

Parkinson's disease

Consider brain-wide drug therapeutic effects in rodent models of Parkinson's disease. We offer in vivo studies in neurotoxin (MPTP, 6-OHDA) and AAV (α -synuclein) based models.

Key models of Parkinson's disease

Quantitation of histopathological changes is imperative for assessment of therapeutic effects in preclinical models of neurodegenerative diseases. Gubra offers stereology and whole-brain 3D imaging for unbiased quantification of histological markers in models of Parkinson's disease (PD).

Key model traits

- Progressive loss of nigral tyrosine hydroxylase (TH) positive neurons and fiber intensity assessed by unbiased stereology and whole-brain quantitative 3D imaging.
- Motor deficits correlates to loss of nigral dopaminergic neurons.

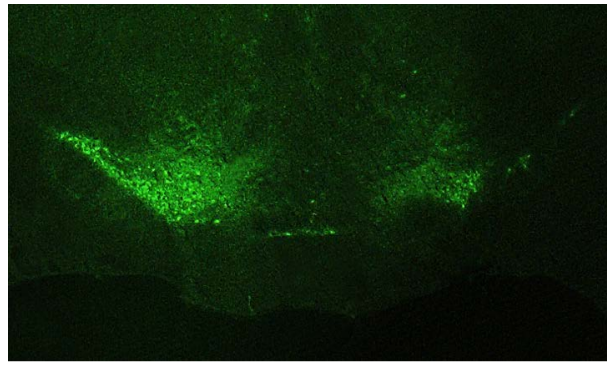
Diet	Regular chow (Altromin 1324)	Rodent models with key histological and motor hallmarks of PD.
Strain	C57BL/6J	

Study outline - α -synuclein model

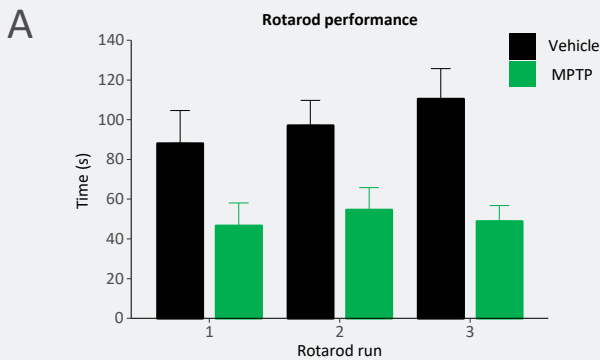
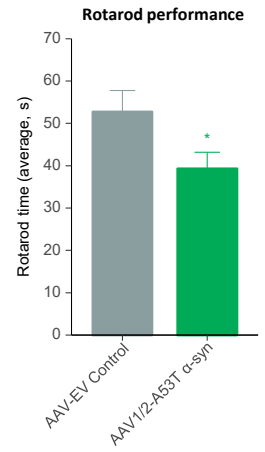


AAV-driven α -synuclein mouse model

Unilateral AAV-induced overexpression of human A53T- α -synuclein in the substantia nigra, leading to progressive loss of TH-positive neurons in the ipsilateral substantia nigra pars compacta (SNc) (left panel) and impaired motor function (right panel).

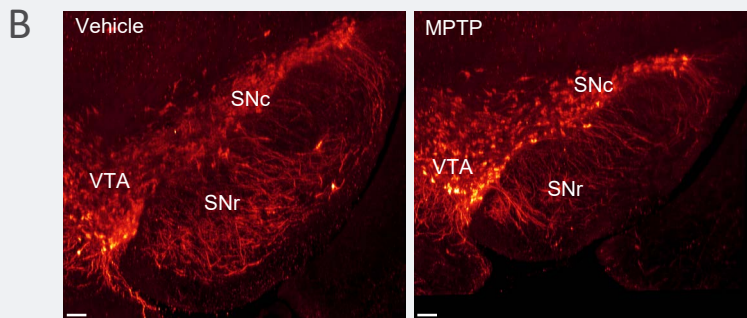


Reduced TH in the ipsilateral SNc

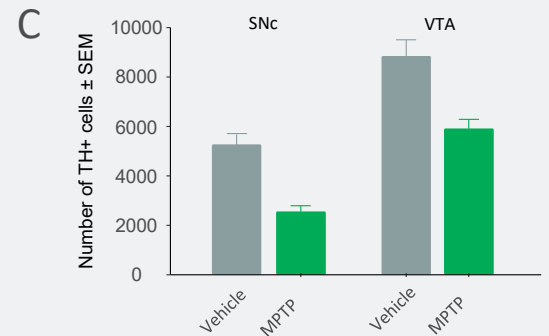


The MPTP mouse

(A) Systemic MPTP administration results in motor impairment (rotarod test) associated with progressive loss of TH-positive neurons. Quantitative 3D imaging of the intact MPTP mouse brain. (B) Coronal midbrain sections constructed from the whole 3D-image stack. (C) 3D counting of total TH-positive cell in the SNc and ventral tegmental area (VTA).

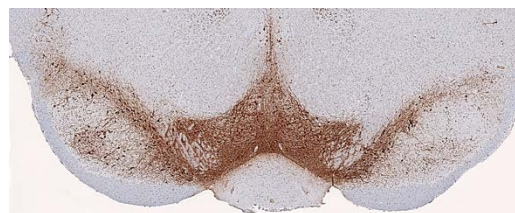


Reduced number of TH-positive cells in the SNc.

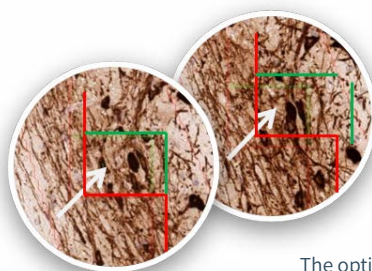


The 6-OHDA rat

Unilateral midbrain injection of 6-OHDA promotes partial loss of TH-positive dopaminergic neurons as estimated by stereology.



TH neuron loss in 6-OHDA



The optical disector for counting neurons

