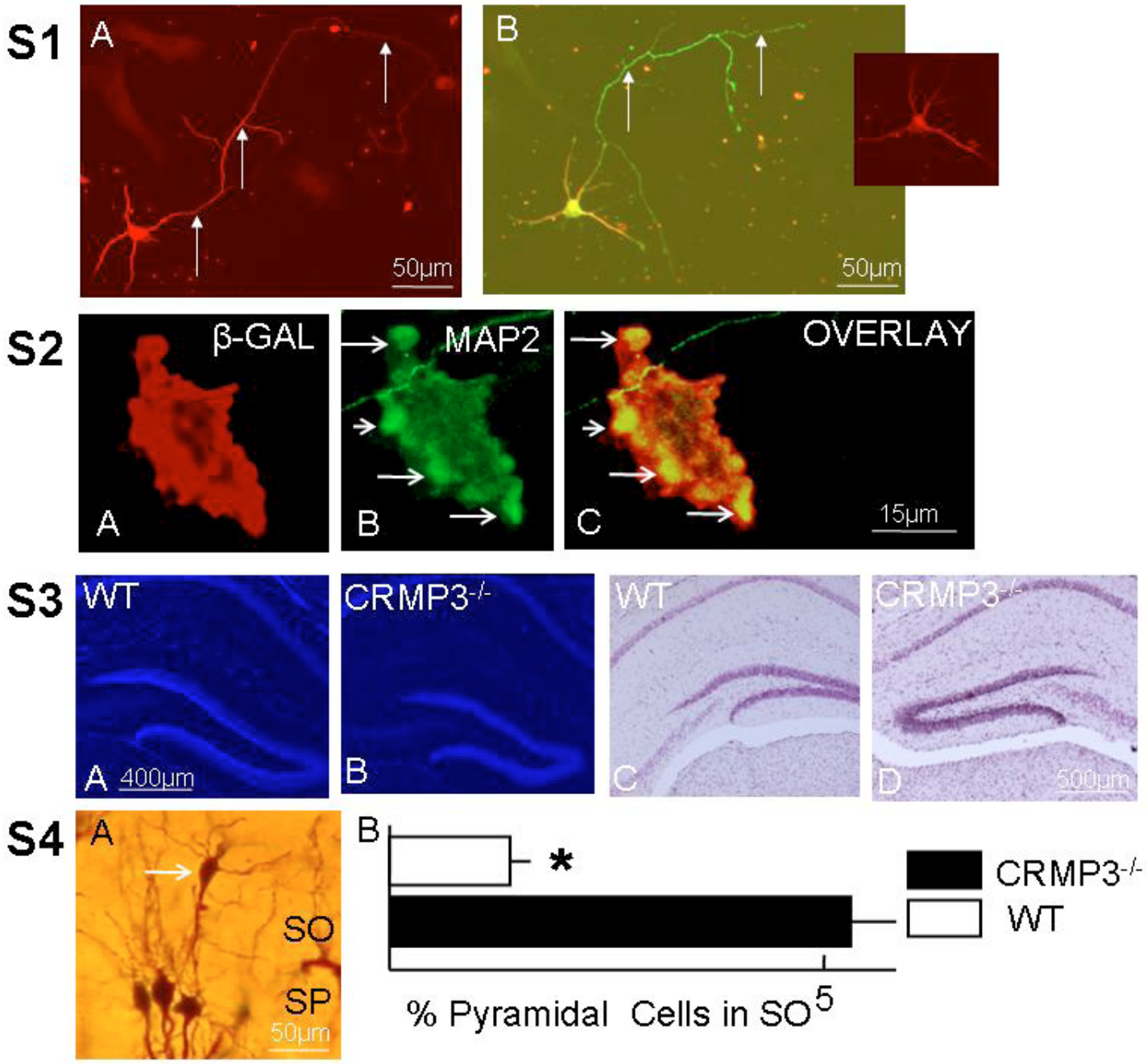

Fig. S1. **Phenotype of WT cultured neurons.** Dissociated WT hippocampal neurons were fixed at 6 d.i.v and immunostained for β-III tubulin to identify neurons (A). Immunofluorescence staining for MAP2 (red) and Tau1 (green) markers (B merged image) was used to identify dendrites and axons. These neurons displayed one single axon and several dendrites suggesting that our experimental conditions are neuronal differentiation permissive.

Fig. S2. Phenotype of CRMP3$^{-/-}$ cultured neurons. Dissociated hippocampal neurons from CRMP3$^{-/-}$ mice were fixed at 6 d.i.v, and stained with anti-β-galactosidase (A, red) and anti-MAP2 (B, green) antibodies. C, merged image; White arrows indicate the localization of MAP2 protein in CRMP3$^{-/-}$ neurons.

Fig. S3. **Effects of CRMP3 gene targeting in hippocampus.** Cryostat coronal sections (20 µm) of 5 weeks old WT (A, C) and CRMP3$^{-/-}$ (B, D) brains were collected on Superfrost Plus slides, permeabilized with 0.1% triton X-100 in PBS containing 1% gelatine, and stained with DAPI (A-B) or hematoxylin-eosin (C-D) to visualize their respective hippocampal layers. No detectable gross anatomical abnormalities were seen in the hippocampus of CRMP3$^{-/-}$ mice (n: 4) as compared to WT (n: 4)

Fig. S4. Golgi staining. Golgi staining of hippocampal sections from CRMP3$^{-/-}$ mice (A) showed a small but significant higher rate of pyramidal neurons migration (B) from stratum pyramidal (SP) to stratum oriens (SO) (B). *p< 0.05, Student's *t*-test.