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Intraganglionic injection of AAV into nodose ganglia in mice

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ABSTRACT

We have developed a novel method of injecting AAV vectors directly into the sensory ganglia, vagal and dorsal root ganglia, of mice. This technique provides for the first time a tool for expression of specific markers in sensory neurons that aid in the tracing of peripheral sensory innervation of organs like the airways and the esophagus.

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1 Mice were anesthetized with a mixture of ketamine (50 mg/kg) and dexmedetomide (0.5 mg/kg) via intraperitoneal injection.

2 Approximately 2 cm of incision was made over a shaved superficial portion of the masseter muscle area.

3 The skin was retracted, and the salivary glands separated gently without cutting them off of the mouse entirely. The vagus nerve, which runs next to the common carotid artery, was identified. The vagus nerve was separated from the common carotid artery and the anterior laryngeal nerve using a cotton tip.

4 The vagal nodose ganglia was carefully exposed.

5 Micropipettes were filled with AAV (0.7ul volume) using capillary force. The virus microinjection assembly consisted of a pulled glass micropipette (~10-15µm tip diameter) attached to a 1 mL syringe via plastic tubing.

6 The tip of the micropipette was gently inserted into the nodose ganglia and then injected by depressing the plunger (~0.5 p.s.i.).

7 After AAV injection, the mice received atipamezole (5 mg/kg) via subcutaneous injection for rapid recovery. The mice were injected with meloxicam (500 mg/kg via subcutaneous injection) as a post-analgesic on the day and 24 hrs later.

8 4 weeks later, mice were euthanized by CO_2 asphyxiation for tissue collection.

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