

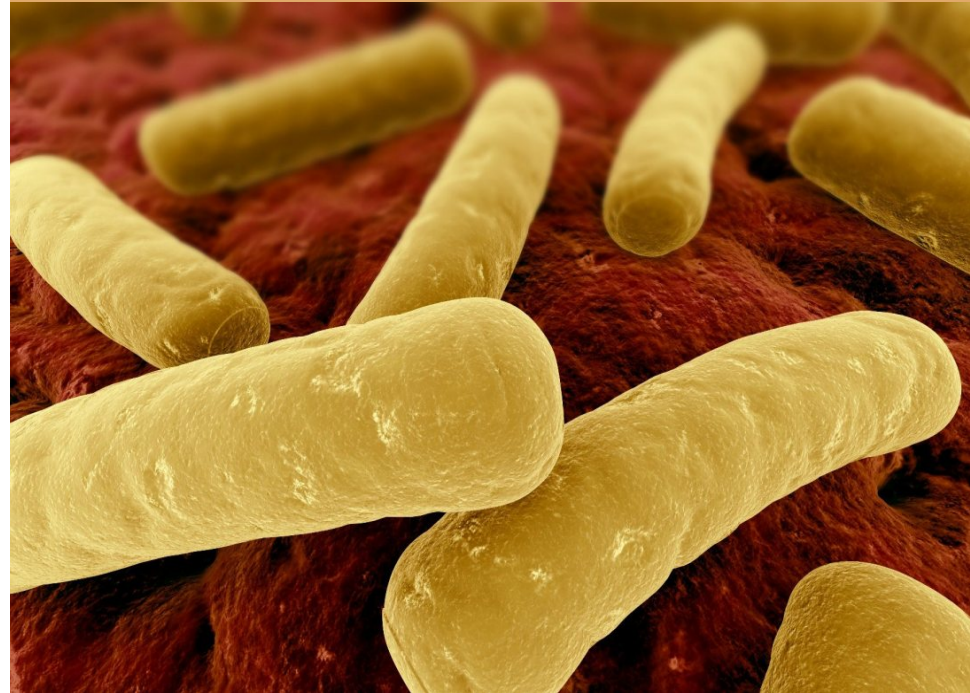
## Clostridia

- Large Gram positive
- Straight or slightly curved rods with slightly rounded ends
- Anaerobic bacilli
- Spore bearing
- Spore do not germinate and growth does not normally proceed unless a suitably low redox potential Eh exists
- Saprophytes
- Some are commensals of the animal & human gut which invade the blood and tissue when host die and initiate the decomposition of the corpse (dead body)
- Causes diseases such as gas gangrene, tetanus, botulism & pseudo-membranous colitis by producing toxins which attack the neurons pathways .

# Clostridia



[https://en.wikipedia.org/wiki/File:Clostridium\\_botulinum.jpg](https://en.wikipedia.org/wiki/File:Clostridium_botulinum.jpg)



## *Clostridium* spp

*C. tetani*

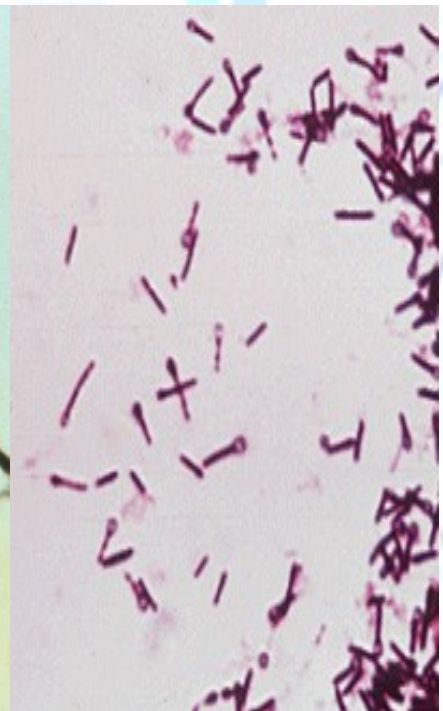
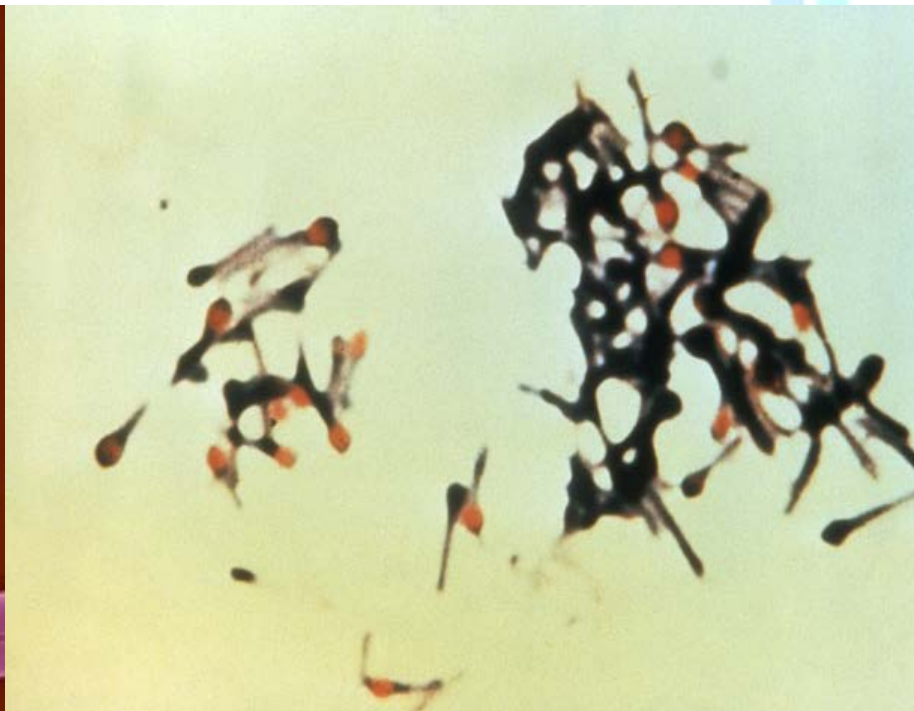
*C. botulinum*

*C. perfringens*

*C. difficile*

## *Clostridium tetani*

- *Clostridium tetani* is the causative agent of **tetanus**.





- The organism is found in soil, especially heavily-manured soils, and in the intestinal tracts and feces of various animals.
- Carrier rates in humans vary from 0 to 25%, and the organism is thought to be a transient member of the flora whose presence depends upon ingestion.
- The organism produces terminal spores within a swollen sporangium giving it a distinctive drumstick appearance.
- Although the bacterium has a typical Gram-positive cell wall, it may stain Gram-negative or Gram-variable, especially in older cells.



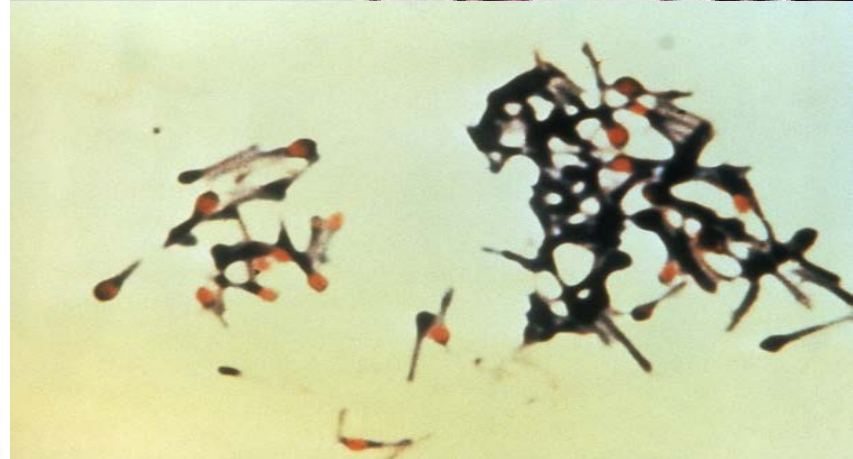
## Toxins

*Cl. tetani* produces two types of toxins:

Tetanolysin, which causes lysis of RBCs

Tetanospasmin is neurotoxin and essential pathogenic product

- Tetanospasmin is toxic to humans and various animals when injected parenterally, but it is not toxic by the oral route
- Tetanospasmin which causes increasing excitability of spinal cord neurons and muscle spasm .



## TREATMENT OF TETANUS

- Removal of necrotized (death) tissue
- Antibiotics
- Human immunoglobulins

## TETANUS VACCINATION SCHEDULE (CDC)

- DTaP vaccine (Diphtheria, Tetanus & acellular pertussis)
- 2, 4, 6 and 12-18 months
- 4-6 years .



# Thank You

## Questions?

Comments and opinions would be appreciated.