**Figure S1**

(A) CircBank analyzed conservative circRNAs between human and mouse, which were derived from host gene CELF1.

**Figure S2**

(A) Knockdown efficiency of si-circCELF1 was assessed by RT-qPCR. (B) RT-qPCR tested the knockdown efficacy of sh-circCELF1. (C) RT-qPCR detected the efficacy of NFAT5 overexpression. (D) Knockdown efficacy of sh-NFAT5 was tested through RT-qPCR. (E) The expression of NFAT5 was detected in NFAT5-depleted tissues of tMCAO mice through RT-qPCR. (F) Brain water content was measured in tMCAO mice with or without NFAT5 knockdown. (G-H) Bederson scores and corner test scores were graded in tMCAO mice before and after NFAT5 down-regulation. (I-J) TTC and HE staining assays were performed to detect the volume of cerebral infarct volume and the number of damaged astrocytes upon NFAT5 deficiency. \*\*P < 0.01.

**Figure S3**

(A) StarBase predicted candidate RBPs likely binding with circCELF1 and NFAT5. (B) (B-C) RT-qPCR and western blot assays were carried out to examine DDX54 expression after astrocytes were transfected with si-DDX54. \*\*P < 0.01.