Title: Characterization of oromotor and limb motor dysfunction in the DJ1 -/- model of Parkinson disease

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Characterization of oromotor and limb motor dysfunction in the DJ1 -/- model of Parkinson disease

Running Title:
Cranial-sensorimotor pathology in DJ1 -/- rats

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Highlights:

- DJ1 -/- rats develop early and progressive vocalization and oromotor deficits
- DJ1 -/- rats are slow to traverse a tapered beam
- At 8 months of age DJ1 -/- rats have reductions in tyrosine hydroxylase cells in the locus coeruleus

Abstract:

Parkinson disease (PD) is devastating to sensorimotor function that includes cranial/oromotor and limb motor deficits. However, the onset, progression, and neural correlates of PD-related dysfunctions are poorly understood. To address this gap, we used a genetic rat model of PD, DJ1 -/-, and hypothesized that motor deficits would manifest early in the disease process, be progressive in nature, and be related to pathologies in brainstem structures associated with sensorimotor function. The present study compares homozygous DJ1 -/- male rats to age-matched wild type controls. Progressive cranial sensorimotor function (ultrasonic vocalizations and tongue motor performance) and limb motor function (tapered balance beam) was analyzed at 2, 4, 6, and 8 months of age.