Supporting information

Supporting figure 1. Silver stain. Silver stain was performed on SDS-PAGE after loading equally with 5×10^{10} genome-containing particles of purified AAV6-CMV-EGFP (lane 2), AAV6-GFAP-EGFP (lane 3), AAVshH10-CMV-EGFP (lane 4), AAVshH10-CMV-EGFP (lane 5), and AAVshH10-GFAP-EGFP (lane 6). This revealed 3 virion protein bands of vp1, vp2, and vp3, respectively, in each sample, corresponding to the particular AAV capsid proteins. Lane 1 shows molecular weight (M) protein ladder in KDa.
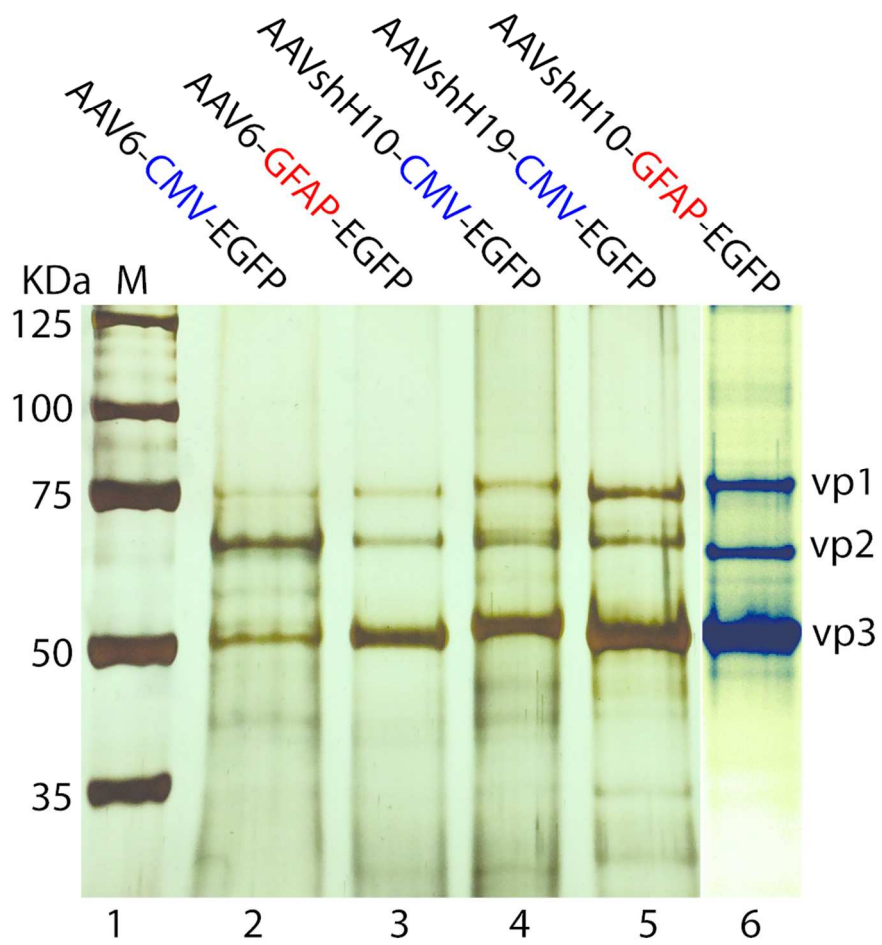
Supporting figure 2. Specificity of GFP antibodies and IHC using IgGs as the negative controls. GFP monoclonal (1:200) (**a**, left panel) and rabbit polyclonal (1:200) (**b**, left panel) antibody immunostaining of DRG sections from naïve rat, with Hoechst nuclear counterstain (a and b, white color in middle panels) and merged images in right panels (a and b). Negative controls for double-labeling performed using rabbit and mouse IgG controls (**c**), as well goat and mouse IgG controls (**d**). Note: Neuronal nuclei can be seen in back & white images (a and b) as larger and less intensively stained compared with SGC nuclei, but they are poorly seen in blue color (c and d). Scale bar: 100μm for all panels.

Supporting figure 3. Transduction profile of AAV6-CMV-EGFP, AAVshH10-CMV-EGFP, and AAVshH19-CMV-EGFP. High-efficient EGFP expression was found in all-sized subpopulation of neurons (green) colabeled by a pan-neuron maker Tubb3 (red)

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5 weeks after intraganglionic injection of AAV6-CMV-EGFP (**a**, **b**) or AAVshH10-CMV-EGFP (**c**, **d**). EGFP was predominantly found in large-sized neurons (green) colabeled by Tubb3 (red) 5 weeks after intraganglionic injection of AAVshH19-CMV-EGFP (**e**, **f**). Scale bar: 100μm for all panels.
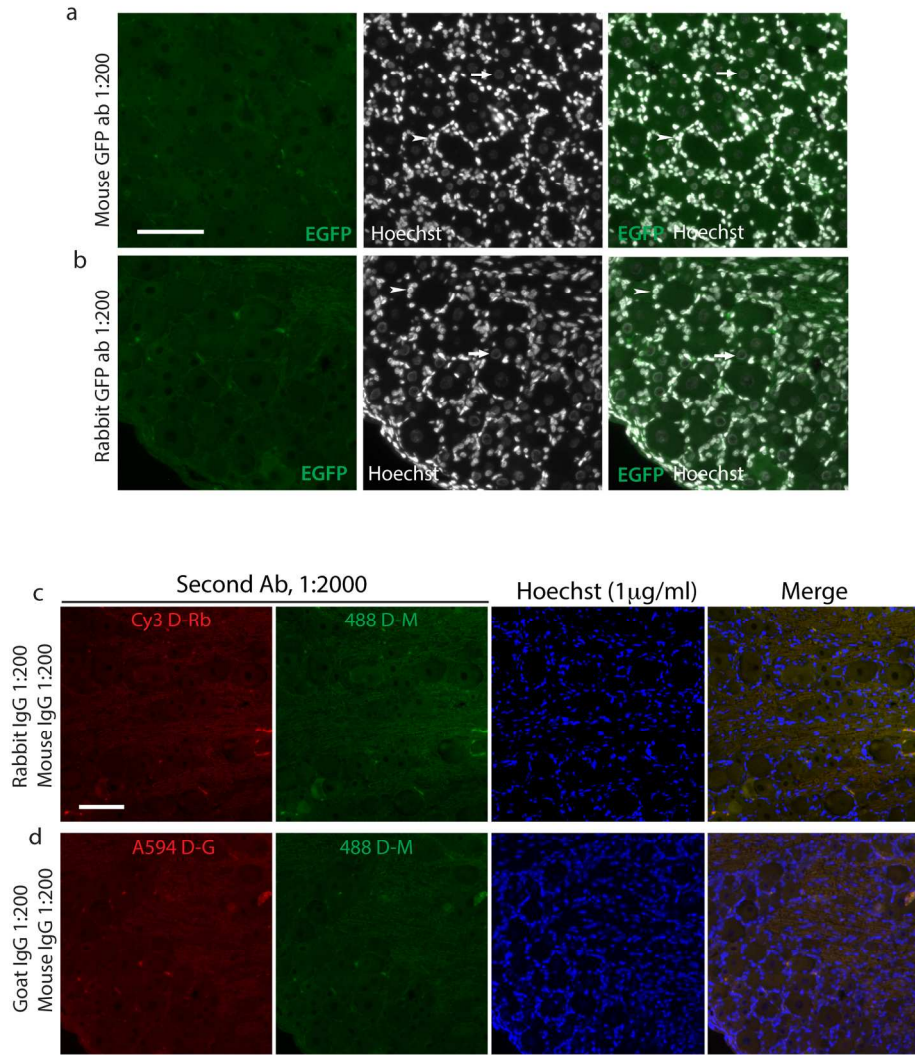
Supporting figure 4. Counting SGC numbers in DRG section. Immunofluorescence double labeling for GFAP (**a**) with EGFP (**b**) or GS (**c**) with EGFP (**d**) in a L5 DRG of AAV6-GFAP-EGFP injected rat. The filled arrowheads point to clearly double-labeled SGCs, and empty arrowheads denote GFAP- or GS-positive SGCs that are negative for EGFP. Scale bars: 100μm for all panels.
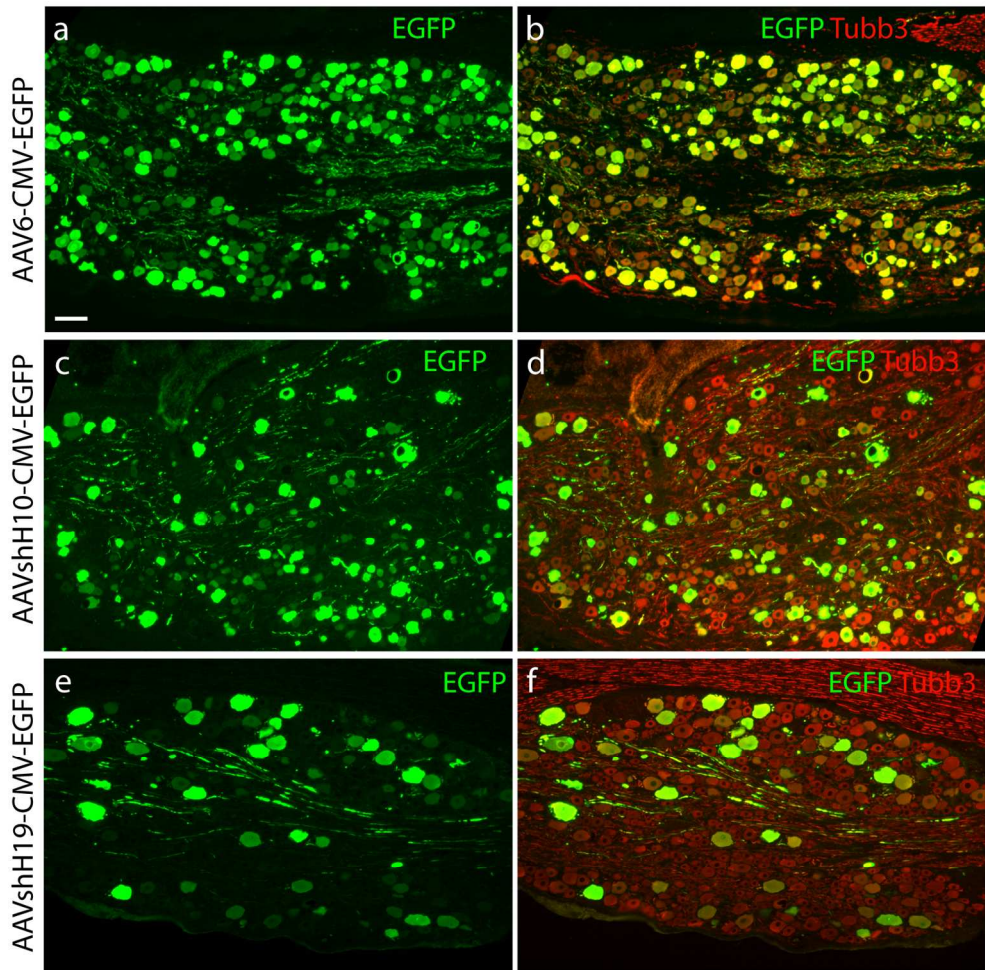
Supporting Figure 1

87x120mm (300 x 300 DPI)
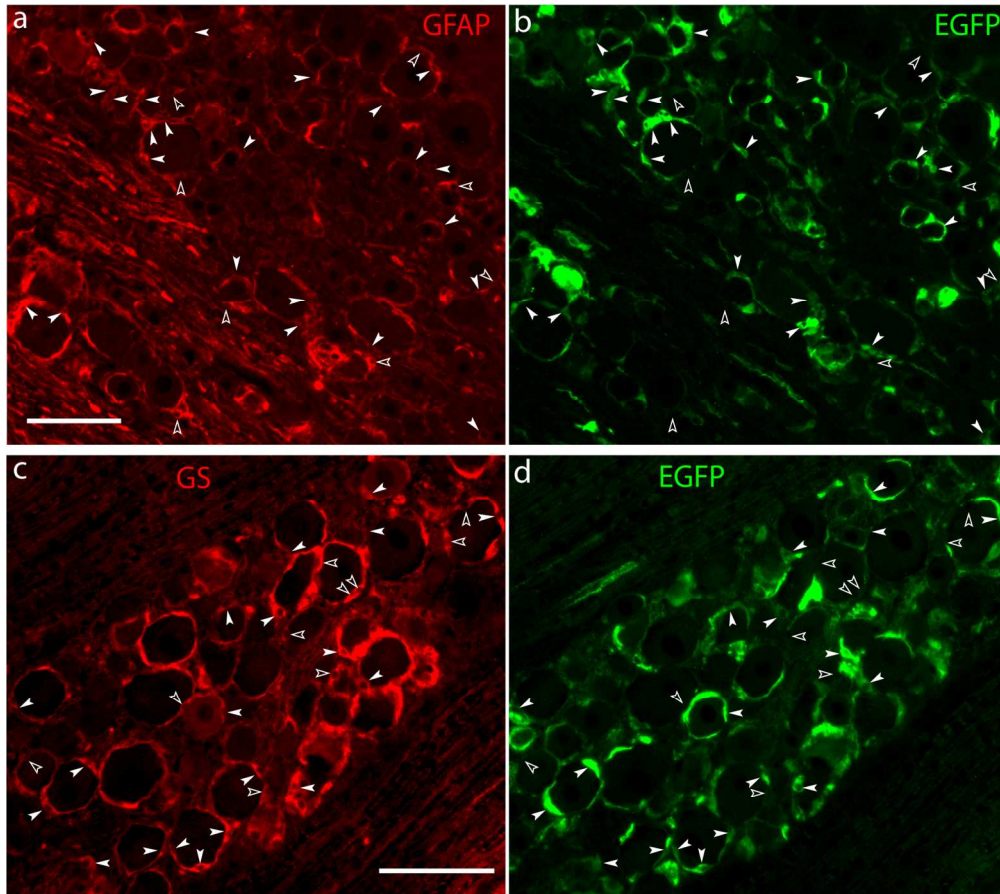
Supporting figure 2

155x203mm (300 x 300 DPI)

Supporting Figure3

138x170mm (300 x 300 DPI)

Supporting figure 4

150x163mm (300 x 300 DPI)