

lec.8



Genus *Corynebacterium*

by

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Theorical bacteriology
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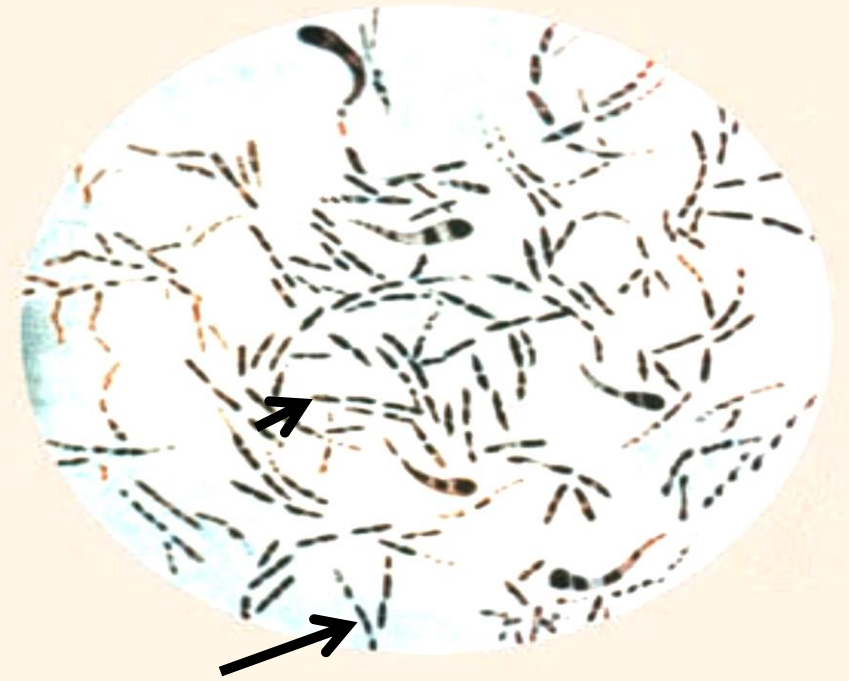
General characters

slender, pleomorphic, gram-positive rods
non-motile and unencapsulated, and they
do not form spores

grow aerobically on standard laboratory Media
such as: blood agar.

arranged in V or L shapes on Gram stain.
C. diphtheriae, cause (Diphtheria).

club-shaped rods that appear in clumps,
suggestive of Chinese characters.

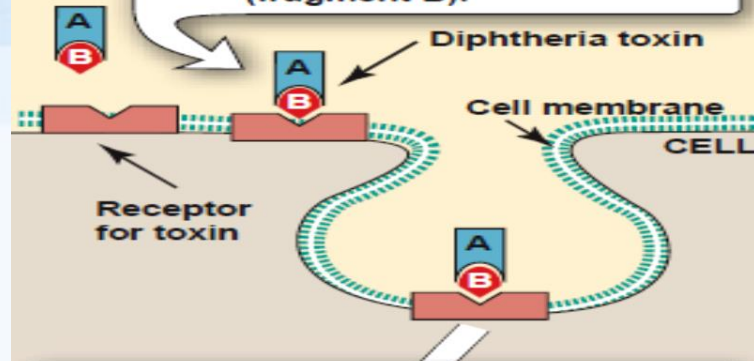


Corynebacterium diphtheriae

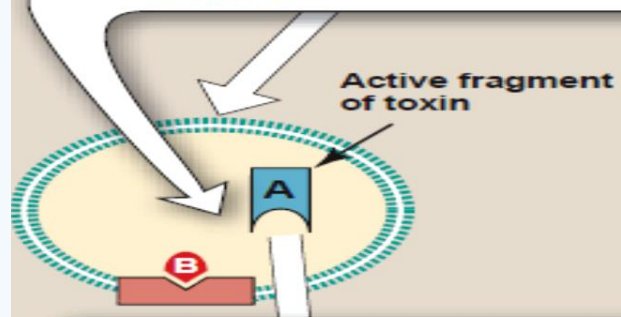


- They often appear in clusters, joined at angles like Chinese letters.

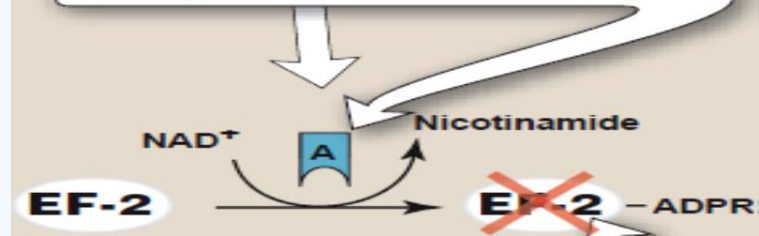
1 A membrane receptor recognizes and binds a portion of the toxin (fragment B).



2 The toxin enters the cell by receptor-mediated endocytosis and dissociates into fragments A and B.



3 The A fragment is translocated to the cytosol, where it catalyzes the transfer of adenosine diphosphate ribose (ADPR) from NAD^+ to EF-2.

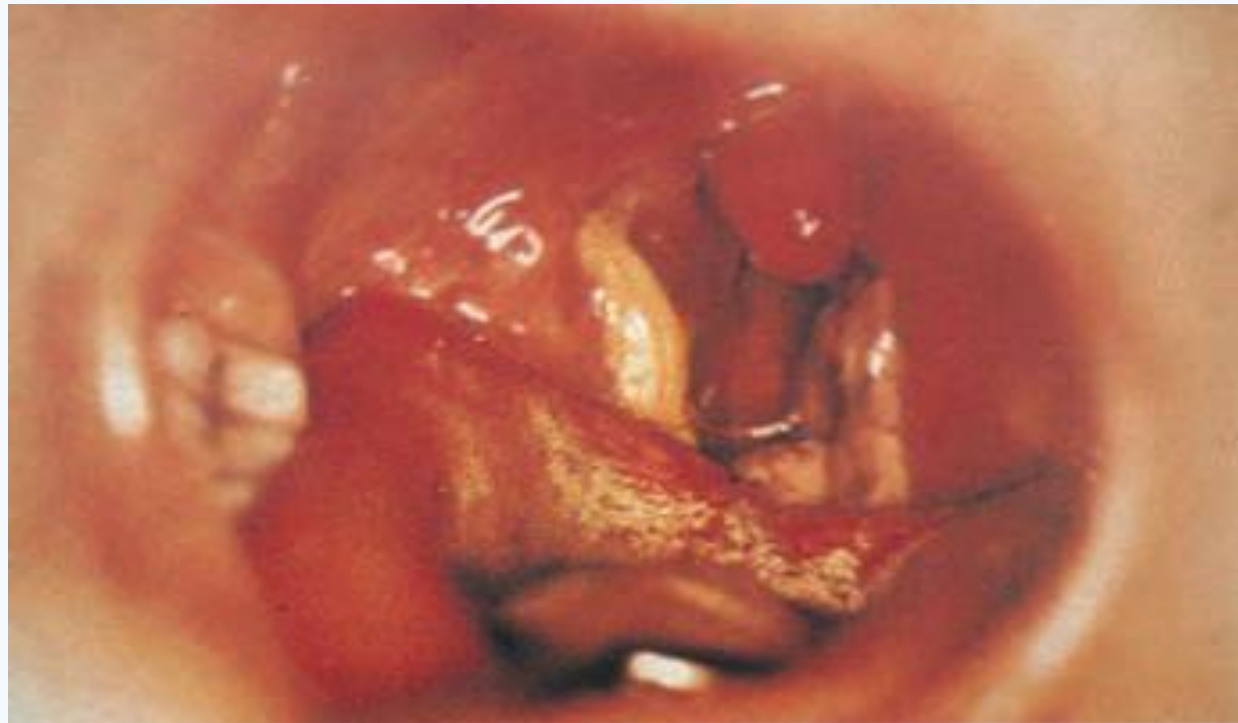


4 The ADPR-elongation factor complex is inactivated, and peptide synthesis stops.

- The infection produces a distinctive thick, grayish, adherent exudate (pseudomembrane) that is composed of cell debris from the mucosa and inflammatory products.



Bull neck

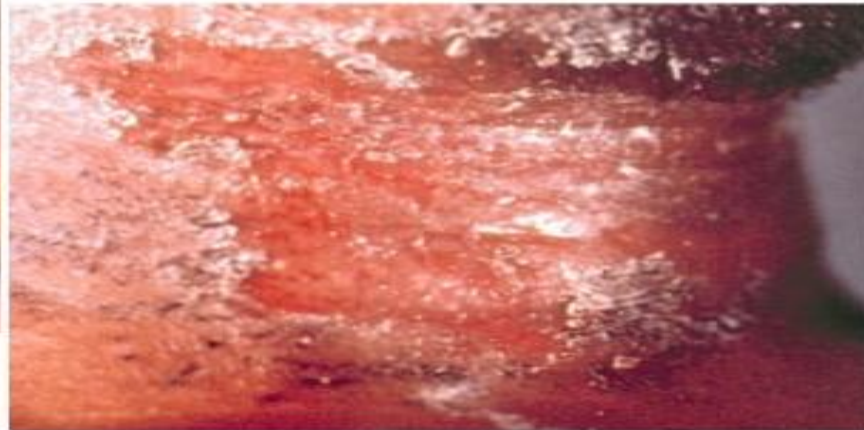


pseudomembrane grayish coat the throat.

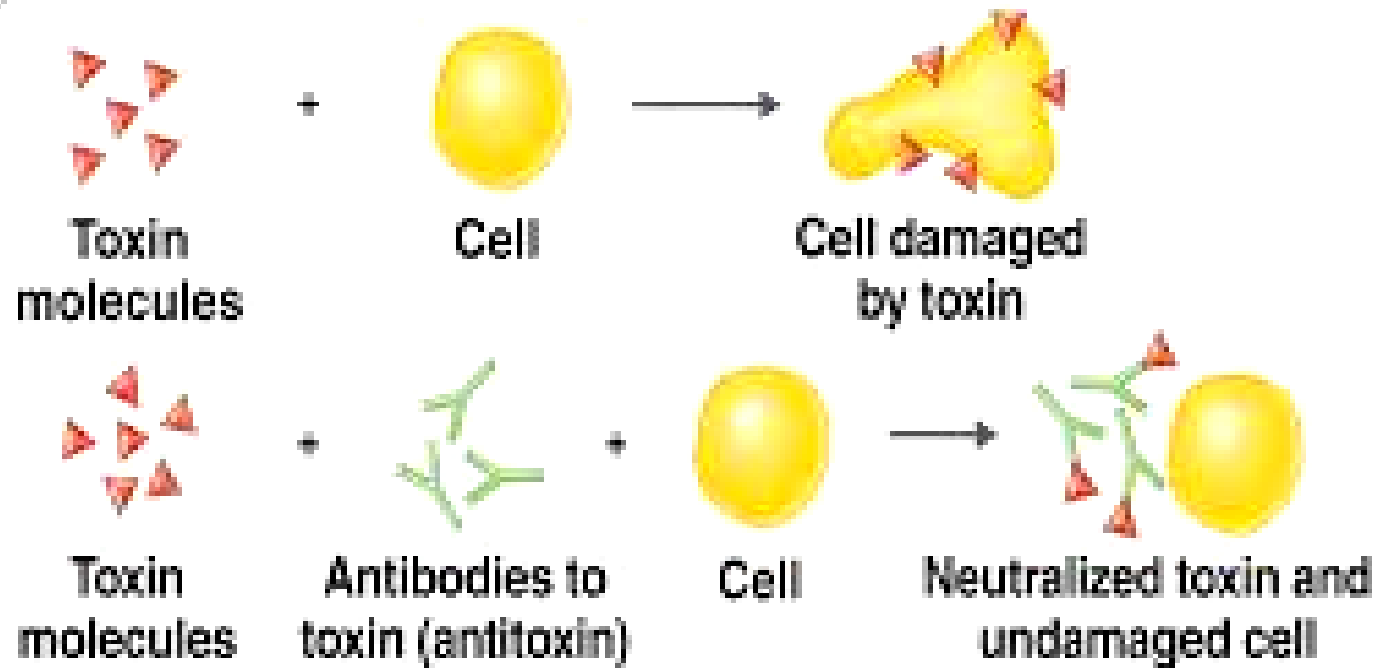
Cutaneous diphtheria:

A puncture wound or cut in the skin can result in introduction of *C. diphtheriae* into the **subcutaneous tissue**, leading to a chronic, non-healing ulcer with a gray membrane. Rarely, exotoxin production leads to tissue degeneration and death.

Skin Lesions



Immunity: Diphtheria toxin is antigenic and stimulates the production of antibodies that neutralize the toxin's activity, and this material used for immunization against the disease, usually administered in the **DTP** triple vaccine, together with tetanus toxoid and pertussis antigens



(a) The effects of a toxin on a susceptible cell and neutralization of the toxin by antitoxin

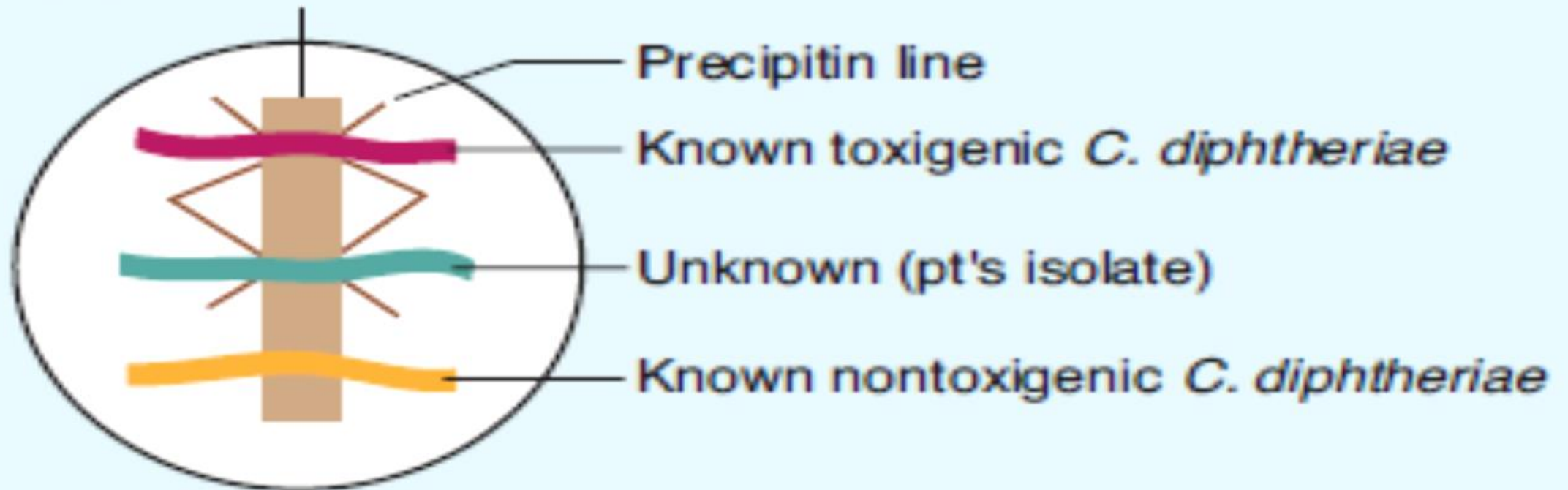


Elek test

to document toxin production (ELISA for toxin is now gold standard)

- Toxin produced by strains diffuses away from growth
- Antitoxin diffuses away from strip of filter paper
- Precipitin lines form at zone of equivalence

Filter paper strip with *C. diphtheriae* antitoxin



Shick test

Intradermal test worked by injection diphtheria toxin (0.2ml) intradermally into the skin forearm, while opposite arm is injected by the same route of injection and toxin inactivate by heat as (control).

Reading the result after 1, 4, 7 days.





Feel free for ask.