Wistar rat

The Wistar rat is an outbred albino rat. These stocks were developed at the Wistar Institute in 1906 for use in biological and medical research, and is notably the first rat developed to serve as a model organism at a time when laboratories primarily used the common house mouse (Mus musculus). More than half of all laboratory rat strains are descended from the original colony established by physiologist Henry Donaldson, scientific administrator Milton J. Greenman, and genetic researcher/embryologist Helen Dean King.

The Wistar rat is currently one of the most popular rats used for laboratory research. It is characterized by its wide head, long ears, and having a tail length that is always less than its body length. The Sprague Dawley rat and Long-Evans rats were developed from Wistar rats. Wistar rats are more active than others like Sprague Dawley rats. The Spontaneously hypertensive rat and the Lewis rat are other well-known stocks developed from Wistar rats.

A study of Çavdar et al., aims to define the cortical and subcortical and brain stem connections of the cerebellum via the superior cerebellar peduncle (SCP) and middle cerebellar peduncle (MCP) using biotinylated dextran amine (BDA) and Fluoro-Gold (FG) tracer in Wistar rats. 14 male rats received 20-50-nl pressure injections of either FG or BDA tracer into the SCP and MCP. Following 7-10 days of survival period, the animals were processed according to the related protocol for two tracers. Labelled cells and axons were documented using light and fluorescence microscope. The SCP connects cerebellum to the insular and infralimbic cortices whereas, MCP addition to the insular cortex, it also connects cerebellum to the rhinal, primary sensory, piriform and auditory cortices. Both SCP and MCP connected the cerebellum to the ventral, lateral, posterior and central, thalamic nuclei. Additionally, SCP also connects parafasicular thalamic nucleus to the cerebellum. The SCP connects cerebellum to basal ganglia (ventral pallidum and clastrum) and limbic structures (amygdaloidal nuclei and bed nucleus of stria terminalis), however, the MCP have no connections with basal ganglia or limbic structures. Both the SCP and MCP densely connects cerebellum to various brainstem structures. Attaining the knowledge of the connections of the SCP and MCP is important for the diagnosis of lesions in the MCP and SCP and would deepen current understanding of the neuronal circuit of various diseases or lesions involving the SCP and MCP [1)].

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Çavdar S, Özgür M, Kuvvet Y, Bay H, Aydogmus E. Cortical, subcortical and brain stem connections of the cerebellum via the superior and middle cerebellar peduncle in the rat. J Integr Neurosci. 2018 Jul 25. doi: 10.3233/JIN-180090. [Epub ahead of print] PubMed PMID: 30056432.