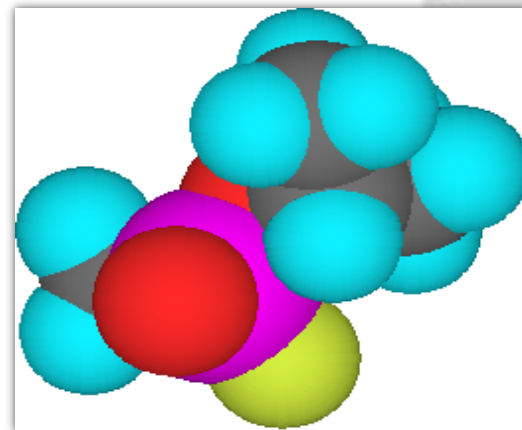


Sarin

Discovered in
Germany in 1938

Stockpiled by Hitler

Never used in WWII



March 1988

Used by Iraqi military against Kurdish villagers

Stops nervous system

Causes death

Aftermath of Halabja chemical attack

Aum Shinrikyo Cult

Released Sarin gas in Matsumoto in June 1994



7 dead, 200 hospitalized

1995 Tokyo subway attack



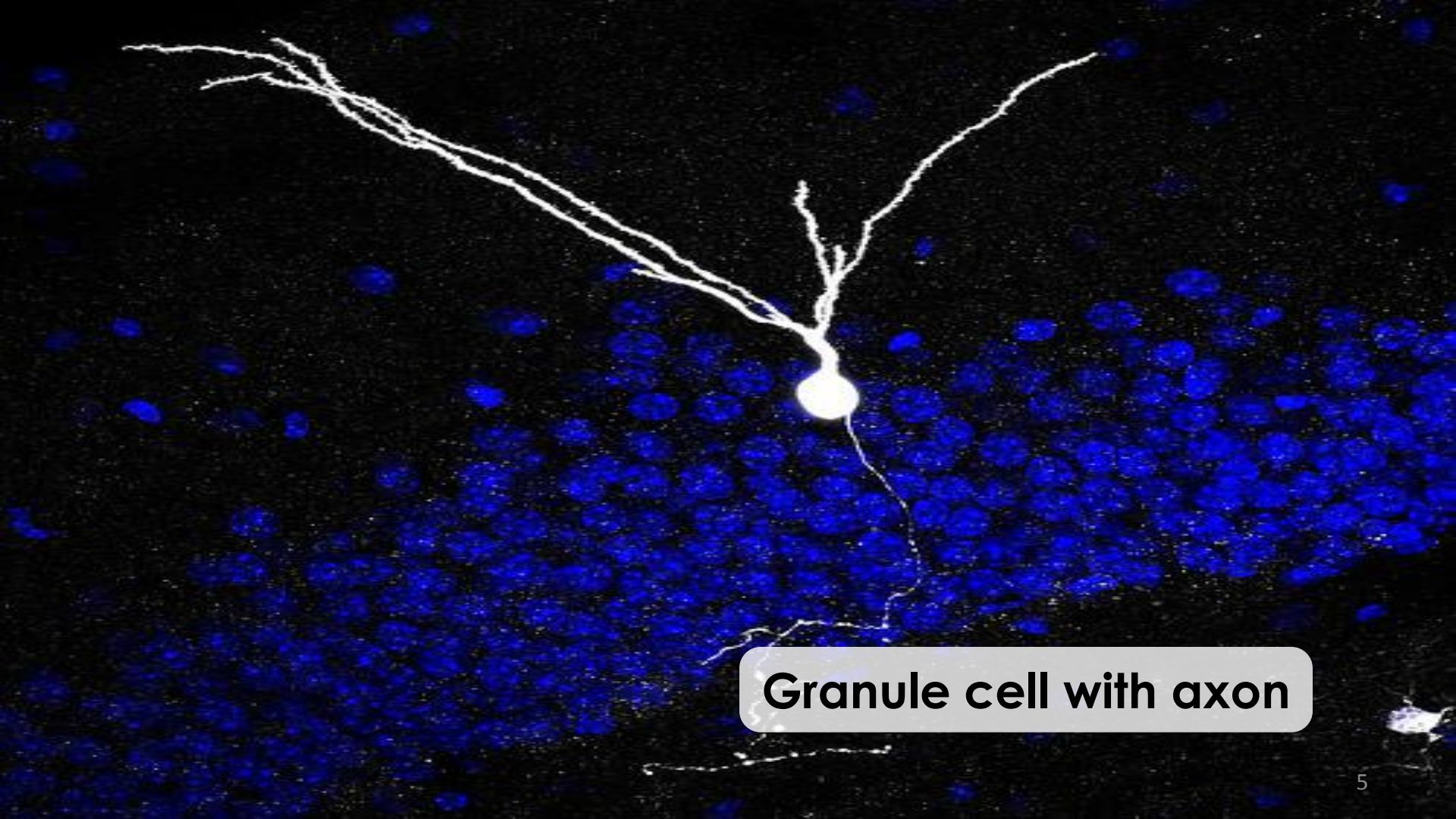
12 dead, 1000 hospitalized

Neurotransmission

How do nerve agents work?



Interfere with biochemical mechanism



Granule cell with axon

Mechanism of action of Sarin

What if there is excess neurotransmitter?



Continued nerve stimulation



Twitching, convulsions, paralysis and death



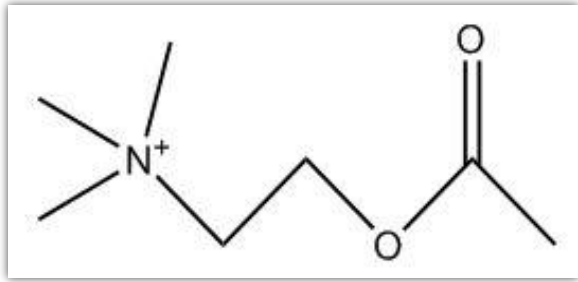
Often starts with blindness

Mechanism of action of Sarin

When would there be excess neurotransmitters?

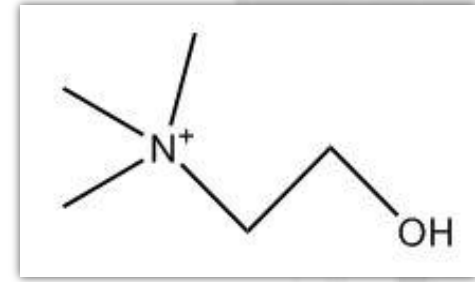
Neurotransmitter concentration is regulated by acetyl cholinesterase

Mechanism of action of Sarin



Acetyl choline

**Acetyl
cholinesterase** →



Choline

Inactive

Mechanism of action of Sarin

Sarin is an acetyl cholinesterase inhibitor



Excess acetyl choline cannot be destroyed



Present in excess

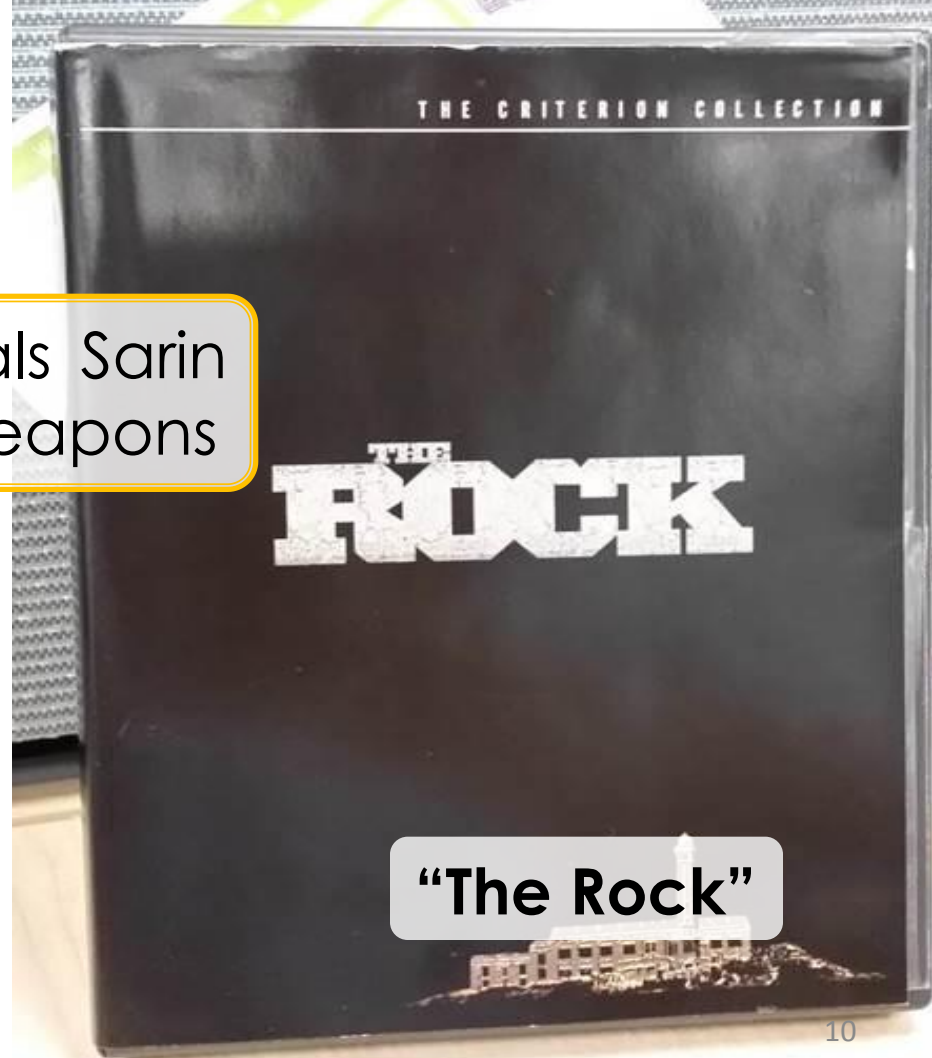
“The Rock”

Renegade soldiers steals Sarin containing chemical weapons

Hero exposed to Sarin



Injected himself with the antidote



“The Rock”

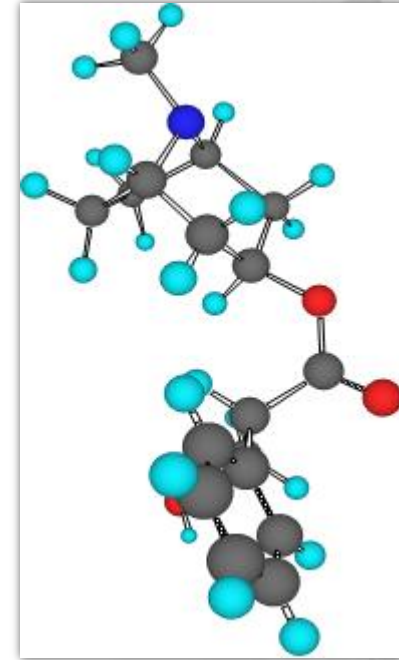
Atropine

Antidote to Sarin



Opposite effect of Sarin

Inhibits action of acetyl choline



Atropine

Atropine

Toxic if not taken as antidote



Inhibits action of neurotransmitter



LD₅₀ (rat, oral) 500 mg / kg

Atropine

Natural compound from
Atropa belladonna



Atropa belladonna

Atropine

Atropine dilates the pupils



Beautiful

Used in optometry



Atropa belladonna

Poisoning

Less common nowadays



Difficult to obtain poisons



Chemistry professors can obtain poisons easily

DNA

Fingerprints

Fibre Analysis

Poison

Blood

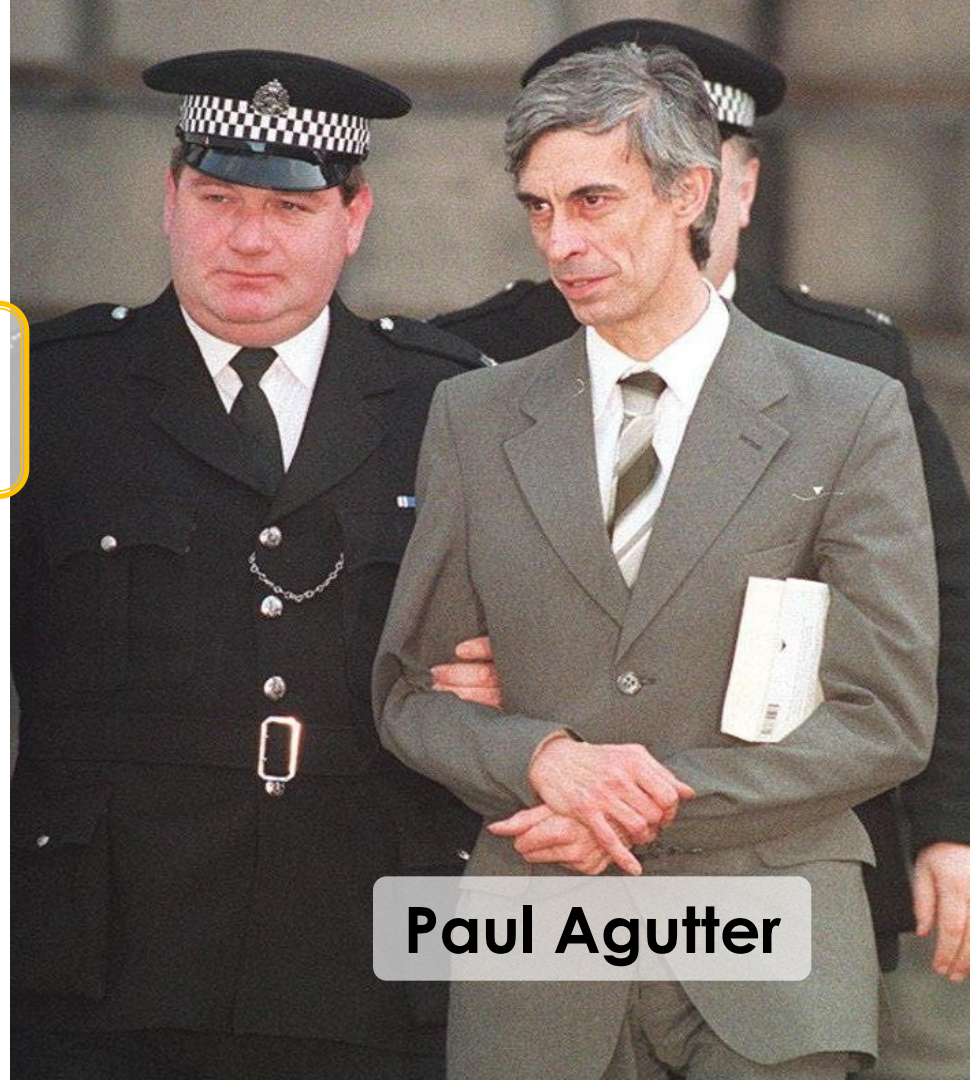
Paul Agutter

Paul Agutter

Convicted of poisoning
his wife with atropine



Atropine from
his research lab



Paul Agutter

Paul Agutter

How did he do it?



Added atropine to
his wife's gin & tonic



Gin & Tonic

Paul Agutter

Tried to mislead investigators



Added atropine to the tonic water at local supermarket

Paul Agutter

Found out by the police



Lesser atropine added to tonic bottles than to his wife's drink

Wife survived

Convicted of attempted murder