

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: **Calcium imaging of a primary hippocampal culture from a *Tsc1^{wt/wt};Rptor^{wt/wt};Emx1-Cre+* (Tsc1-WT) mouse.** AAV-jRGECO1a was added on DIV 2 and spontaneous calcium transients were imaged on DIV 14. Video shows a 32 second (20 frames per second (fps)) movie recorded at 8.91 Hz frame rate. Scale bar = 250μm.

File Name: Supplementary Movie 2

Description: **Calcium imaging of a primary hippocampal culture from a *Tsc1^{fl/fl};Rptor^{wt/wt};Emx1-Cre+* (Tsc1-cKO) mouse.** AAV-jRGECO1a was added on DIV 2 and spontaneous calcium transients were imaged on DIV 14. Video shows a 32 second (20 fps) movie recorded at 8.91 Hz frame rate. Scale bar = 250μm.

File Name: Supplementary Movie 3

Description: **Calcium imaging of a primary hippocampal culture from a *Tsc1^{fl/fl};Rptor^{wt/wt};Emx1-Cre+* (Tsc1-cKO;Raptor-cHet) mouse.** AAV-jRGECO1a was added on DIV 2 and spontaneous calcium transients were imaged on DIV 14. Video shows a 32 second (20 fps) movie recorded at 8.91 Hz frame rate. Scale bar = 250μm.

File Name: Supplementary Movie 4

Description: **Calcium imaging of a primary hippocampal culture from a *Tsc1^{wt/wt};Rptor^{wt/wt};Emx1-Cre+* (Tsc1-WT) mouse.** AAV-jRGECO1a was added on DIV 2 and spontaneous calcium transients were imaged on DIV 14. Video shows a 32 second (20 fps) movie recorded at 8.91 Hz frame rate. Scale bar = 250μm.

File Name: Supplementary Movie 5

Description: **Calcium imaging of a primary hippocampal culture from a *Tsc1^{wt/fl};Rptor^{wt/wt};Emx1-Cre+* (Tsc1-cHet) mouse.** AAV-jRGECO1a was added on DIV 2 and spontaneous calcium transients were imaged on DIV 14. Video shows a 32 second (20 fps) movie recorded at 8.91 Hz frame rate. Scale bar = 250μm.