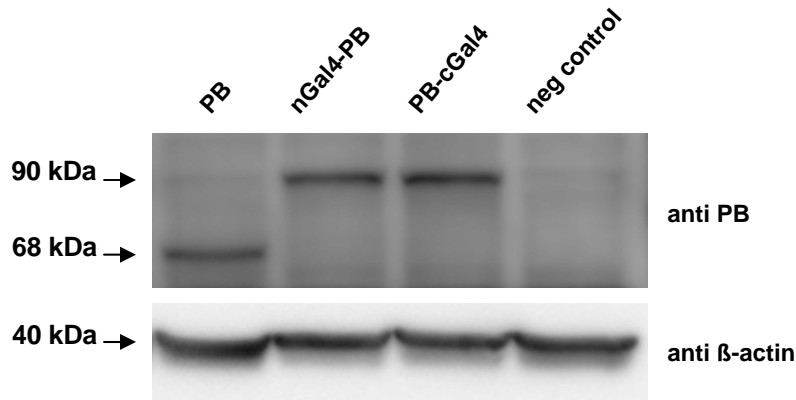
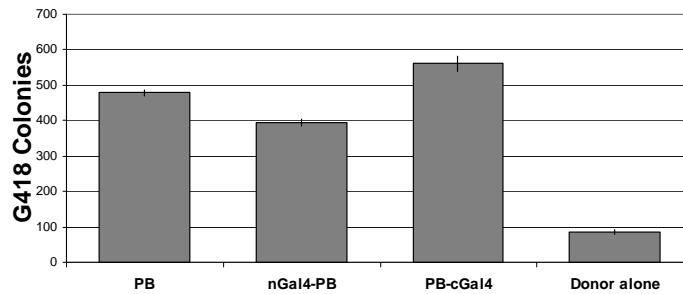


## Supporting Information



**Figure S1.** Western blot comparison of protein levels of native PB, N-terminal Gal4 PB, and C-terminal Gal4 PB. The larger size for nGal4-PB and PB-cGal4 samples is due to the Gal4 DBD fusion to the transposase. The negative control used was untransfected HEK293 cells.



**Figure S2.** Comparison of plasmid integration efficiencies in HEK293 cells. Number of G418 resistant colonies from transfections with native PB, N-terminal Gal4 PB, C-terminal Gal4 PB and transposase-negative control (n=3, mean ± SD).

**Table S1: Nested SB and PB Plasmid Primers**

UAS-R Primary	CCTGCAGGTCGGAGTACTGT
UAS-F Primary	GCGCTCGCTAGAGTCTCC
TTAA-F Primary	TCCGGCCTTTATTACATTC
TTAA-R Primary	GGCTAAATACGGAAGGATCTGA
UAS-R	GAGACTCTAGCGAGCGCAAC
UAS-F	ACCTGCAGGCATGGAAGC
TTAA-F	GCGTGTTACGGTGAAAACCT
TTAA-R	CAAAGGGAAAACCTGTCCAATG
PB 5TRE Primary	CGACTACGCACTAGCCAACA
PB 5TRE	ACGGATTCGCGCTATTTAGA
PB 3TRE Primary	GGTGCACGAGGTAAGAGAGG
PB 3TRE	CCGATAAAACACATGCGTCA

**Table S2: nrLAM PCR Primers**

5'TRE Linear1	CGACTACGCACTAGCCAACA
5'TRE Linear2	CACGCGGTCGTTATAGTTCA
3'TRE Linear1	GGTGCACGAGGTAAGAGAGG
3'TRE Linear2	TGTCTGGGAGTCCCTCTCAC
5'TRE Primary	CTTACCGCATTGACAAGCAC
3'TRE Primary	GGGAGTCCCTCTCACCAA
Linker Primary	GACCCGGGAGATCTGAATTC
5'TRE For Nested	ACGGATTCGCGCTATTTAGA
3'TRE Rev Nested	CCGATAAAACACATGCGTCA
Linker Nested	AGTGGCACAGCAGTTAGG
Single stranded adaptor	5'-P-CCTAACTGCTGTGCCACTGAATTCAGATCTCCCGGGTddC-3'

**Table S3: Position weight matrix of Gal4**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
<b>A</b>	0	0	0	¼	.	.	.	.	.	.	.	.	.	¼	0	0	0
<b>C</b>	1	0	0	¼	.	.	.	.	.	.	.	.	.	¼	1	1	0
<b>G</b>	0	1	1	¼	.	.	.	.	.	.	.	.	.	¼	0	0	1
<b>T</b>	0	0	0	¼	.	.	.	.	.	.	.	.	.	¼	0	0	0