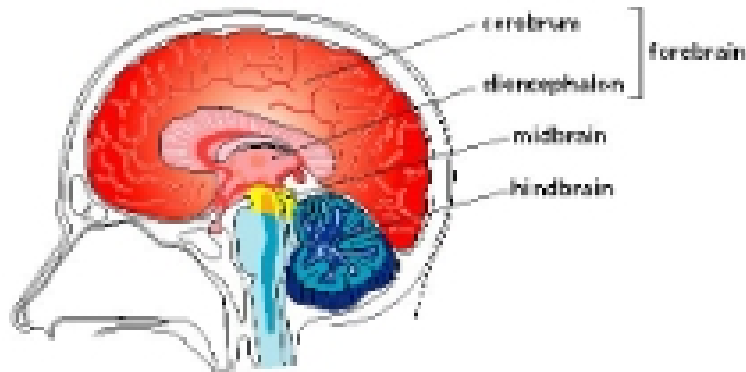
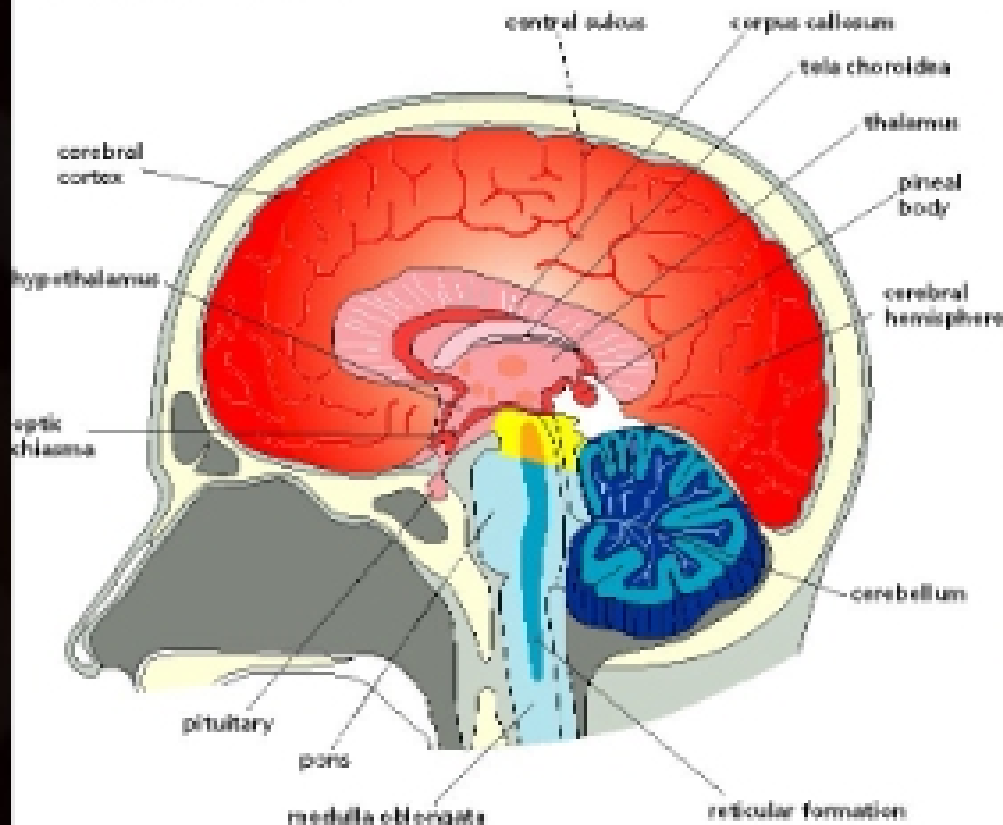


Drugs Targeting the CNS

Major regions of the brain



Forebrain and hindbrain structures



- Hypnotics/Anxiolytics
- Antidepressants
- Neuroleptics
- Parkinson
- Epilepsy

Drugs Targeting the CNS

Neurotransmitters in the CNS

- Norepinephrine:
 - Excitatory or inhibitory
 - Targeted by: MAO inhibitors (↑); tricyclic antidepressant (↑); amphetamines (↑)
- Acetylcholine:
 - Excitatory (M1; N) or inhibitory (M2)
 - Targeted by: M inhibitors (↓); Acetylcholine-esterase inhibitors (↑)
- Glutamate:
 - Excitatory
 - Targeted by: antiepileptics, ketamine, phencyclidine (↓)
- GABA (γ -amino-butyric acid):
 - Inhibitory (increases g_{Cl^-} and g_{K^+} , but not g_{Na^+} => hyperpolarization (higher threshold for activation)
 - Targeted by: hypnotics, sedative, anti-epileptics (↑)
- Dopamine:
 - Inhibitory
 - Targeted by: older neuroleptics (↓); anti-parkinson drugs, amphetamines (↑)
- Serotonin:
 - Excitatory or inhibitory
 - Targeted by: MAO inhibitors, SSRIs, Tricyclic antidepressants, hallucinogens (↑)

Drugs Targeting the CNS

Glutamate

- **Excitatory amino acid:**

- Uniformly distributed throughout the brain
- Mainly derived from glutamine or glucose
- Stored in synaptic vesicles
- Four distinct receptors exist -
(**NMDA receptor subtype** most significant for drug action: needs to be "co-occupied" by glycine to become activated)
- Termination mainly by re-uptake into nerve terminal and astrocytes
- Astrocytes convert it to glutamine (lack activity) and return it to nerve cells

