Supplementary Figure 1. Normal neural development of the trigeminal ganglia in the NF1 mutant mice. hGFAP-Cre mediates recombination in the trigeminal ganglion (**a**, X-gal staining is on P35 R26; hGFAP-Cre mice), however NF1 ablation does not lead to gross morphological abnormality of the trigeminal ganglia (**c-d**), nor the number of neurons (**b**). Scale bar is 10um.

Supplementary Figure 2. Lack of cortical barrels throughout the entire somatosensory cortex in neurofibromin mutant mice. Tangential sections (50 μm) of the entire somatosensory cortex from dorsal to ventral illustrate the extant of barrel segregation from two separate control mice at P35 (**a-f** and **g-i**). This segregation is reduced in neurofibromin conditional mutant mice (**m-r** and **s-x**).

Supplementary Figure 3. Degree of cortical segregation is reduced in NF1 mutant. The degree of cortical segregation was determined from P30-35 DAPI stained tangential sections in control and mutant cortex (**a**). The measurement is given in arbitrary units (AU). Counts of DAPI stained puncta show similar numbers in control and mutant young adult cortex (**b**).

Supplementary Figure 4. Serotonin immunostaining and DAPI staining in P8 control and mutant cortex. Low magnification (1.5X) images of serotonin staining reveal various cortical sensory regions in both control (**a**) and mutant cortex (**b**). The visual (V), limb (L), lower lip (LP), and barrel cortex (B) regions are clearly seen in both animals. DAPI staining shows segregation of cortical barrels in the control (**c**) that is absent in the mutant (**d**).