

# Basal ganglia

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## 1 Types of Nuclei

3 type of nuclei: Input / Output / Intrinsic nuclei

Input nuclei:

- Receives info from cortex, thalamus
- Examples: striatum: Caudate Nucleus & Putamen

Output Nuclei:

- Sends BG info to the Thalamus
- E.G.: Globus Pallidus internus & Substantia Nigra (pars reticulata)

Intrinsic Nuclei:

- Connect input & Output nuclei
- E.G.: Globus Pallidus externus, ST nucleus, Substantia Nigra (Pars compacta)

## 2 Principal nuclei

There are 5 principal basal ganglia nuclei.

1. Caudate Nucleus
2. Putamen
3. Globus Pallidus
4. Subthalamic Nucleus
5. Substantia Nigra (in midbrain)

Lentiform nucleus: Putamen + Globus Pallidus striatum: Caudate Nucleus + Putamen

## 3 Function

- Through extensive motor & sensory cortical connections > Influences executive motor function (motor hierarchy)
  - BG decide whether or not to execute movement
  - Streamlines the movement
- Organize all cortical activity into one behavioral output

### 3.1 Practical function:

- Learning & Cognition:
- Integration of motor output
- Regulates emotional aspects of Behavior

### 3.2 Direct pathway / Indirect:

- Direct = facilitates goal-oriented movement
- Indirect = Suppress all competing movement
- Result = Measured and coordinated motor output