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# Cognitive functions of the rat subthalamic nucleus

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## Abstract

Within the basal ganglia, the subthalamic nucleus (STN) has long been considered a relay structure on the so-called ‘indirect pathway’ of the motor loop. For the two last decades, this view has changed when the hyperdirect pathway, connecting directly the cortex to the STN, has been highlighted and when data revealing non-motor deficits induced by manipulation of the STN started to accumulate. Here, our data obtained in the rat using STN lesions, high frequency stimulation or electrophysiological recording, will be summarized, demonstrating a critical role for the STN in attention (Baunez and Robbins, 1997; Baunez et al., 2007), control of inhibition (Baunez et al., 1995; Eagle and Baunez, 2010) and encoding of error in execution or in reward prediction (Lardeux et al., 2009).

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