Analysis of target genes regulated by chronic electroconvulsive therapy reveals role for *Fz6* in depression

Supplemental Information

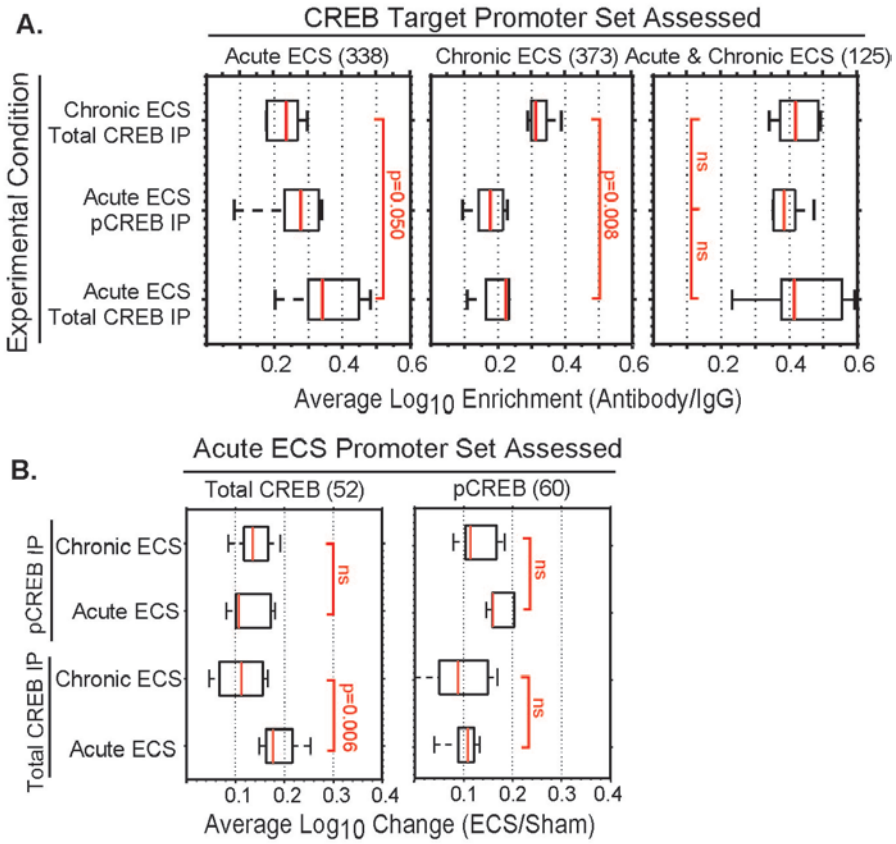

Figure S1. Comparison of acute and chronic ECS induced changes in CREB binding and phosphorylation. **(A)** Box plots indicate average log10 ratio (antibody IP/pre-immune IgG IP) by total CREB antibody following acute ECS (bottom), pCREB antibody following acute ECS (middle) and total CREB antibody following chronic ECS (top) for the 338 acute CREB targets (left), 373 chronic CREB targets (middle) or the 125 acute and chronic CREB targets (right). **(B)** Box plots indicate average log10 ratio (ECS/sham) for total CREB antibody following acute ECS (bottom), total CREB antibody following Chr-ECS (lower middle), pCREB antibody following acute ECS (upper middle) and pCREB antibody following Chr-ECS (top) for the 52 promoters exhibiting > 1.3-fold, $p < 0.05$ enhancement of total CREB occupancy or the 60

promoters exhibiting > 1.3-fold, $p < 0.05$ enhancement of pCREB occupancy relative to sham treatment following acute ECS. Chr, chronic; CREB, cAMP-response element binding; ECS, electroconvulsive seizure; IP, immunoprecipitation; ns, not significant; pCREB, phospho-CREB;

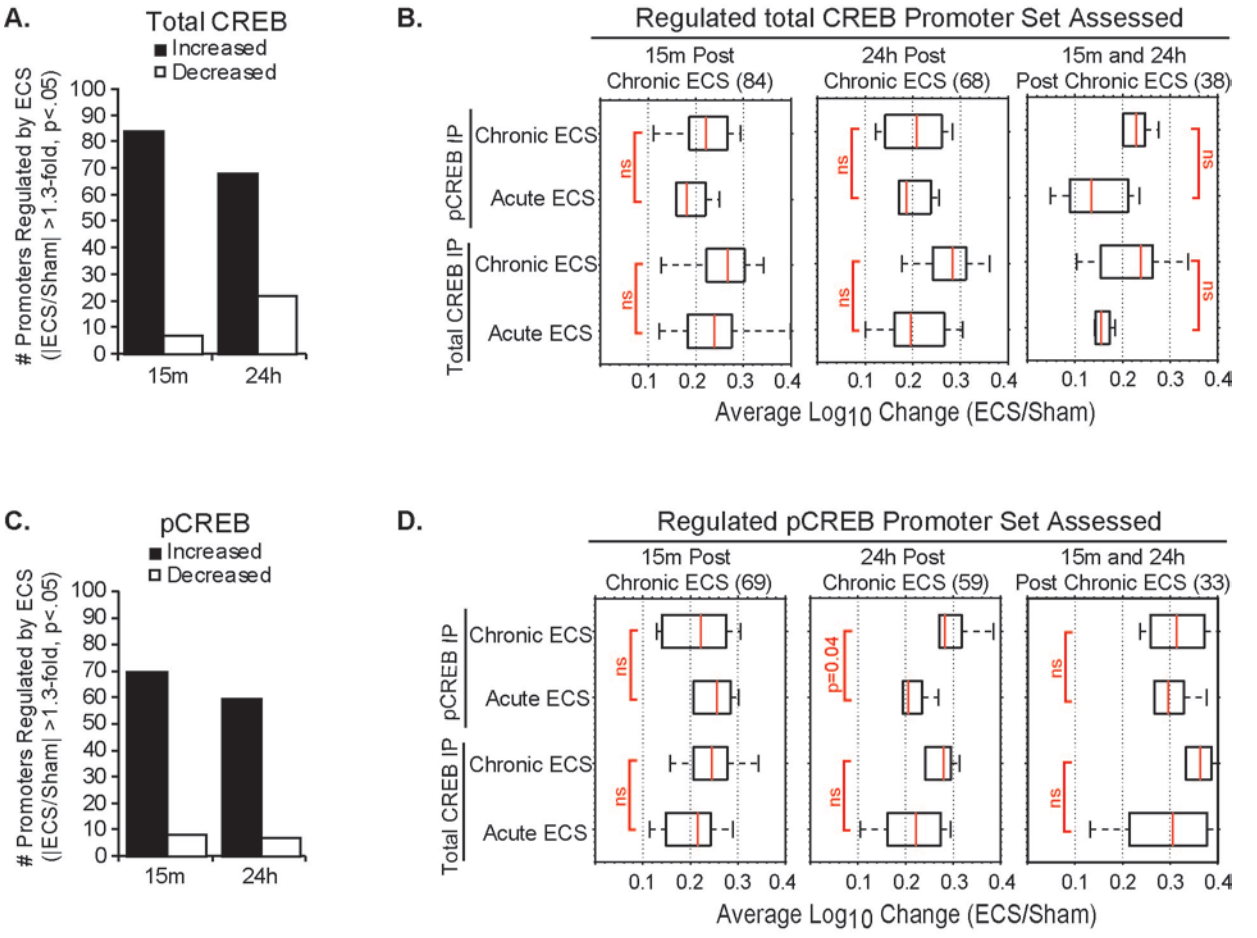

Figure S2. Stability of the Chr-ECS induced changes in CREB binding and phosphorylation at hippocampal promoters. **(A, C)** Bar graph indicates number of promoters with ECS/sham differences in total CREB **(A)** or pCREB **(C)** occupancy of > 1.3-fold, $p < 0.05$ (black) or < -1.3 fold, $p < 0.05$ (white) 15 min following the 10th Chr-ECS treatment (15 m) or 24 hr and 15 min following the 9th Chr-ECS treatment (24 h). **(B, D)** Box plots indicate average log10 ratio (ECS/sham) for total CREB antibody 15 min following the 10th ECS (bottom), total CREB antibody 24 hr and 15 min following the 9th ECS (lower middle), pCREB antibody 15 min following the 10th ECS (upper middle) and pCREB antibody 24 hr and 15 min following the 9th

ECS (top) exhibiting > 1.3-fold, $p < 0.05$ enhancement of total CREB **(B)** or pCREB **(D)** occupancy relative to sham treatment 15 min following the 10th ECS, 24 hr and 15 min following the 9th ECS or both, respectively. t-test *p*-values as shown. See Figure S1 for abbreviations.

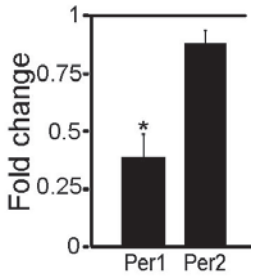

Figure S3. Effect of chronic electroconvulsive seizure (Chr-ECS) on *Per2* expression in the hippocampus. Data represent mean ± SEM of fold change in mRNA, $n = 5$ per group. Fold change of 1 indicates no change in expression in Chr-ECS-treated rats over sham. Student's t-test; $*p < 0.05$.

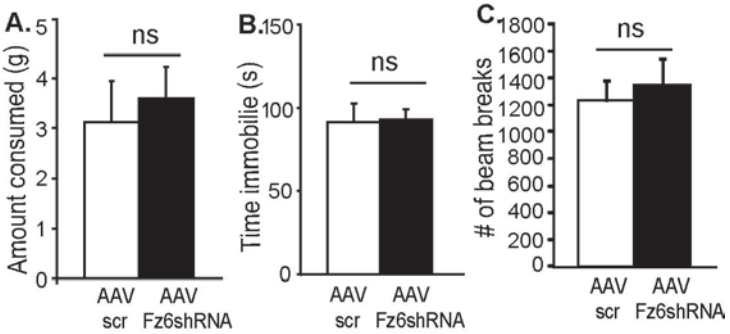

Figure S4. Influence of AAVFz6shRNA in animal models of depression. **(A)** Novelty suppressed feeding (home cage feeding control). **(B)** Immobility in the forced swim test. **(C)** Locomotor activity. AAV, adeno-associated virus; ns, not significant; scr, scrambled; shRNA, short hairpin RNA.