Substantia nigra

The substantia nigra is a structure located in the mesencephalon (midbrain) that plays an important role in reward, addiction, and movement. Substantia nigra is Latin for “black substance”, reflecting the fact that parts of the substantia nigra appear darker than neighboring areas due to high levels of neuromelanin in dopaminergic neurons. It was discovered in 1784 by Félix Vicq-d'Azyr, and named after Samuel Thomas von Sömmerring alluded to this structure in 1791.

Parkinson's disease is characterized by the death of dopaminergic neurons in the substantia nigra pars compacta.

Although the substantia nigra appears as a continuous band in brain sections, anatomical studies have found that it actually consists of two parts with very different connections and functions: the pars compacta and pars reticulata. The pars compacta serves mainly as an input to the basal ganglia circuit, supplying the striatum with dopamine. The pars reticulata, on the other hand, serves mainly as an output, conveying signals from the basal ganglia to numerous other brain structures.
