.21327005835453
M'X' 2.23737976721377
M 2.12933786239778
X S 2.7577894593521
M 2.10005612773112
X X'M' 3.03466790439343
M' 1.71713998962482
M 1.96608144132414
M'S' 2.76213271675825
X S 2.58104024574866
X'X' 2.1474507985463
X S'M 3.51247238695447
X S 2.53375910329984
M S' 2.65369811718801
X'X 2.08896048112465
M M' 3.99894669375119
X' 1.44878856818113
M' 1.49673854162203
M X S' 4.19820897687747
S' 1.69151619389051
M 2.18491577096718
M'X 2.04463101446691
M 1.94665516366197
S'S 2.92543695997714
X'M 2.62684727379871
M'S 3.42663470533421
X'M M' 4.71501840977548
S' 1.93474451586704
M 2.04908299939351
M 2.00150152481154
X 1.20504186834192
X M' 2.11959463534699
M 2.1146925326365
X 1.30097624154171
M M'S' 4.79042947619738
S 2.14754751174254
M S'M' 4.76244237871203
X 1.40423556308775
S'M X 3.06553896965705
M 1.84179344191726
S 1.79275355350234
M' 1.70168128381588

M'M' 2.94928757013492
S X M 4.19667060625064
S'X S' 3.11791758730093
M' 1.64385737098813
M 1.96546832319332
M' 1.52669595972996
M 1.9661351046163
S'X S' 2.68200459306971
X' 1.48044855346637
X 1.25448557406437
X'M 2.38013230508971
S 2.29647832773847
S' 1.73536996796864
S 2.12596015733552
S 2.04248493687044
M'S' 2.6471993995838
M' 1.36247441070624
M' 1.06217719833301
M' 1.61809750501782
X X M 2.6147648489768
S' 1.74614573635328
X'M'S'X' 3.52849772640476
M'X X X 2.44175575943635
X' 1.46878944426117
M' 1.359250166391
M'S X' 3.47041819511795
X'M M' 3.60429762799405
S'M 1.68212267780154
S X X 3.43828342683579
X'X' 2.0946939475107
X' 1.29615539903822
X 1.13340563634032
M X' 2.48629954097449
S'X' 2.35853833051422
X 1.19030193314363
M X' 2.47600732438892
X'X'M X'X' 3.6610681166829
M' 1.3954215990634
M X' 2.69372435158821
M M 3.63060185773255
M' 1.64900346776592
X'S' 2.35363616243275
M X' 2.52744433333012
M S M' 4.3459963607351
M X S' 3.42800606375031
X'M'X X X 2.78757951390254
S 2.24744665270875
M 1.88755901217112
M 1.95179352004698
M 2.63452106376816
S' 1.7853086487753
S 2.38135671630456
M M' 3.8109383903142
X' 1.47005737138358
M X' 2.78764272206369
S S' 1.9289979095976
M'X 2.23470055462157

X X'X'X' 3.1190378324365
M 2.05880065788126
M X'X 3.30212072868631
M'X'M 3.90108173781054
S 2.3698280986953
M'X' 2.14785240437729
M 1.97662189277498
M'M' 2.64684657306743
M M 3.6796311713881
X' 1.45655848606121
M'M'X' 3.99710656289123
S' 1.97060815010647
M 1.67953739619387
M' 1.31586603472847
M'S' 2.39461188967978
M 1.33976354310426
M 1.68048256933191
M S 3.59220032466205
M'X 2.13481079557699
M' 1.49598896234381
M' 1.37317408117449
M 1.85591743796373
X' 1.34943397480811
M'M'M' 4.27639713470939
S S X 3.23798407956525
M 1.84051704261658
M'M 3.25096154202129
X X S X' 3.15953685682909
X'M 2.45583330967003
M 1.83230988897936
S'S'M 3.62763274295822
S 1.68409921930977
X 1.1971271255127
X 1.09758693375181
M' 1.4257740013395
M X'M 4.49046852388334
S 1.92484130594137
M' 1.4232454977298
M'S X M 4.36012235023121
M'M' 2.74165361539793
M' 1.40621488993042
M 1.94613916326674
M'X 1.99771849064836
X 1.2235459254055
S' 1.91479281629902
M' 1.51023118865721
M'S X' 3.77719331086573
M S X 4.18083529957603
M 1.84809278294343
M X S S 4.80972435510393
M S'X 3.4995705772023
S 2.11086158593825
M 1.93455380793888
S 2.11030456025794
M S 3.24720051880013
X 1.29831049365564
X M' 2.08599267946289

X' 1.39130388582215
S S M'S' 4.87275591359618
M X' 3.0016328161833
M 1.97890901181913
S X M 3.69138250721922
X X M 3.09600905324992
X 1.23913643736409
M' 1.89526826570607
M 1.84468315326449
X'X S' 2.72435287683536
M 1.94405020166904
X' 1.59245618288019
S'S'M 4.08834957759361
X X' 2.37535758386955
S'X'M 3.56732811122528
S S' 2.36558096751542
S' 0.948827371404669
M 1.37775540271886
X S'S'X' 2.90903870955104
X X 1.70602091004157
M'M' 1.95649944418566
S 2.9437842107967
S' 1.75591124507675
M'M' 2.75574559055979
M X'M 4.24066622262561
M 1.90363686304041
X'M M 4.30894961358856
S'M'S X' 3.98902481565543
M' 1.41774759942072
X' 1.21254719751865
M' 0.921992658805623
X' 1.42167586828241
X 1.01862761401033
M' 1.4443565111397
X 1.10969667268267
M'X'X'M' 4.1271348416354
X S'S' 2.32402015257084
M' 1.45922032697326
X' 1.25069801299228
X' 1.31095284847869
X M' 1.8726370777417
M' 1.38206598404764
S' 1.53588444117139
S'M' 2.33306042288327
M'X 1.64768406647517
S 1.25498517429072
M 1.82433624869142
S M' 3.21757727520038
X'M M' 4.34773307805051
M 2.04608423848144
X' 1.44650969635864
M 2.08070297588918
S'S X'M' 4.15714773722096
X S'M 2.65016547360813
M' 1.58702626607753
X 1.19242327050327
M 2.0508834108112

M	5.21614327353998
S'M'	2.7496466082002
S	2.28342983048461
X	1.03159464397908
M	1.85909483934269
S	2.47221151666336
X'	1.44061610954653
M	2.18915764460631
X	1.66628060328186
X S X	1.03604326172239
S	1.29233787671583
M M'S'	3.24321170308341
M	1.60617126320731
S'	2.03759402643316
M	2.27906950544252

Table S8. Best fit significant parameter values and 95% confidence intervals. ‘ = Reverse orientation. $\Delta G < 0$ corresponds to favorable interactions. Mig1 parameters from L1 were held constant in L2.

Library	Parameters	Values \pm 95% confidence intervals
L1	$\Delta G_{\text{Mig1-RNAP}}$	0.67 ± 0.2
L1	$\Delta G_{\text{Mig1}'\text{-RNAP}}$	0.54 ± 0.2
L1	$\Delta G_{\text{Gcr1}'\text{-RNAP}}$	-0.16 ± 0.1
L1	$\Delta G_{\text{Spacer}'\text{-RNAP}}$	-0.8 ± 0.1
L1	$\Delta G_{\text{Mig1-Mig1}}$	-2.45 ± 1.1
L1-Weak	$\Delta G_{\text{Mig1-Strong Site}} - \Delta G_{\text{Mig1-Weak Site}}$	-1.9 ± 0.8
L2	$\Delta G_{\text{Reb1-RNAP}}$	-0.84 ± 0.31
L2	$\Delta G_{\text{Reb1}'\text{-RNAP}}$	-0.52 ± 0.28
L2	$\Delta G_{\text{Rap1-RNAP}}$	-0.77 ± 0.3
L2	$\Delta G_{\text{Rap1}'\text{-RNAP}}$	-1.17 ± 0.34
L3	$\Delta G_{\text{Adr1-RNAP}}$	3.41 ± 1.41
L3	$\Delta G_{\text{Adr1}'\text{-RNAP}}$	4.05 ± 1.63
L3	$\Delta G_{\text{CSRE-RNAP}}$	-1.34 ± 0.44
L3	$\Delta G_{\text{CSRE}'\text{-RNAP}}$	-1.52 ± 0.44
L3	$\Delta G_{\text{Rgt1-RNAP}}$	-0.92 ± 0.39
L3	$\Delta G_{\text{Rgt1}'\text{-RNAP}}$	-1.18 ± 0.4
L4	$\Delta G_{\text{Cbf1-RNAP}}$	-0.81 ± 0.61
L4	$\Delta G_{\text{Cbf1}'\text{-RNAP}}$	-0.52 ± 0.44
L4	$\Delta G_{\text{Cbf1-Cbf1}}$	2.11 ± 1.38
L4	$\Delta G_{\text{Gcn4-RNAP}}$	-1.27 ± 0.54
L4	$\Delta G_{\text{Gcn4}'\text{-RNAP}}$	-1.65 ± 0.6
L4	$\Delta G_{\text{Met31/32-RNAP}}$	-0.95 ± 0.5
L4	$\Delta G_{\text{Met31/32}'\text{-RNAP}}$	-0.43 ± 0.39
L4	$\Delta G_{\text{Nrg1-RNAP}}$	0.83 ± 0.47
L4	$\Delta G_{\text{Nrg1}'\text{-RNAP}}$	1.29 ± 0.57
L4	$\Delta G_{\text{Nrg1-Nrg1}}$	2.38 ± 1.42
L5	$\Delta G_{\text{Msn2/4-RNAP}}$	-1.66 ± 1.03
L5	$\Delta G_{\text{Msn2/4}'\text{-RNAP}}$	-0.97 ± 0.66
L5	$\Delta G_{\text{Smp1-RNAP}}$	-1.42 ± 1.02
L5	$\Delta G_{\text{Smp1}'\text{-RNAP}}$	-0.95 ± 0.7

Table S9. Predicted relative expression for top 500 promoter sequences in the genome based on Mig1 sites. A value of 1 represents no Mig1 repression.

Gene	Relative Expression
YFL052W	0.146655628
YKR075C	0.363807683
HXT11	0.364140969
YOL157C	0.364140969
ALD4	0.368344608
RCK1	0.40102119
YLR089C	0.402602225
XDJ1	0.402602225
YNR071C	0.405493659
PFK2	0.410792682
YMR206W	0.410792682
MAL13	0.427105397
NYV1	0.427537621
CSR2	0.438710893
APL4	0.438710893
MRK1	0.455264682
HXK2	0.482085867
YLR036C	0.484174602
YGR287C	0.484714623
DCI1	0.492466554
LAS17	0.492466554
SUT1	0.503764489
RAD54	0.506566747
ERG5	0.518256722
SUL1	0.519071149
TRF5	0.524777728
HXK1	0.544556279
YGR067C	0.54648597
MAL32	0.546937104
MAL31	0.546937104
QCR9	0.552222869
MIG2	0.552539521
MAL33	0.554358245
ACT1	0.557713851
YGR043C	0.558232403
YDL247W	0.559583257
YJR160C	0.559583257
RPO41	0.563751318
SNF3	0.581361594
YMR31	0.582293372
HXT12	0.590694218
YIL172C	0.590694218
HXT1	0.591121235
JEN1	0.591335741

IRA2	0.60450838
YLR023C	0.608558059
CBF2	0.610776786
YDR107C	0.621165742
GSG1	0.621165742
HXT9	0.622303071
TEF2	0.62384332
TKL2	0.62384332
DDP1	0.633350269
YRR1	0.633350269
GUT1	0.634491531
YJR115W	0.635697255
YDR384C	0.637884697
MTH1	0.640500358
PUP1	0.643163468
PET123	0.643163468
YPL201C	0.644741338
CSM4	0.644741338
FBP1	0.646887377
HXT7	0.648035124
CYT1	0.648328037
YNG1	0.648328037
SIT4	0.6486812
GPM2	0.649540284
YNL144C	0.653750499
STP4	0.654566998
HXT3	0.655516755
YKR073C	0.663993031
COD1	0.664946019
ISR1	0.664946019
PDC1	0.665725459
HAP4	0.669282431
SDS22	0.673156911
YGL080W	0.679376822
YOR352W	0.684087971
MEK1	0.684087971
IML2	0.685939679
QCR8	0.686326445
YGR243W	0.686601044
YBR203W	0.691689683
RLP7	0.696345353
DOM34	0.696345353
CDC47	0.697573663
HXT2	0.700378379
SMF3	0.706637469
GCR1	0.707651772
GAL4	0.709567898
YFL054C	0.70980074
DAK2	0.70980074

STF1	0.710423057
SOR1	0.711835604
YDL246C	0.711835604
HFM1	0.711995226
YGL250W	0.711995226
FPS1	0.713201985
YFR020W	0.71327884
YNL184C	0.713749649
SCO2	0.716504878
DOG2	0.717273642
IOC4	0.717700239
YKL069W	0.719840851
MET2	0.720903117
HTB2	0.722196826
HTA2	0.722196826
YDR233C	0.725008202
LYS4	0.725008202
SNF11	0.72583005
IPT1	0.72583005
ORM2	0.727123642
FET5	0.727227044
RPL3	0.727784169
YOR062C	0.728865349
GGA1	0.72985634
YDR357C	0.72985634
MRPL39	0.730901889
POP3	0.731049287
WSC2	0.731049287
GAL10	0.732326991
GAL1	0.732326991
COS12	0.734200625
HXT13	0.73427307
HAL1	0.735557469
GRH1	0.736658462
YDR516C	0.736658462
YJL160C	0.737119056
GAL3	0.737695436
PGM1	0.737806009
RPL23A	0.741161632
YIL057C	0.741784931
YDR247W	0.74209823
MNN4	0.742343434
OPT2	0.743506219
YML107C	0.744518473
URA5	0.744518473
YDR286C	0.747539295
YDR287W	0.747539295
CBP4	0.747914443
MAM3	0.748432872

GPD2	0.748432872
BAP3	0.748732341
FUN34	0.750585529
PEX13	0.750649036
PLB1	0.752018681
SYS1	0.752224487
YJL003W	0.752224487
SRP21	0.753317486
YKL121W	0.753317486
YJR056C	0.753520362
YBR094W	0.75512346
PHO5	0.75512346
MSN4	0.755569175
PKR1	0.755767866
RGM1	0.758277752
ALD6	0.759221459
SLY41	0.76168399
BDH1	0.762641817
PRB1	0.762919913
SEC3	0.764876997
NTF2	0.764876997
LYS20	0.766361174
PIG1	0.767631798
CDC46	0.767631798
BMH1	0.774743546
YOR1	0.776324544
PXR1	0.777270287
FUR4	0.777606751
MLS1	0.77789716
DCP2	0.77789716
HXT17	0.780767998
GFA1	0.781271539
SSD1	0.782521007
ECM4	0.783197274
AQR1	0.784467999
YLR279W	0.785322125
YLR278C	0.785322125
YOR049C	0.785570684
GPI12	0.789004999
CAT8	0.789004999
BUL2	0.789996071
HMS1	0.79001159
CYB2	0.79024245
KIN82	0.791437539
ODC1	0.792429088
MDH2	0.79290178
YOL125W	0.79290178
UBC5	0.793919119
MAK21	0.793919119

KTR1	0.794999717
NUP1	0.794999717
PRE7	0.795466022
FUI1	0.795466022
SDH3	0.795493841
YAR023C	0.796200549
DBP5	0.796876043
PTP3	0.797039092
GSH2	0.797980991
APC1	0.798422292
MDG1	0.798422292
HSP42	0.799072729
YNR034W-A	0.800689099
YIL121W	0.802550091
YER028C	0.803069951
MET32	0.80605268
CHL4	0.80605268
THI2	0.806458768
GLG1	0.807058765
YHL021C	0.809681357
SDH4	0.809724703
YOR152C	0.810119014
YPR115W	0.811057419
GPX1	0.811238873
YEL047C	0.811717961
YPL109C	0.814422049
TPK1	0.815380282
YPR150W	0.815630249
RHO2	0.815670449
LSM6	0.815851571
RGA2	0.815851571
YER121W	0.816303739
YPL108W	0.817291149
SUT2	0.818546857
FLO8	0.81903379
YJR136C	0.820109031
RRP6	0.820547761
YNL190W	0.82292239
RPB3	0.82404205
FSH3	0.827370654
SER33	0.828749972
TIF34	0.828804501
YMR147W	0.828804501
YIR016W	0.829068179
HYM1	0.829683473
UBR2	0.829801561
SNF7	0.830718016
GSH1	0.832397306
LSB6	0.832397306

BNI4	0.832611136
TRM3	0.833060956
CVT20	0.833060956
XKS1	0.833185009
SKI6	0.833185009
NUC1	0.833221944
SCS7	0.833333774
YLL007C	0.833944764
MMM1	0.833944764
YNL193W	0.834679735
YNL194C	0.834679735
LEE1	0.834968301
LGE1	0.834968301
HEK2	0.836081049
RIB1	0.836081049
CHS3	0.83659808
CAR2	0.836725925
YLR437C	0.836725925
MGA2	0.836751048
DAL3	0.836751048
YSR3	0.837784537
YMR163C	0.837838038
APG1	0.838168064
YBL064C	0.841375365
KIP1	0.841375365
YMR099C	0.842772357
PFK27	0.843004134
YPL099C	0.843521413
YMR291W	0.844230085
COT1	0.844858439
PCL8	0.846060025
ACC1	0.846141377
YEL057C	0.847422497
YCR082W	0.847424661
YBR139W	0.847962849
HDR1	0.847962849
EXG1	0.848136635
RPS15	0.848516834
RPP2A	0.848516834
MSS18	0.848936996
YLR327C	0.84982216
XRS2	0.850837239
PDR10	0.850973595
SNC2	0.850973595
APG2	0.851336926
AST2	0.851442427
PRP45	0.851640181
YGR161C	0.852002666
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ESBP6	0.860601923
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MCM6	0.916516951
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