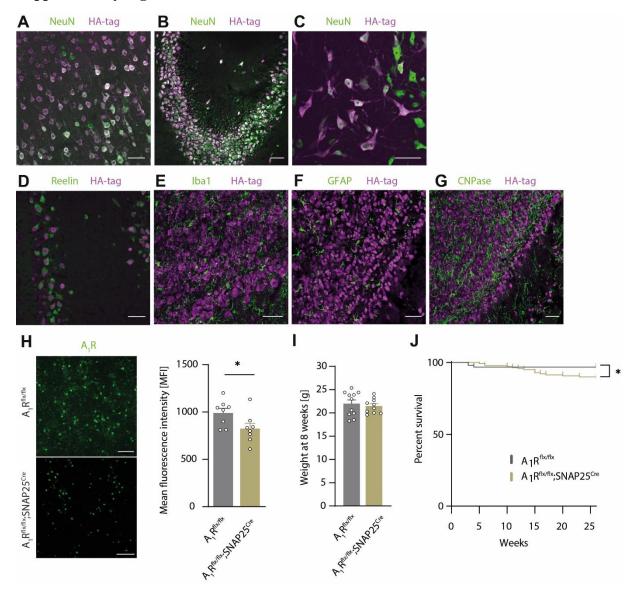
## **Supplementary Figure 1**



Supplementary Figure 1 | Characterization of A<sub>1</sub>R<sup>fl/fl</sup>;SNAP25<sup>Cre</sup> mice. (A–C) Reporter expression in neuron-specific mouse line A<sub>1</sub>R<sup>flx/flx</sup>; Tag; SNAP25<sup>Cre</sup> indicates a wide distribution of Cre expression in different brain regions (scale bars =  $50 \mu m$ ): (A) cortex, (B) hippocampus: CA3 region of the dentate gyrus and (C) spinal cord: motor neurons in the ventricular horn are shown. HA-tag counterstained with anti-HA antibody (magenta) labeling Cre expression cells, NeuN counterstaining (green) stains the majority of neurons in these areas. (**D**) Mitral cells and tufted cells were stained by marker Reelin (green) with Tag (magenta) in the main olfactory bulb in the A<sub>1</sub>R<sup>flx/flx</sup>; Tag; SNAP25<sup>Cre</sup>. (**E–G**) Immunostaining of the HA-tag (magenta) in the A<sub>1</sub>R<sup>flx/flx</sup>; Tag; SNAP25<sup>Cre</sup> together with specific markers for (**E**) microglia (Iba1), (**F**) astrocytes (GFAP) and (G) oligodendrocytes (CNPase) in green (Scale bars = 50 µm). (H) Mean fluorescence intensity of the antibody directed against A<sub>1</sub>R in A<sub>1</sub>R<sup>flx/flx</sup> and A<sub>1</sub>R<sup>flx/flx</sup>;SNAP25<sup>Cre</sup> primary neuronal culture as representative images (left, scale bar = 100 µm) and quantification (right) (four biological replicates with two technical replicates each). (I) Mean weight of  $A_1R^{flx/flx}$  and  $A_1R^{flx/flx}$ ;  $SNAP25^{Cre}$  mice at 8 weeks of age (BF<sub>10</sub> = 0.327). (J) Kaplan-Meier survival curve of A<sub>1</sub>R<sup>flx/flx</sup> (n = 139) and A<sub>1</sub>R<sup>flx/flx</sup>:SNAP25<sup>Cre</sup> (n = 170) animals until the age of 26 weeks. Log rank test were performed. \*P < 0.05.