Clostridium: Gm + spore forming fastidious obligate anaerobe

**CLOSTRIDIUM** obligate anaerobe, req. neutral pH, rich medium.  
Spores resist to 120°C, 15'

*C. tetani* terminal spores. When they germinate, non-invasive.  
Upon death&lysis, release toxin *exotoxin* in 4-10 days.  
*Toxin prevents re-uptake of acetylcholine: spastic paralysis, protect with toxoid.*

**toxoid** = inactive toxin: “tetanus shot”: you body makes anti-tetanus antibodies.

Isolated antitoxin (*gamma globulin*) injected if you *have* tetanus (p. 1109)

*C. botulinum* (sausage) fr non-acid home canned foods, esp. beans & green peppers.  
Spores more resistant than any other anaerobe, 6 hr boiling.  
Toxin coded for by *lysogenic phage.* (p. 386)

**Most potent toxin known:** cleaves “SNARE” proteins, **prevents release of acetylcholine**,  
causes **flaccid paralysis**. floppy baby syndrome.

*C. perfringens* **gas gangrene**, anaerobic tissue infected, produce H₂, terrible foul odor, bubbles "snap, crackle and pop" when patient is moved. **Debridement**, penicillin.