

(A) PWM1-R2

A| -0.788457| -2.3979|-0.200671| -2.3979|-0.788457| 0.167054|
C| -0.788457|-0.200671|-0.200671|0.969401|-0.200671| 0.435318|
G| 0.969401| 0.969401| 0.820981|0.167054| 0.820981|-0.788457|
T|-0.788457|-0.788457| -2.3979| -2.3979|-0.788457|-0.200671|

(B) PWM2-R2

A| 1.21302| -2.3979|-0.788457|-0.788457| 0.200671|1.31568|
C| -2.3979| 1.21302|-0.200671| 0.820981|-0.788457|-2.3979|
G| -2.3979| -2.3979|-0.788457| -2.3979|-0.200671|-2.3979|
T|-0.788457|-0.788457| 0.820981| 0.167054| 0.646627|-2.3979|

(C) PWM3-R2

A | -0.04652|-0.893818|-0.257829| 0.276253|0.127833|-0.257829|-0.526093|
-0.04652| 0.405465|-0.893818| 0.276253|0.276253| 0.127833| 0.405465|
-0.257829|-0.257829| 0.127833| 0.519875| -1.4816|-0.893818|-0.526093|
1.01983|-0.257829| 0.127833|-0.893818| -1.4816| -0.04652|-0.257829|
-0.257829| -0.04652| -0.04652|
C | -0.04652| -0.04652| -0.04652| 0.276253| 0.276253|-0.257829|0.127833|
-0.04652|-0.526093| -0.04652| 0.276253|-0.526093| -0.04652|0.127833|
-0.526093| 0.276253|-0.257829| 0.127833| -3.09104|-0.257829| 1.01983|
-0.526093| 0.800778|-0.893818|-0.526093| 0.71562| 0.127833|0.276253|
-0.04652| 0.127833|-0.526093|
G | 0.127833| 0.405465|-0.257829| -0.04652|0.127833| 0.276253| 0.405465|
0.405465| -0.04652| 0.276253|-0.257829|0.276253| 0.127833|-0.257829|
-0.04652| 0.405465| -1.4816|-0.526093|0.879249| 0.800778| -1.4816|
-0.893818| -1.4816| -1.4816| 0.800778|0.127833|-0.893818| 0.405465|
0.276253|-0.257829| -0.04652|
T | -0.04652| 0.127833|0.405465|-0.893818|-0.893818| 0.127833|-0.257829|
-0.526093| -0.04652|0.276253|-0.526093|-0.257829|-0.257829|-0.526093|
0.519875|-0.893818| 0.62253|-0.526093| 0.276253|-0.526093|-0.893818|
-1.4816|-0.257829|0.800778|-0.257829|-0.526093| 0.405465|-0.893818|
-0.04652| 0.127833|0.405465|

Figure S3. The R2 versions of random position weight matrices constructed by randomly shuffling numbers within each column in the individual genuine matrices. **(A)** PWM1-R2 constructed from PWM1. **(B)** PWM2-R2 constructed from PWM2. **(C)** PWM3-R2 constructed from PWM3.