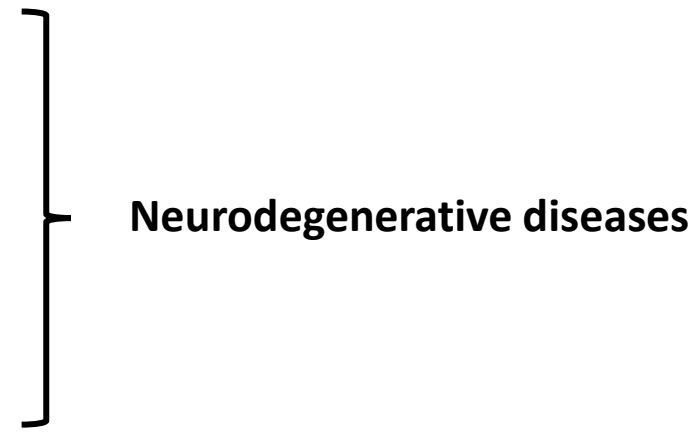


# Pathophysiology II

## Chapter (5): CNS disorders

- Multiple sclerosis
  - Parkinson disease
  - Alzheimer disease
  - Seizure disorders
- Neurodegenerative diseases
- 

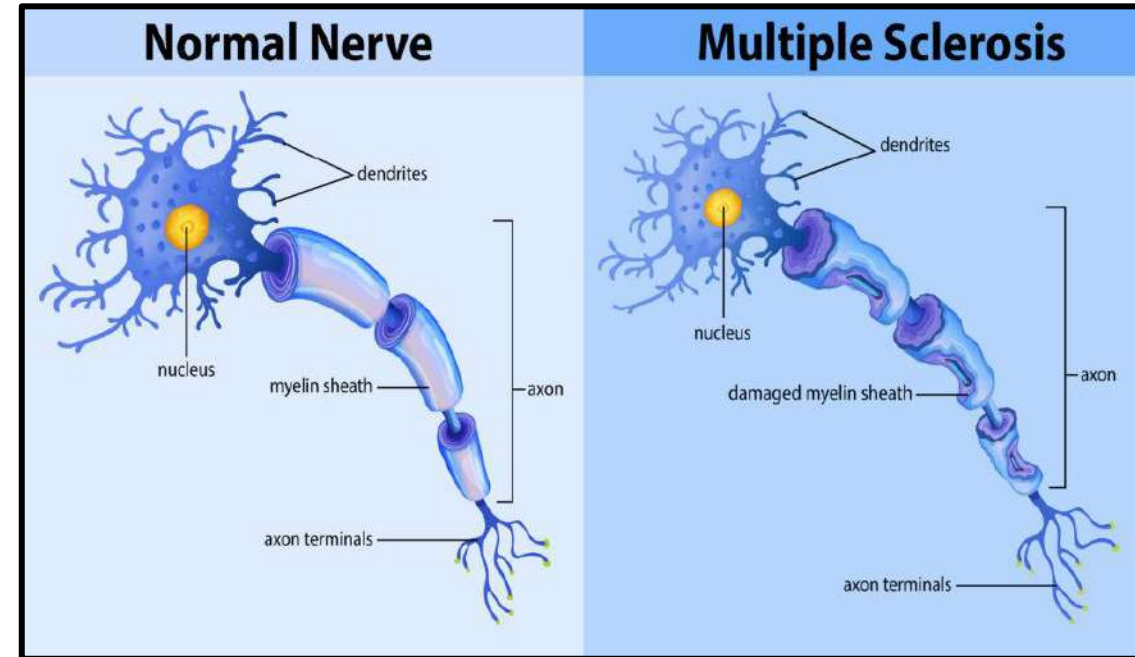
# Neurodegenerative diseases

- are characterized by progressive loss of neurons
  - Diseases affect the hippocampus: Alzheimer's disease
  - Diseases affect the basal ganglia: hypokinetic (Parkinson disease), or hyperkinetic (Huntington disease)
  - Diseases that affect the cerebellum: ataxias
  - Diseases affect the myelin sheath: Multiple sclerosis

# Neurodegenerative diseases

## 1. Multiple sclerosis (MS)

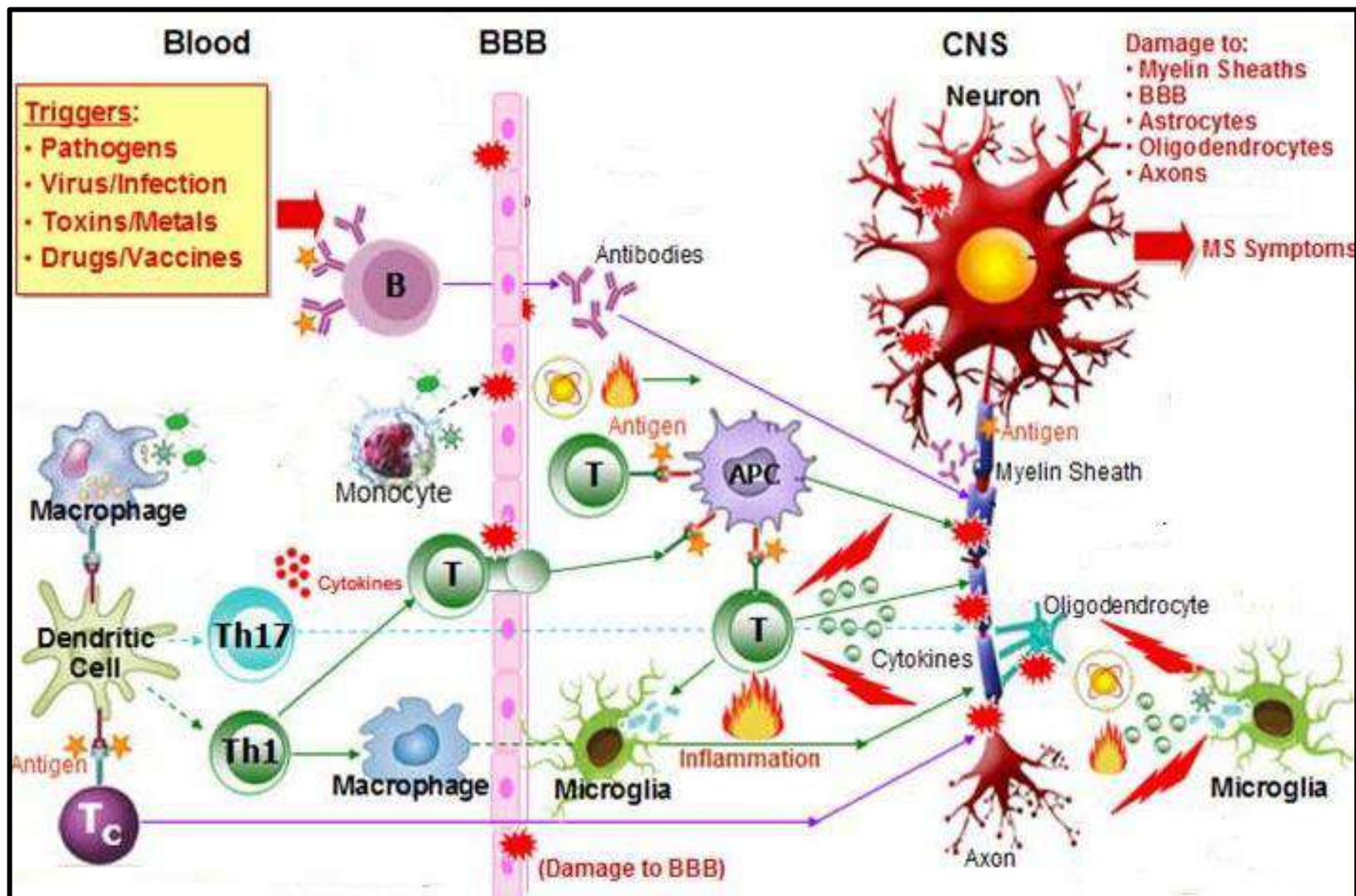
- It is a progressive neurodegenerative disorder characterized by demyelination of the CNS neurons
- MS is more common in women by a 2 : 1 ratio
- Causes
  - Autoimmune response
- Risk factors
  - Infections
  - Genetics
  - Drugs



# Neurodegenerative diseases

## 1. Multiple sclerosis (MS)

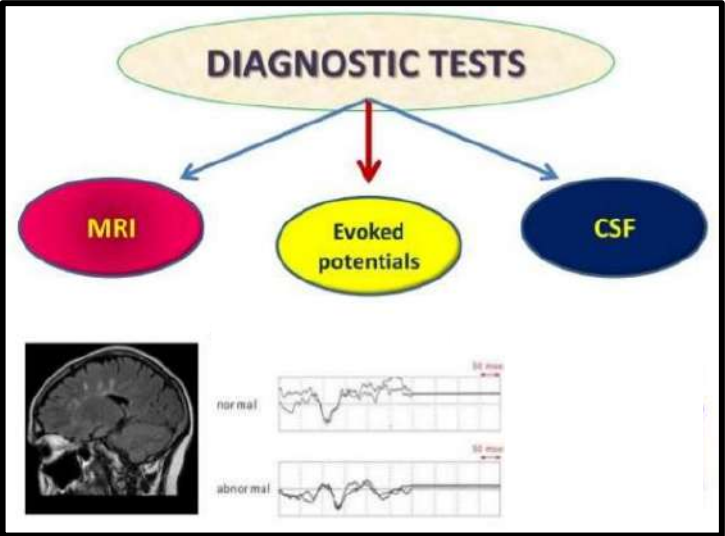
### ■ Pathogenesis



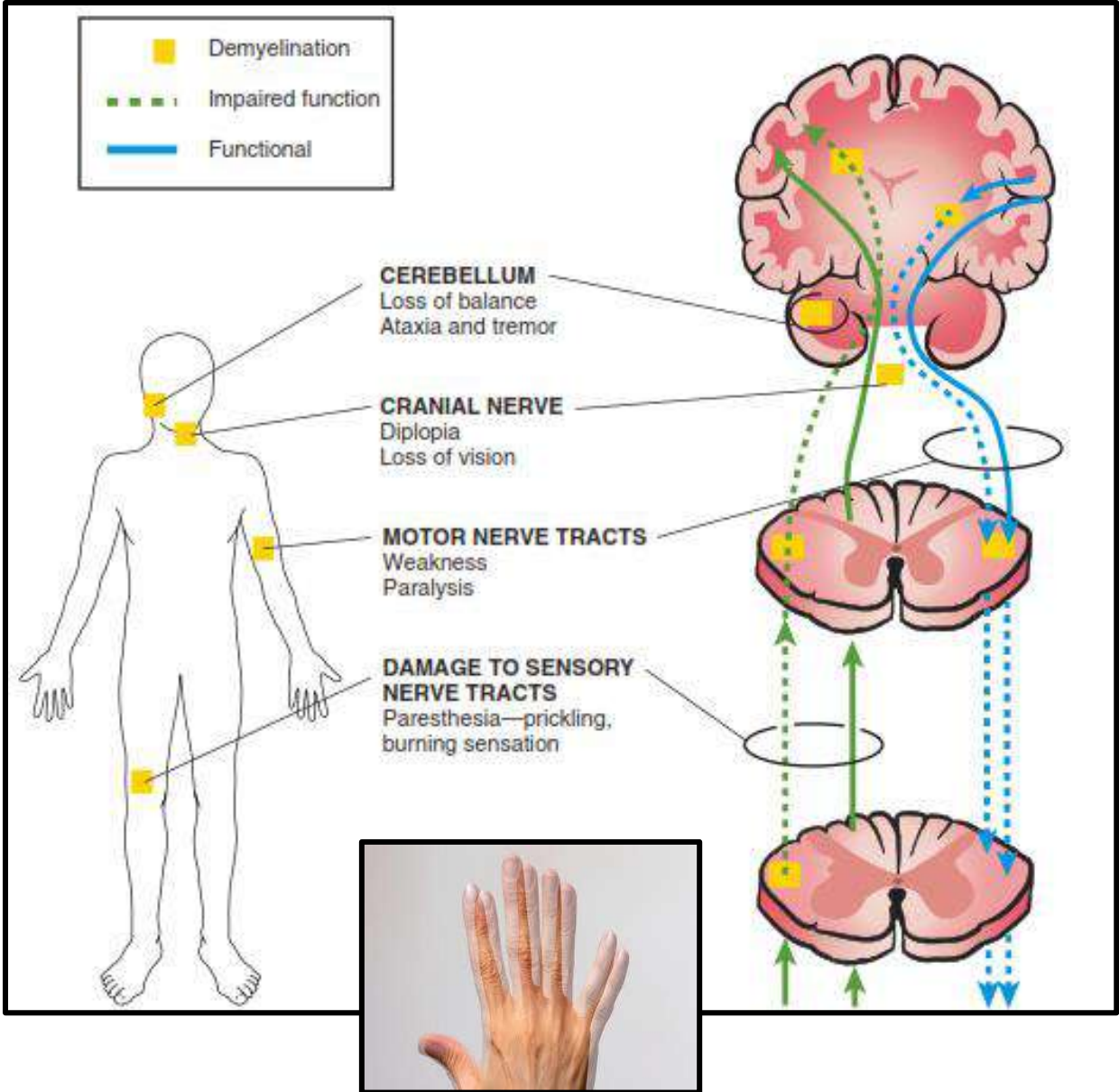
# CNS Disorders

## 1. Multiple sclerosis (MS)

- Symptoms
- Diagnosis: imaging (plaques)



- Treatment
  - Immunosuppressants
  - Drugs to reduce the symptoms



# Neurodegenerative diseases

## 2. Parkinson disease (PD)

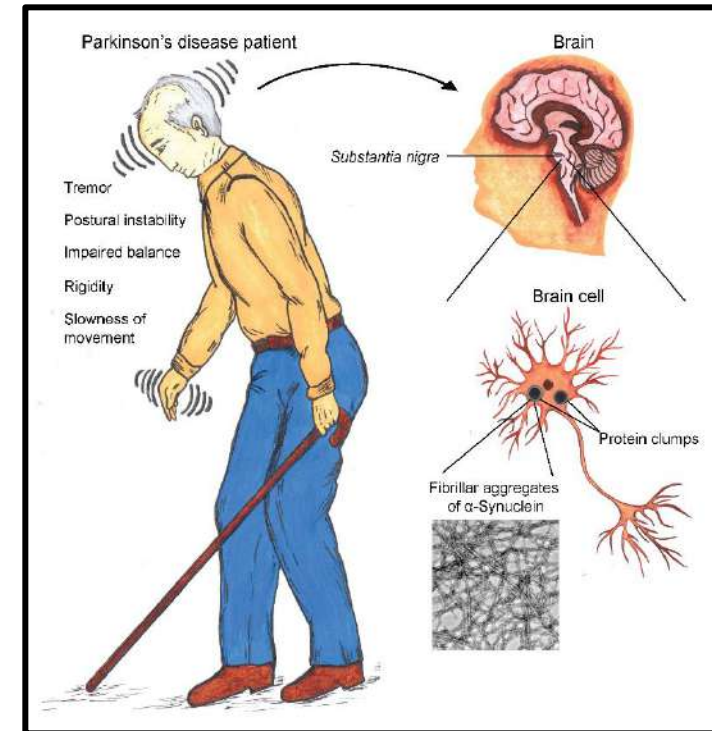
- It is a progressive neurodegenerative disorder characterized by a hypokinetic movement disorder that is caused by loss of dopaminergic neurons

- It mainly affects the motor neurons

- Causes

- Primary PD:  $\alpha$ -synuclein aggregation, Idiopathic, elderly

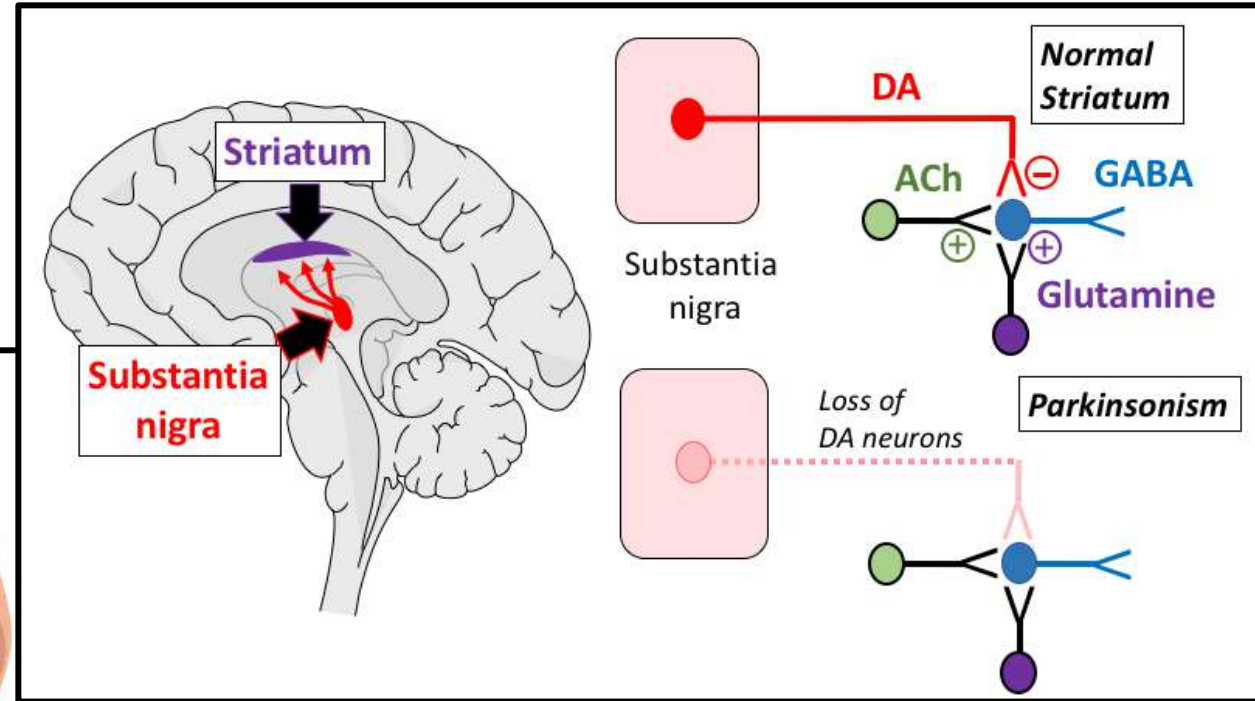
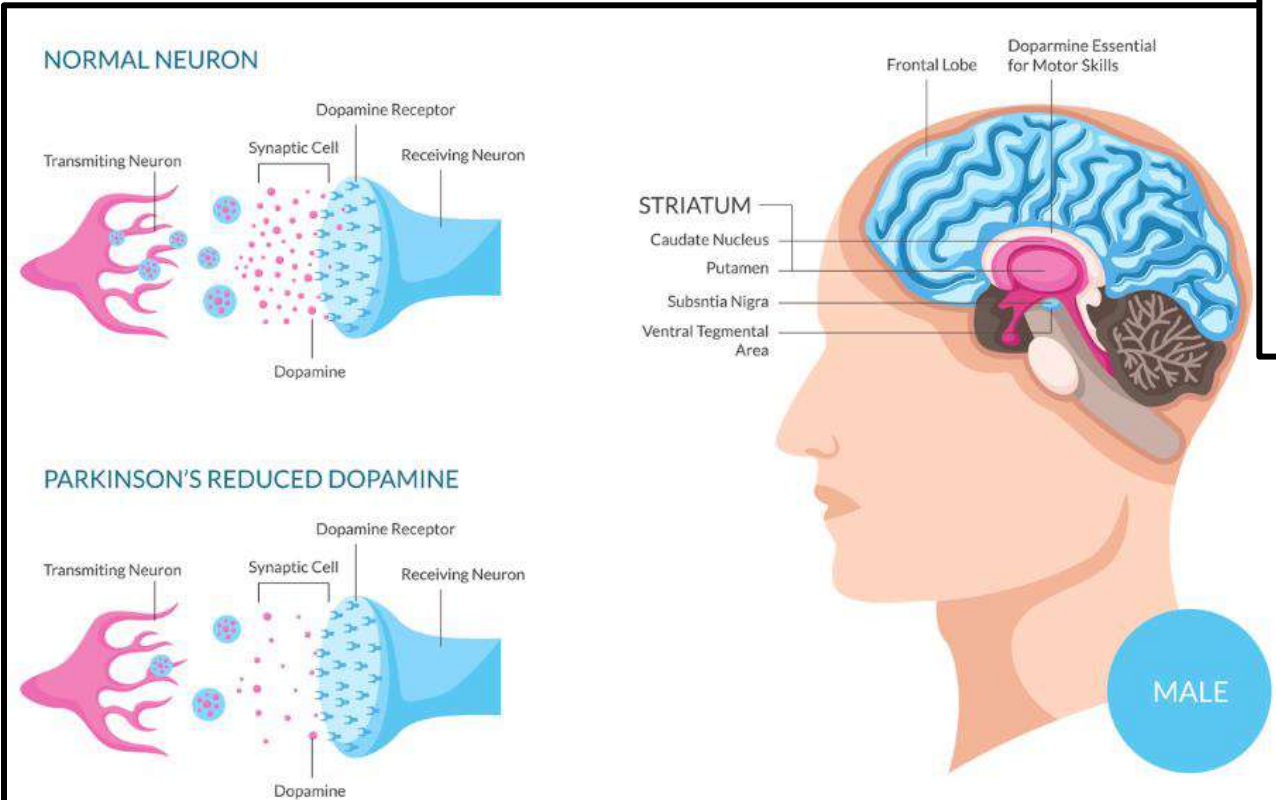
- Secondary PD: encephalitis, vascular disease, dopaminergic antagonists



# Neurodegenerative diseases

## 2. Parkinson disease (PD)

### ■ Pathogenesis



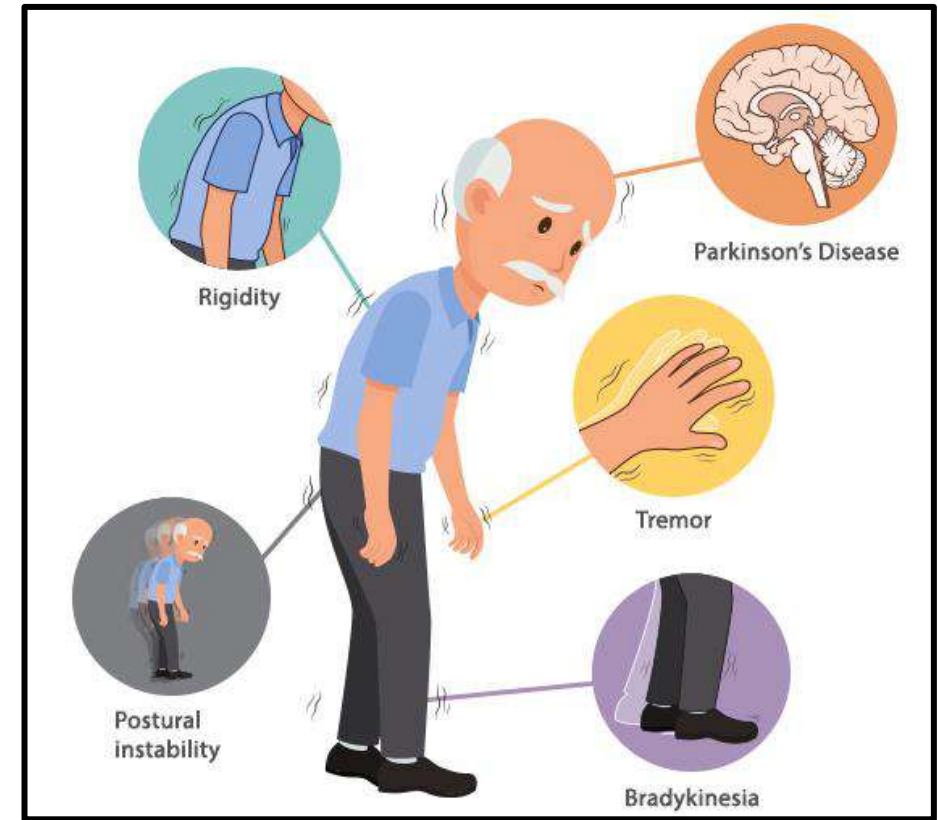
# Neurodegenerative diseases

## 2. Parkinson disease (PD)

- Symptoms

The cardinal signs of Parkinson's disease are tremor at rest, rigidity, bradykinesia (slowed movement), and postural instability

- Treatment

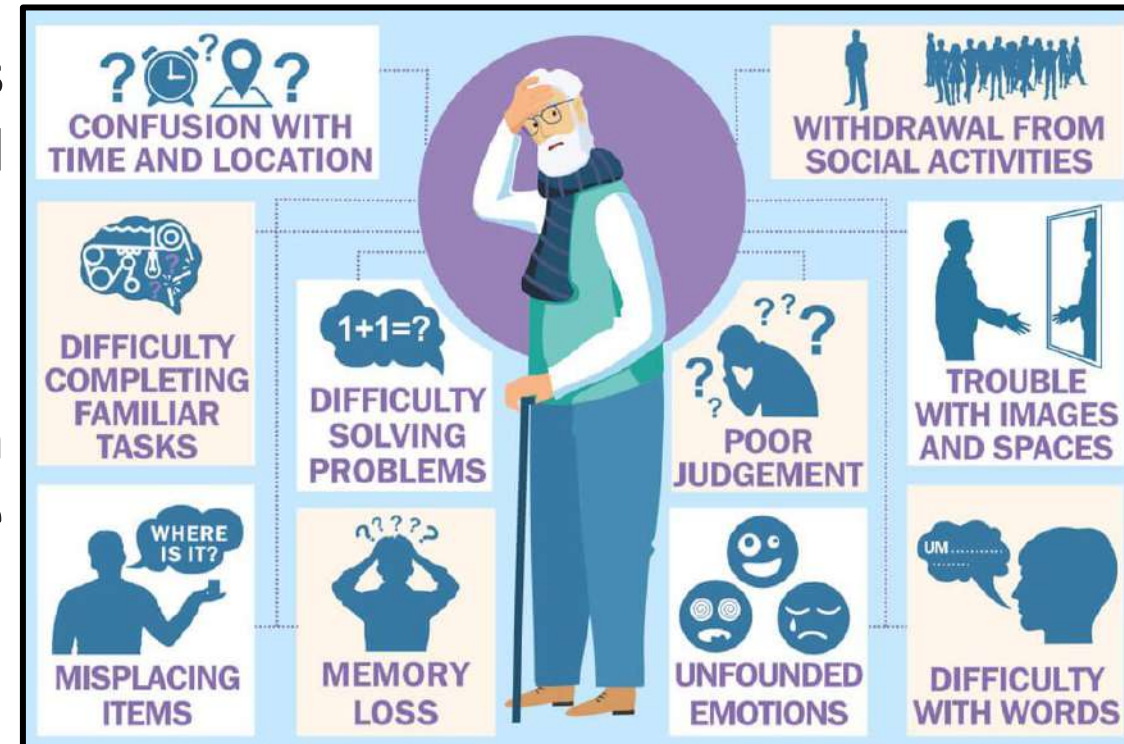
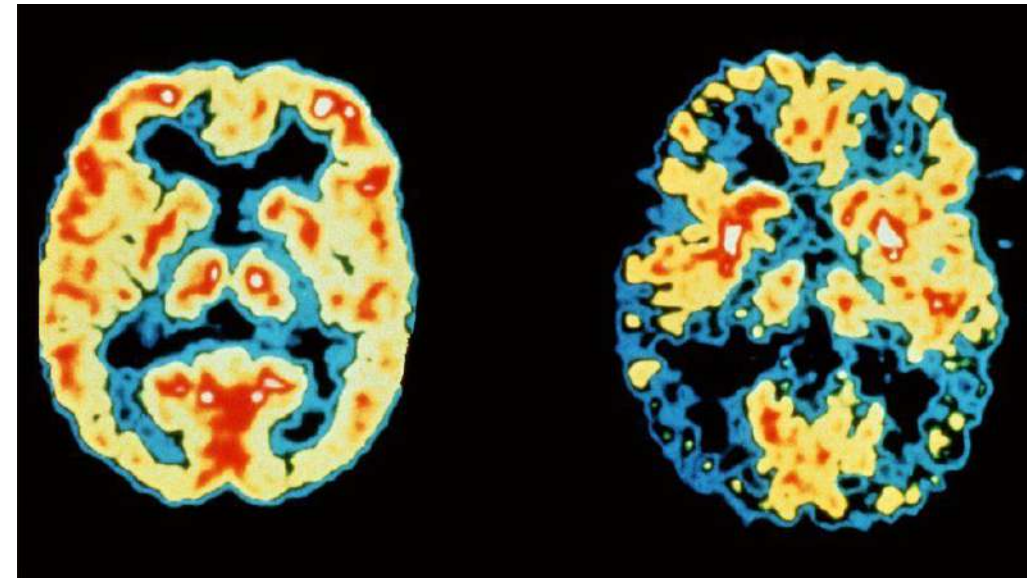




# CNS Disorders

## Dementia

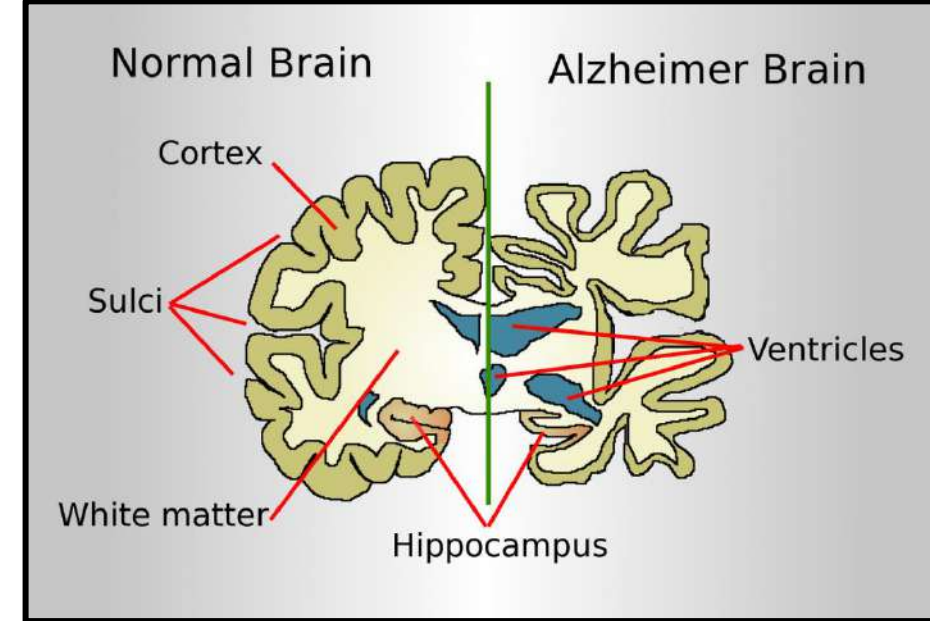
- It is a progressive chronic disease, in which the cerebral cortical function of the brain is decreased.
- It is characterized by impairing cognitive skills such as language, logical thinking and judgment, ability to learn new information, as well as motor coordination.
- The essential feature is loss of short-term memory, while long-term memory can be affected in severe cases.



# Neurodegenerative diseases

## 3. Alzheimer's disease (AD)

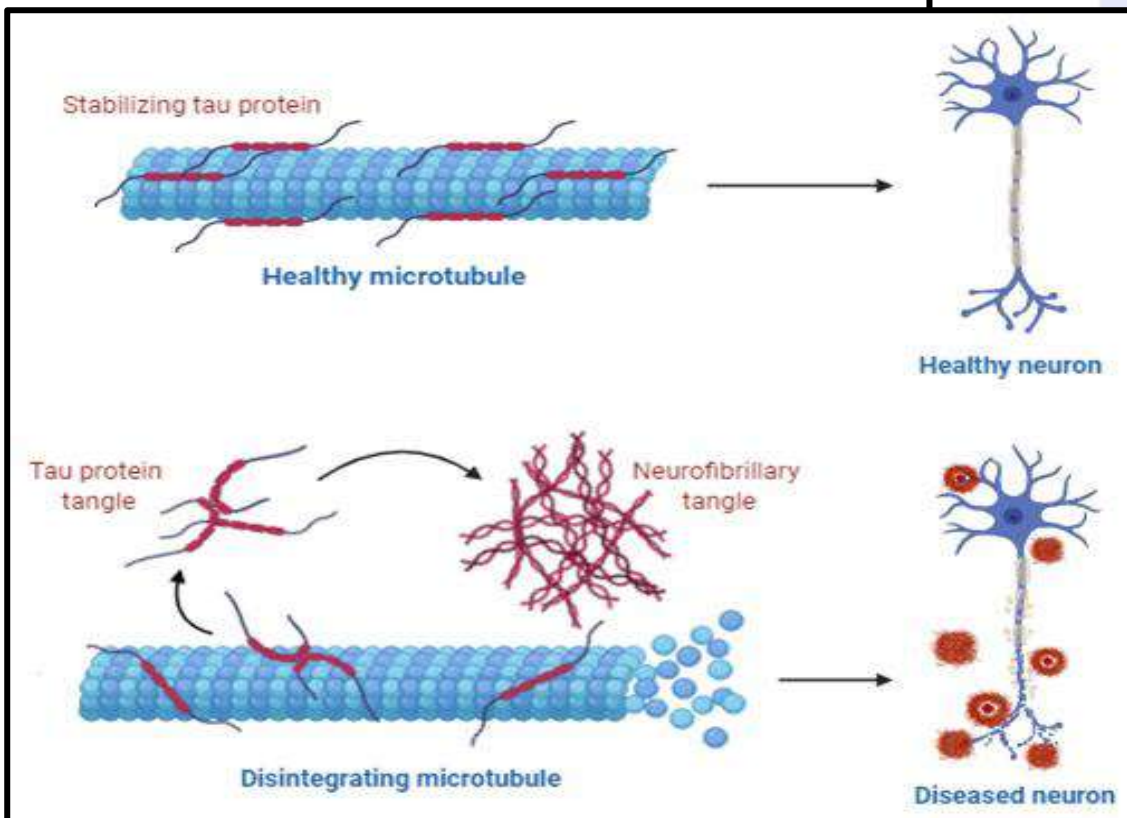
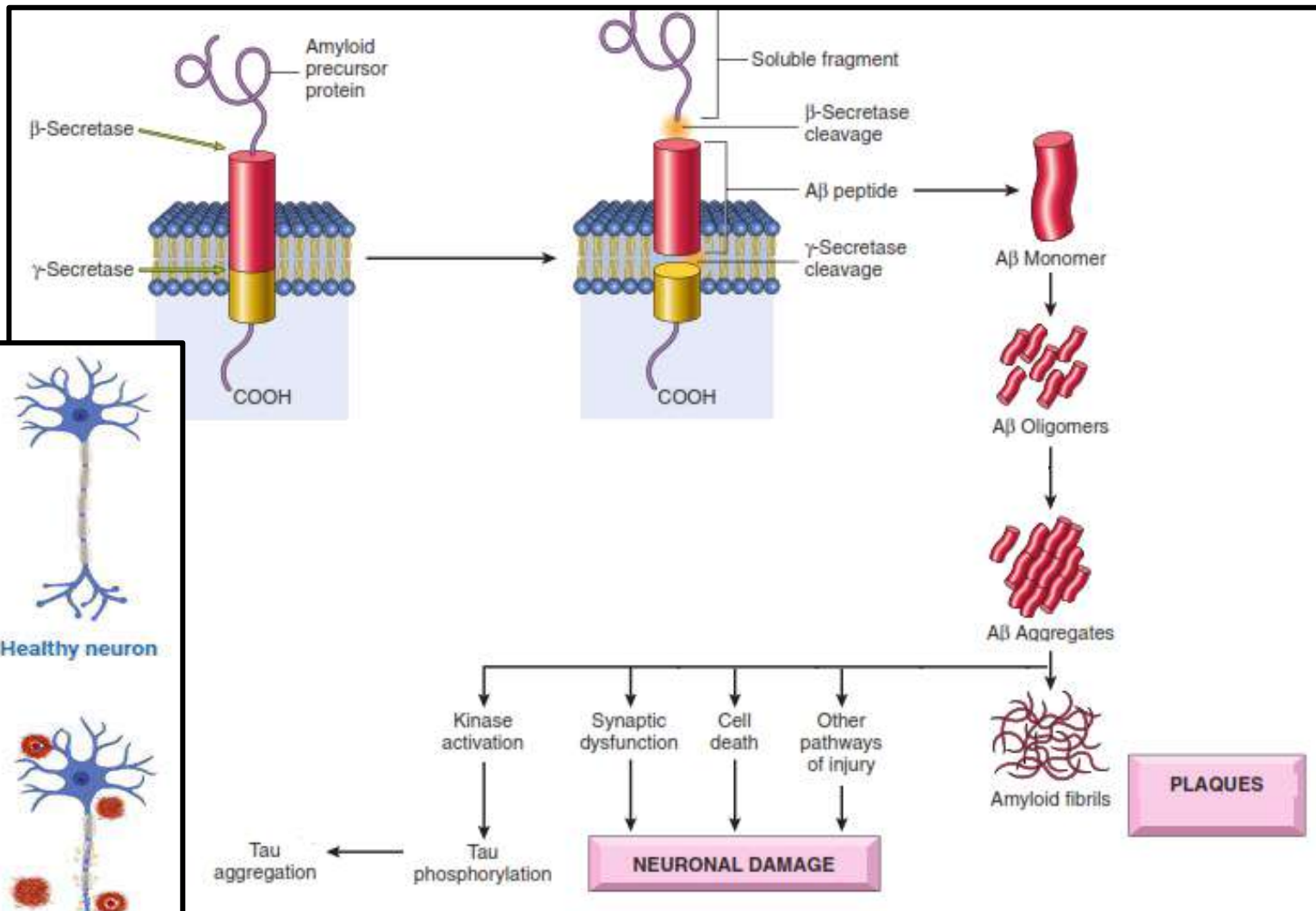
- It is a progressive neurodegenerative disorder characterized by cortical atrophy and loss of neurons, particularly in the hippocampus.
- AD is more common in women
- Causes: **unknown**
  - Aggregation of  $\beta$ - amyloid and tau proteins
- Risk factors
  - Age
  - Genetics
  - Oxidative stress



# Neurodegenerative diseases

## 3. Alzheimer's disease (AD)

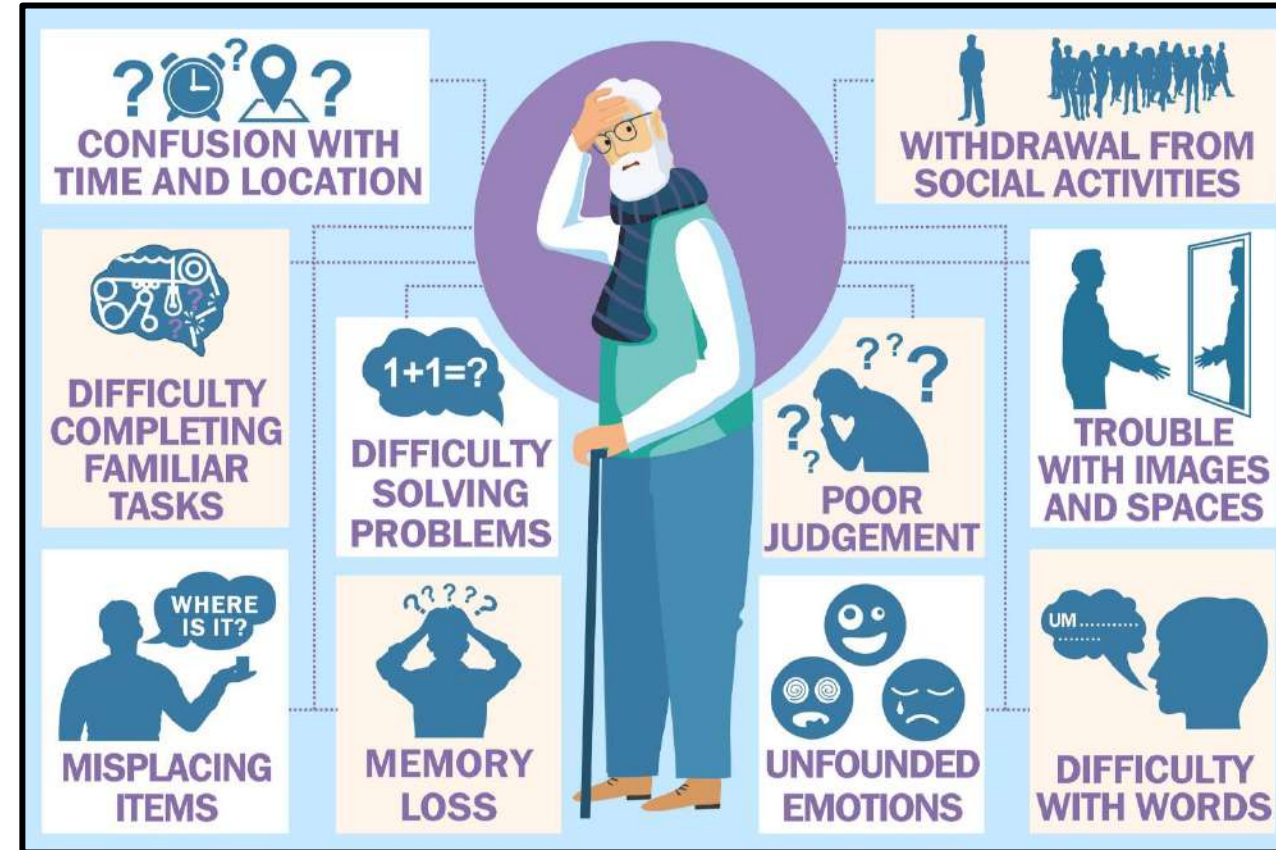
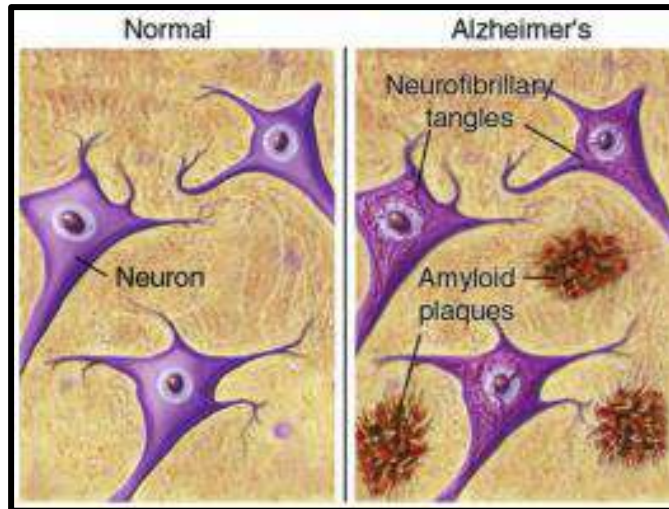
### ■ Pathogenesis



# CNS Disorders

## 3. Alzheimer's disease (AD)

- Symptoms
- Diagnosis: symptoms, imaging



- Treatment
  - To slow the progression of the disease: cholinesterase inhibitors
  - Drugs to reduce the symptoms