

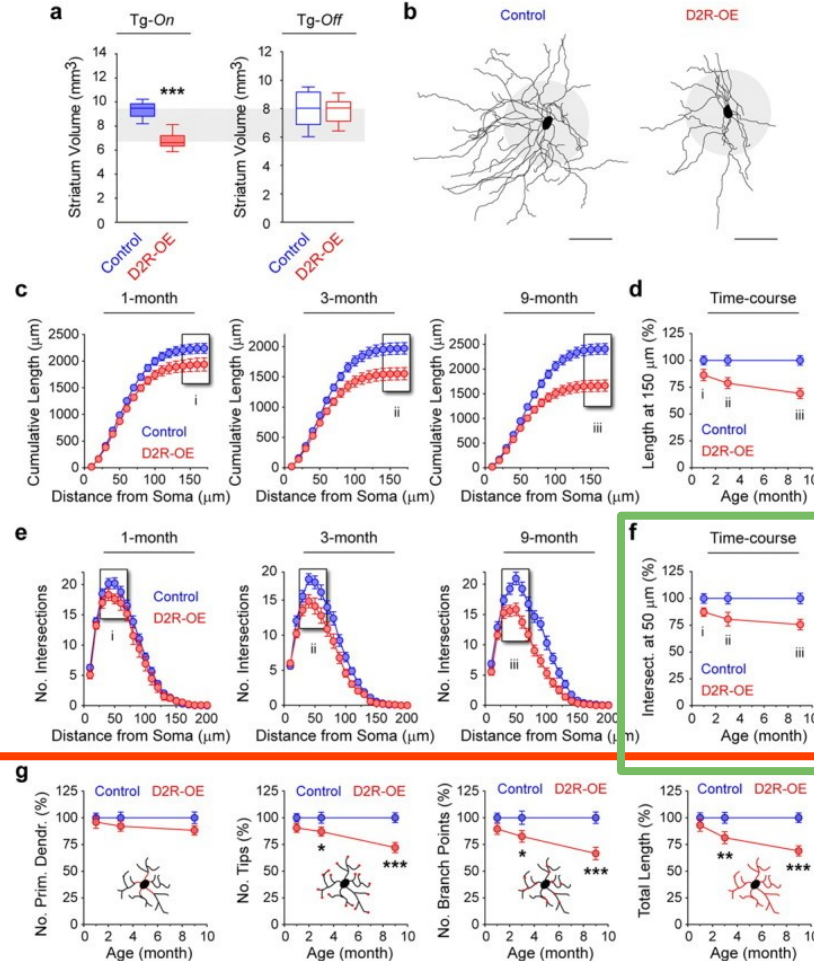
Progressive decrease in MSN dendritic arborization in the striatum of adult D2R-OE mice

Excessive dopamine D2 receptors activation has been associated with the positive (psychotic) symptoms of schizophrenia.

Striatal D2R upregulation decreases dendritic arborization of MSNs in mouse models of schizophrenia.

Cazorla et al. (2012) J Neurosci

DOI: 10.1523/JNEUROSCI.6056-11.2012



model
constraints

to be used
for validation
of the model

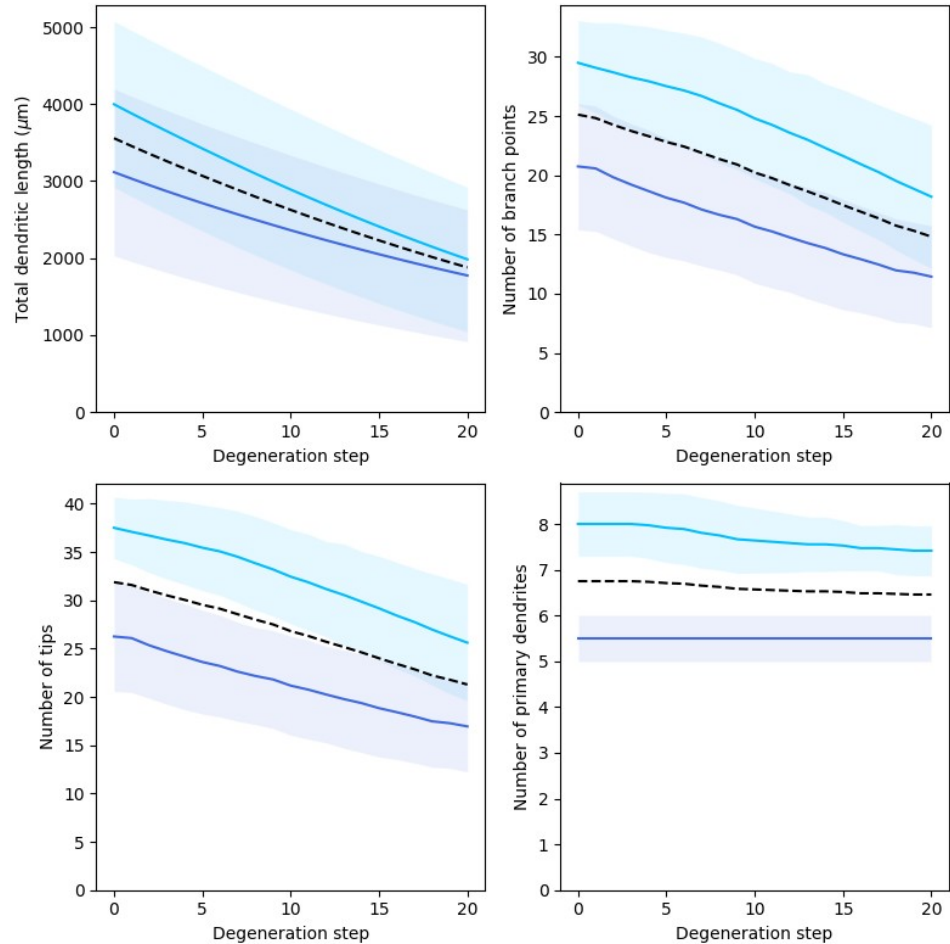
Modeling progressive dendritic degeneration in the striatal projection neurons

Dendritic branches are shortened by $3\text{ }\mu\text{m}$ in every terminal section at each degeneration step. This results in progressive decrease of the total dendritic length, the number of branching points and the number of dendritic tips but the number of dendritic stems.

Light blue for dSPN, dark blue for iSPN, dashed black lines for the means, shaded areas for STD.

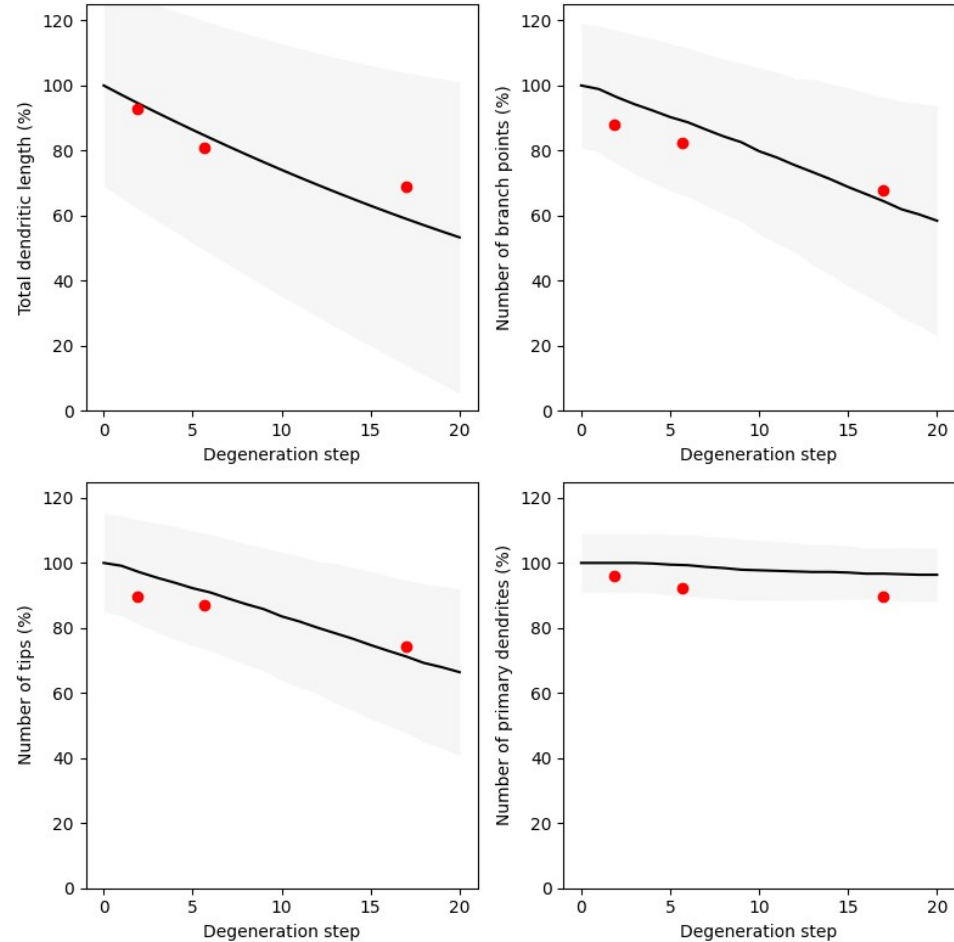
The algorithm is described in

[Carannante et al. \(2024\) Net Neuroscience](#)
DOI: 10.1162/netn_a_00394



Modeling progressive dendritic degeneration in the striatal projection neurons

Experimental data from Cazorla et al., 2012 (red dots) for 1, 3 and 9 months old mice with D2R overexpression in striatum are mapped to the dendritic degeneration model (black). Shaded area for STD values in the model morphologies.



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Validation of the model (black, mean; grey, STD) using the maximal number of Sholl intersections for 1, 3 and 9 months old mice with D2R overexpression in striatum (red dots).

Example of dSPN morphology at 17th degeneration stage corresponding to 9-month old mouse neuron with D2R overexpression. Lost dendritic branches are shown in grey.

