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Expanded Central Nervous System Gene Transfer in Rats by Intravenous Delivery of Recombinant Adeno-Associated Virus

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Description

Viral vector gene transfer is an important tool for studying protein function in vivo. Recombinant adeno-associated virus (AAV) is advantageous for gene transfer to the central nervous system. Over the past few years it has been shown that an intravenous vector delivery can transduce neurons throughout the central nervous system [1-3]. The images are of rats administered AAV serotype 9 vector encoding green fluorescent protein (GFP). The rats were injected intravenously on post-natal day one and imaged for GFP expression 4-12 weeks later. There is robust expression in the spinal cord and dorsal root ganglia and the cerebellum (Figures 1-3). We have been exploiting the efficient spinal cord transduction to study a spinal cord disease, amyotrophic lateral sclerosis [2-4].

Figure 1: GFP expression in the rat spinal cord and cerebellum on the right, visualized with an ultraviolet lamp. A control sample is on the left.

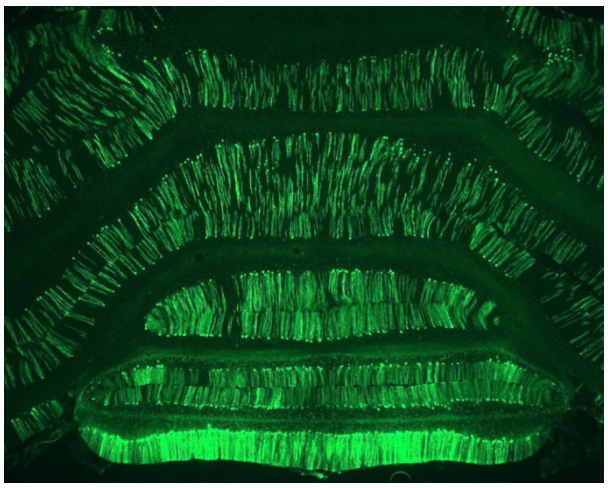

Figure 2: GFP expression in rat cerebellar Purkinje neurons.

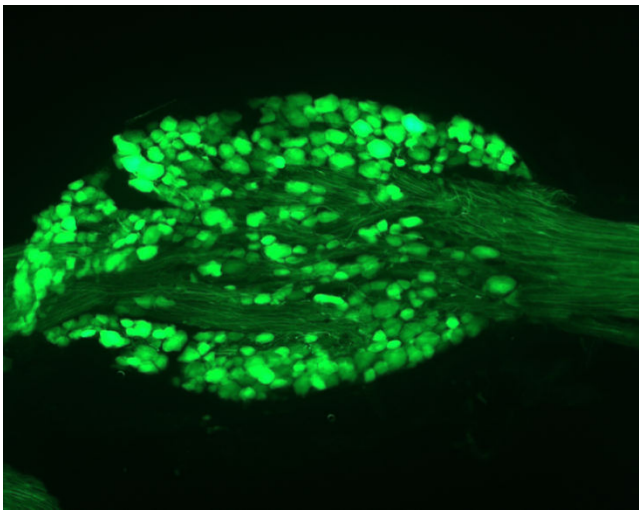

Figure 3: GFP expression in rat dorsal root ganglion.

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