

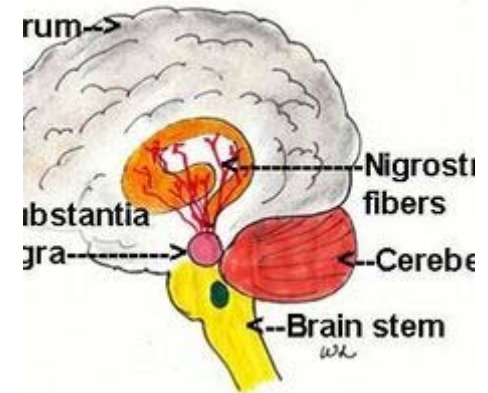
# Bioassay of Anti-Parkinsonian Activity



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# General Considerations

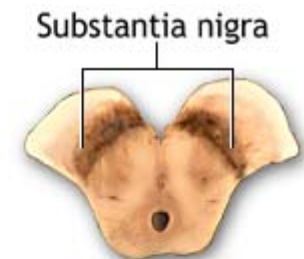
- Parkinson's disease is a marked **deficiency** in the **dopaminergic** innervation of the **basal ganglia** owing to degeneration of neurons in the **substantia nigra**.



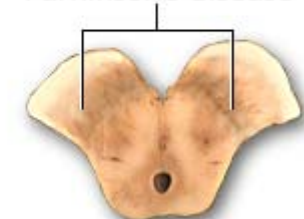
*Brain areas diagram*



Cut section of the midbrain where a portion of the substantia nigra is visible



Diminished substantia nigra as seen in Parkinson's disease



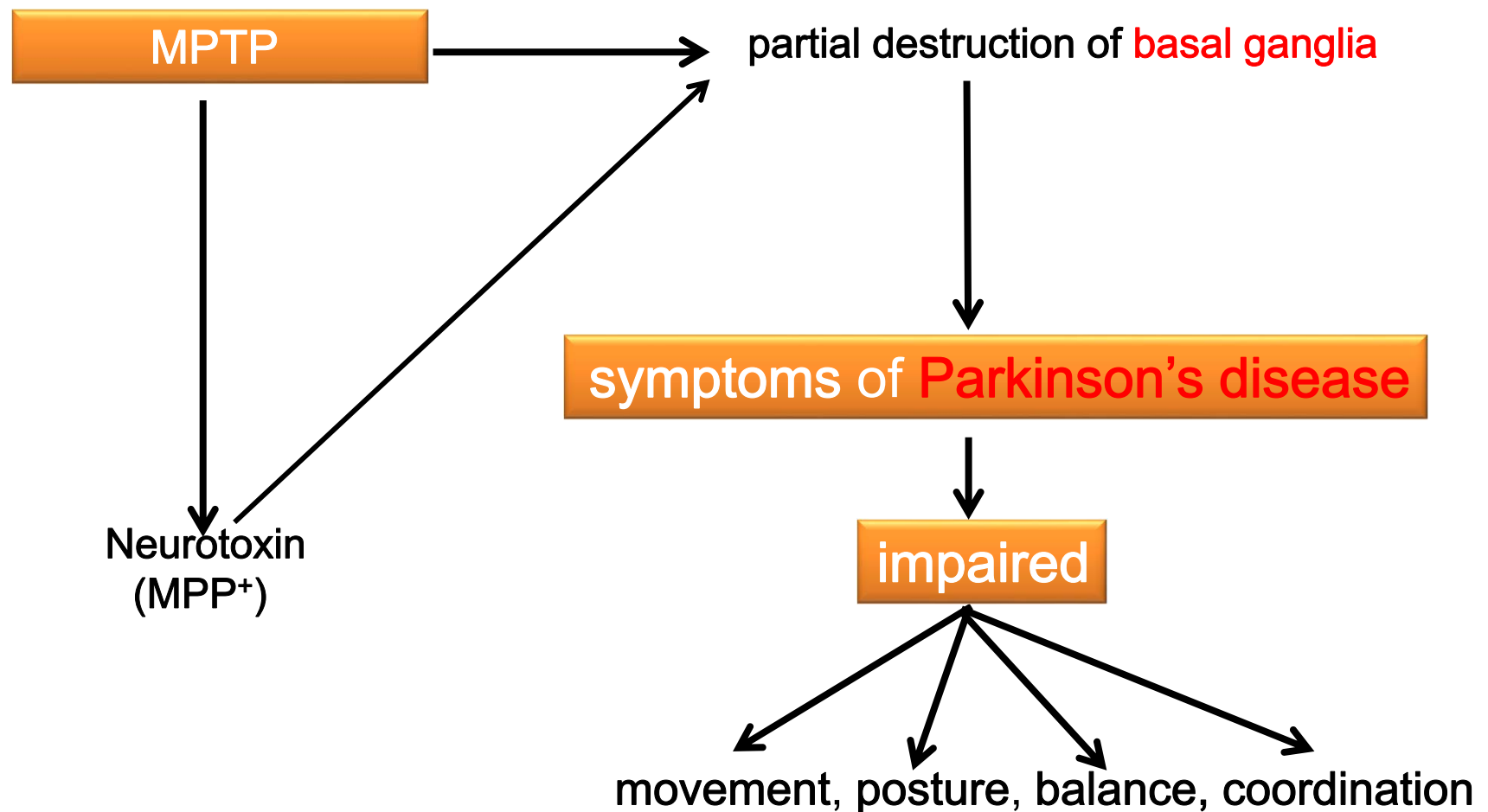
# Antiparkinsonian bioassay methods

1. 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) Model
2. Rotenone-induced Parkinson-like Symptoms

# Antiparkinsonian bioassay methods

## 1. MPTP Model

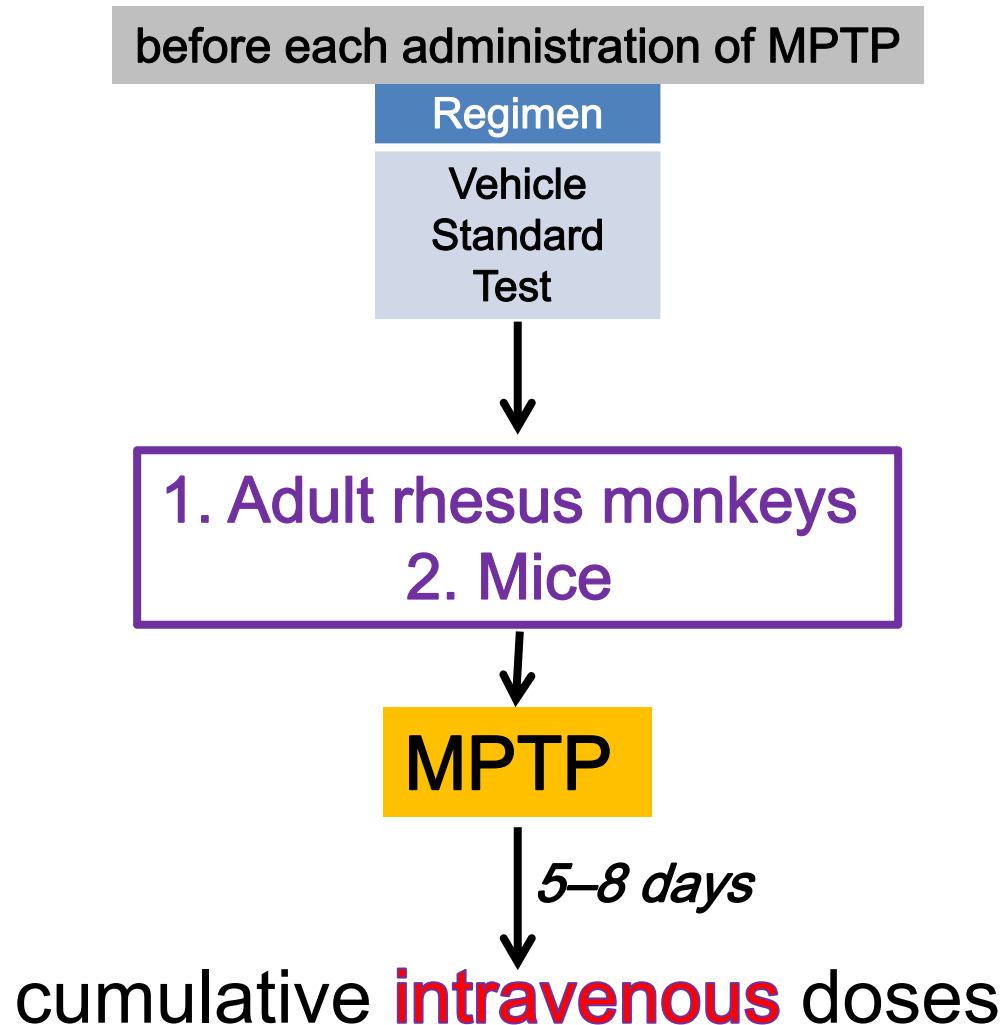
### Principle



# Antiparkinsonian bioassay methods

## 1. MPTP Model

### Procedure



# Antiparkinsonian bioassay methods

## 1. MPTP Model

### Evaluation

#### parkinsonism like disorder

scale of **0** (normal) to  
**17** (maximum severity)

- ***akinesia*** [loss of voluntary movement]
- ***rigidity***
- ***postural tremor***
- ***flexed posture***
- ***eyelid closure***
- ***drooling***= salivation

# Antiparkinsonian bioassay methods

## 1. MPTP Model

### Evaluation

Antiparkinsonian effect

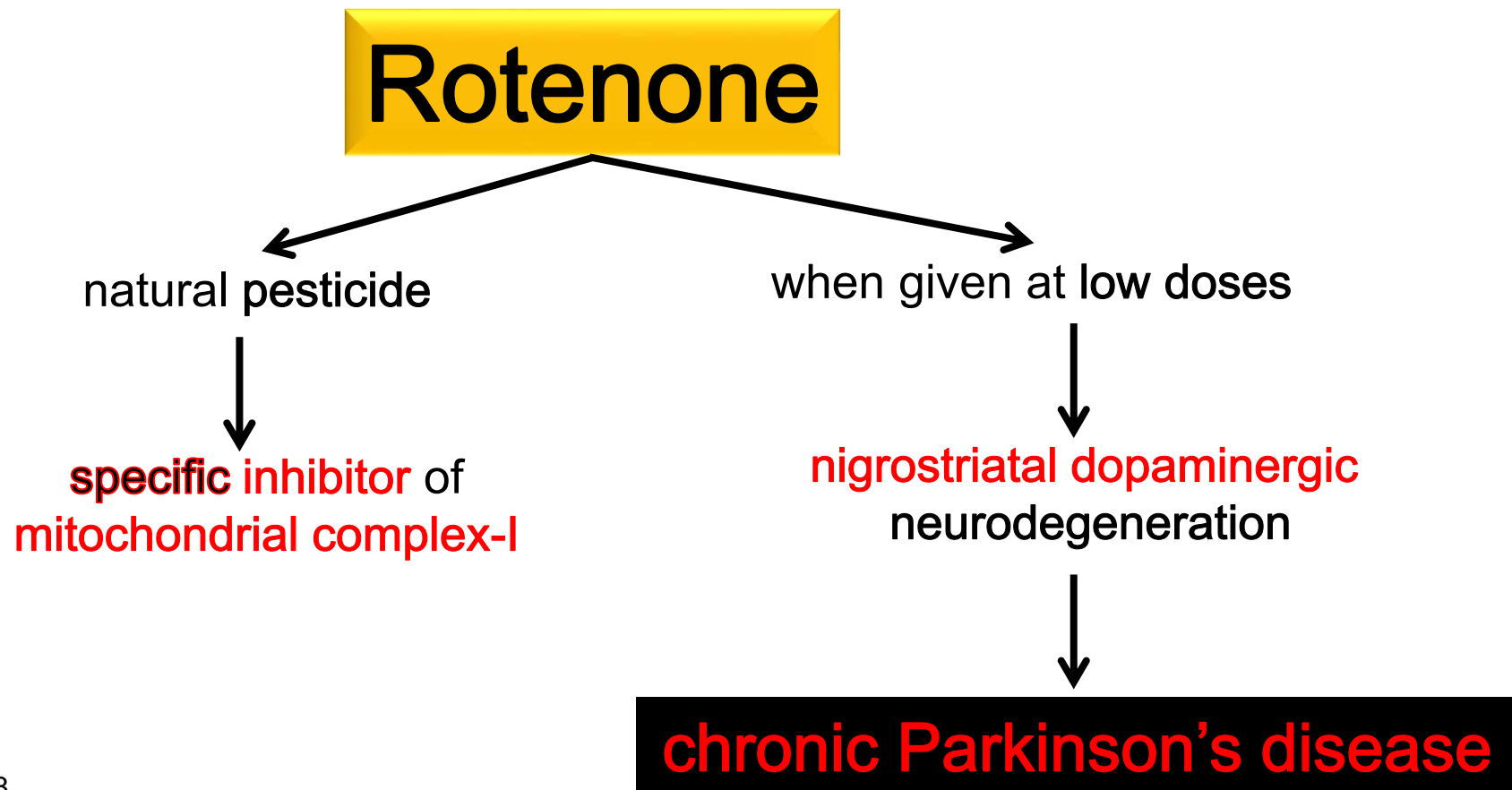


↓ Scale Number

# Antiparkinsonian bioassay methods

## 2. Rotenone-induced Parkinson-like Symptoms

### Principle

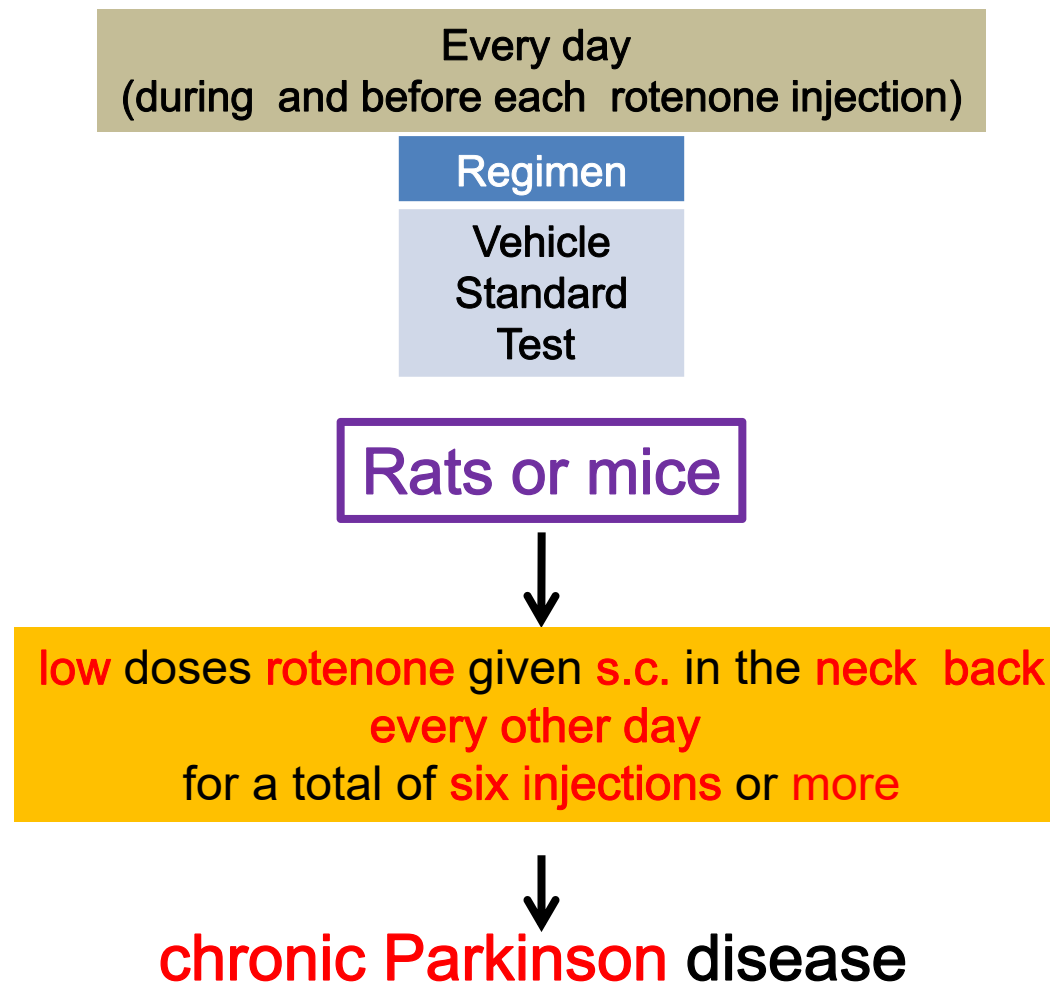




# Antiparkinsonian bioassay methods

## 2. Rotenone-induced Parkinson-like Symptoms

### Procedure



# Antiparkinsonian bioassay methods

## 2. Rotenone-induced Parkinson-like Symptoms

### Evaluation

Animals are placed on a **Perspex container** situated on a **Panlab proximity sensor unit**

They are observed for

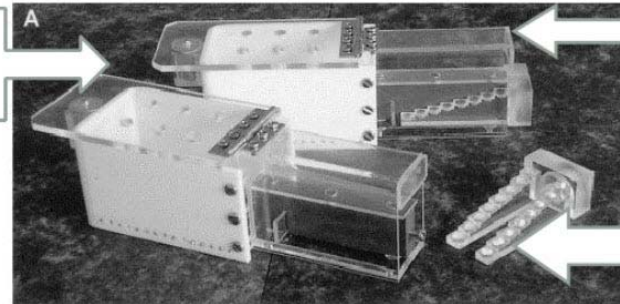
10min **Locomotor** activity  
(horizontal movements)

**Rearing episodes**  
(stands on its hind legs)

**Grooming episodes**  
(cleaning)

### Procedure: Apparatus

A Perspex chamber with a hinged lid.



A narrower compartment with a central platform running along its length, creating a trough on either side,

A removable double staircase is inserted into the end of the box, sliding into the troughs on either side of the central platform.

# Antiparkinsonian bioassay methods

## 2. Rotenone-induced Parkinson-like Symptoms

### Evaluation

**Antiparkinsonians**

```
graph TD; A[Antiparkinsonians] --> B["↑ Locomotion/10min  
↑ Rearing Number/10min  
↑ Grooming Number/10min"]; style B fill:#000,stroke:#f00,stroke-width:2px
```

**↑ Locomotion/10min**  
**↑ Rearing Number/10min**  
**↑ Grooming Number/10min**