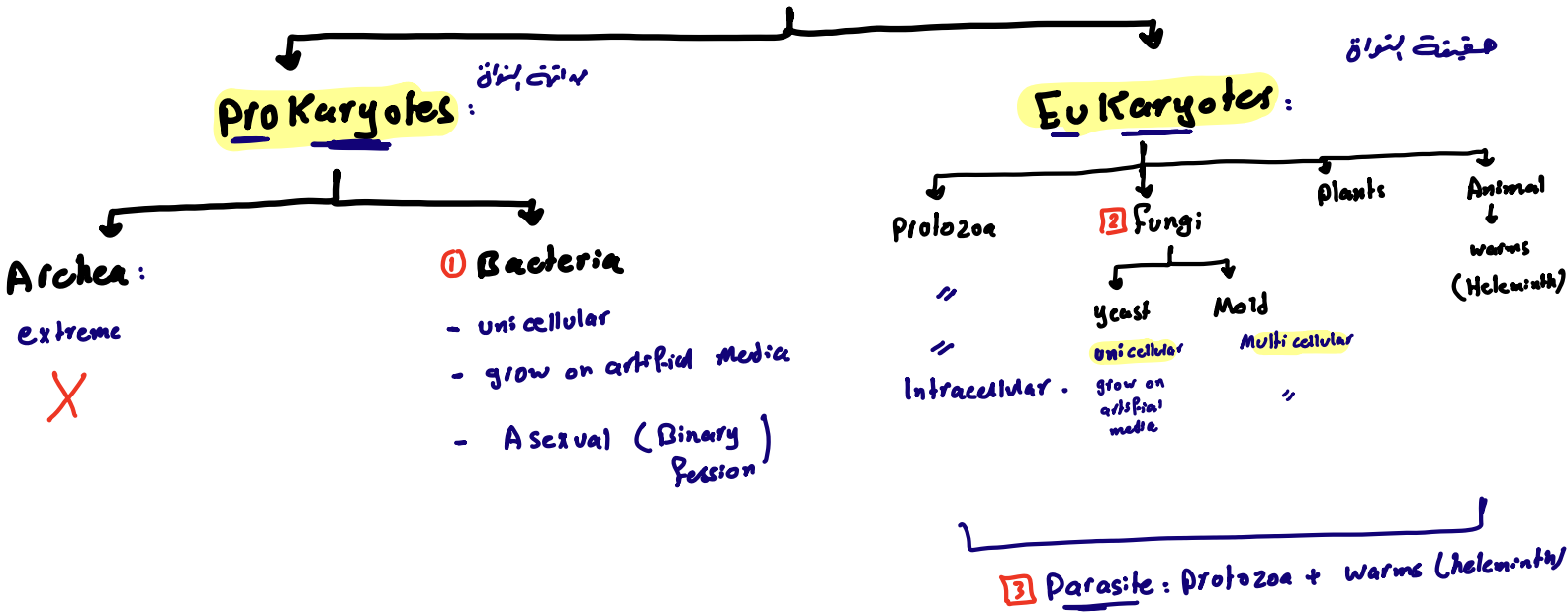
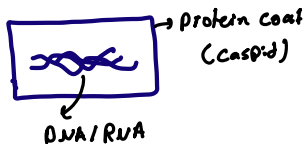
Medical Microbiology



④ * Viruses: Not living things

Smallest.



Obligate Intracellular / Parasite.

Needs EM.

Can affect: H. A. P. + microorganism

Microbiology:

① Bacteriology
② Mycology
③ Parasitology
④ virology

Distribution of Microorganisms: كل Omni present

why ?
① In all enviroments
② Beneficial
③ Only a minority are pathogenic.

* History

Discovery period

Antony van Leeuwenhook :

Microscope X50 - 300 .

"Animalcules"

Robert Hooke:

→ compound microscope

→ Cell theory.

Real Heroes Can see Cells

robert Hooke Compound microscope

Ignas Semmelweis:

puerperal sepsis can be transmitted by contaminated Hand & prevented by washing.

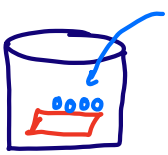
Ignaz نجسة

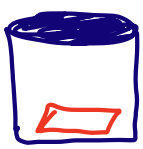
Transition period:

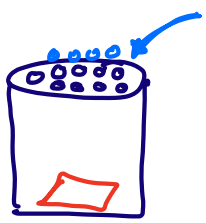
Spontaneos theory

Get rid of

Franciso Redi :







Golden period:

Louis pasteur :

Father of Microbiology

① Anaerobic Fermentation For Both Bacteria & Fungi

② Pasteurization: (heat Kills Bacteria)

③ Study Anthrax & Cholera

④ Introduce Live Attenuated vaccines :

chicken Cholera

Robert Kock:

① Develop media & staining techniques For culture

② Discover Anthrax & cholera

③ Kocki postulates.

+ve

-ve

+ve

Dimitri Ivanowski :

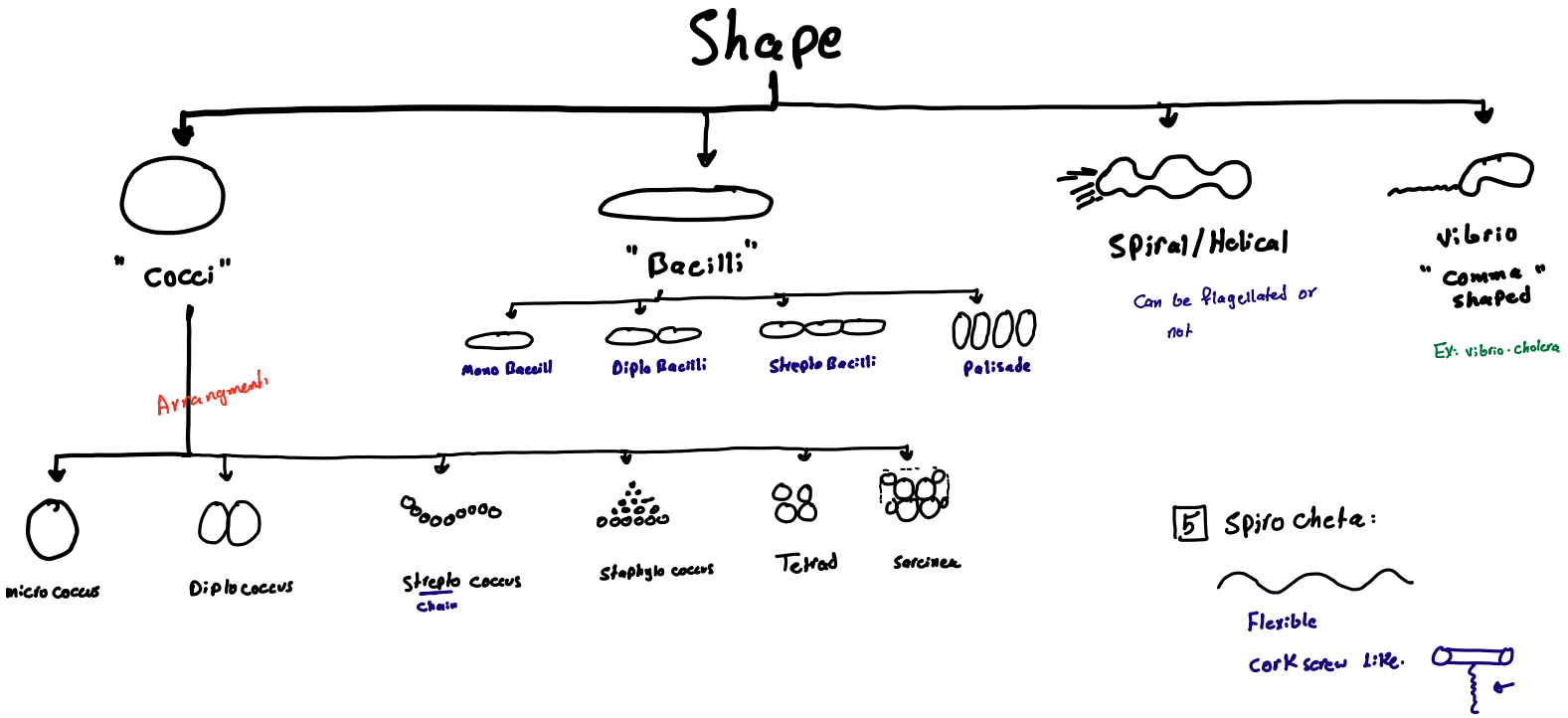
virology

Alexander Fleming

Penecillin

Penecillium

Bacterial structure &Classification



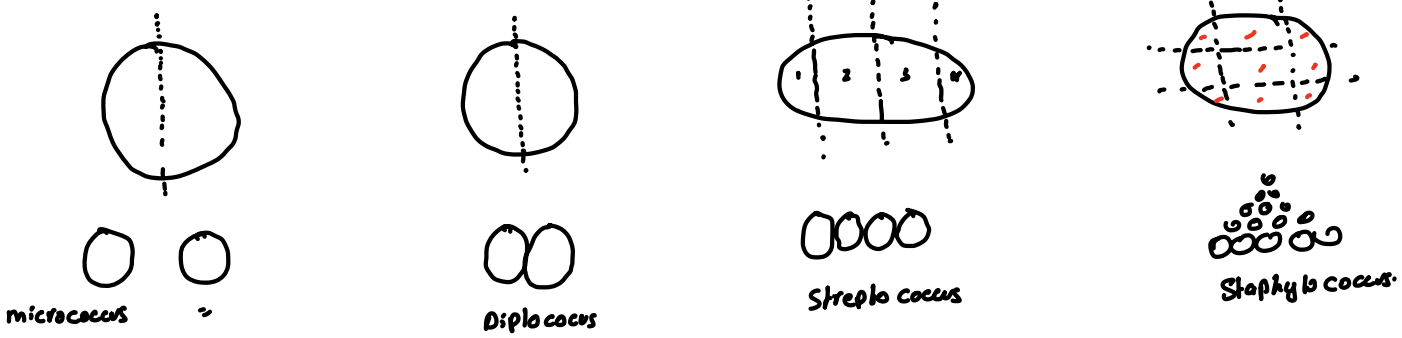
5 Spiro chete:

Flexible

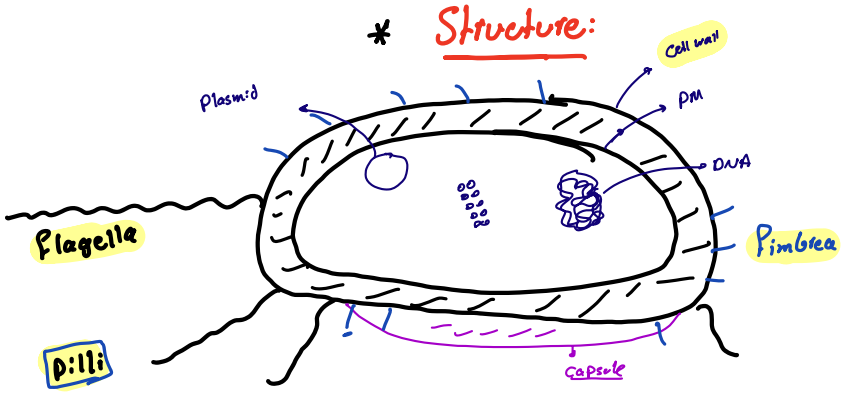
cork screw like.

why Bacteria have diff arrangments?

Plane of Division.



* Structure:

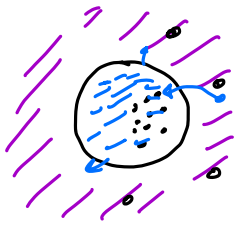


* Cell wall :

essential

Fx:

1. Shape
2. Rigidity
   - ↳ Resistent to high pressures (osmotic pressure)
3. Growth & Division



hypotonic

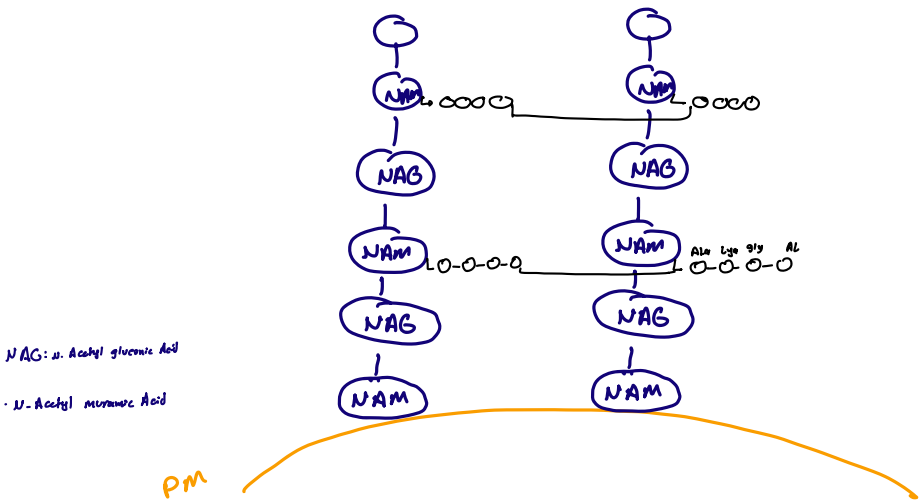
↓

monosaccharide

* Peptidoglycan (PG) :

→ 2 repeated sugars cross linked by Tetrapeptide.
(4 AA)

→ Attachment of Tetrapeptide: NAM.

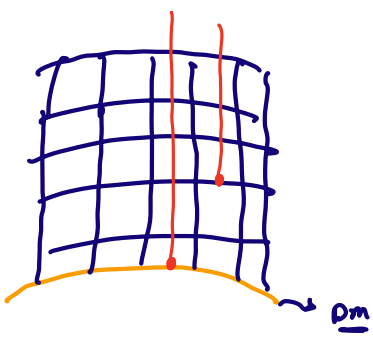


NAG: N. Acetyl glucosic Acid

N-Acetyl muramic Acid

Grame +ve

- Very Thick cell wall
- Inner membrane
- respond well to AB.
- ↑↑ PG



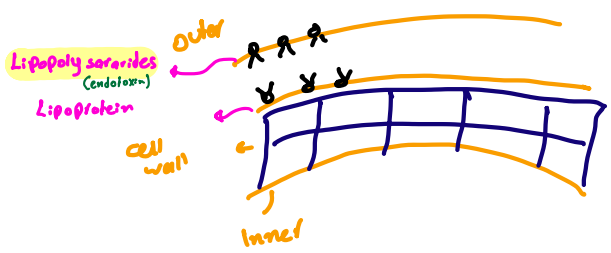
Tichoic Acid & LiPo Trchoic Acid :

glycerol (P)
ribitol (P) = Carbo
PDE

FXN: Anchor PG with PM.

Grame -ve.

- very thin cell wall
- Inner & outer membrane
- Poor respond to AB.
- PG↓



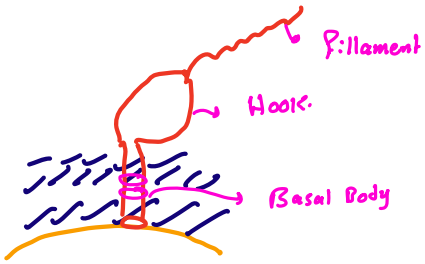
* Flagella:

Non-essential

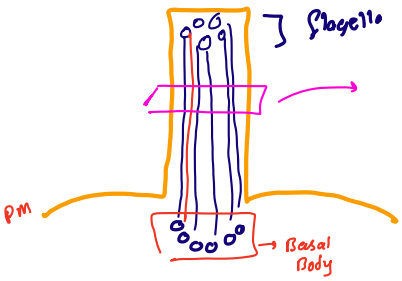
FXN → Motility

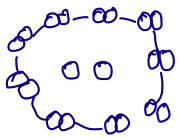
Made of → Flagellin

3 parts :
1. Basal Body
2. hook
3. Filament

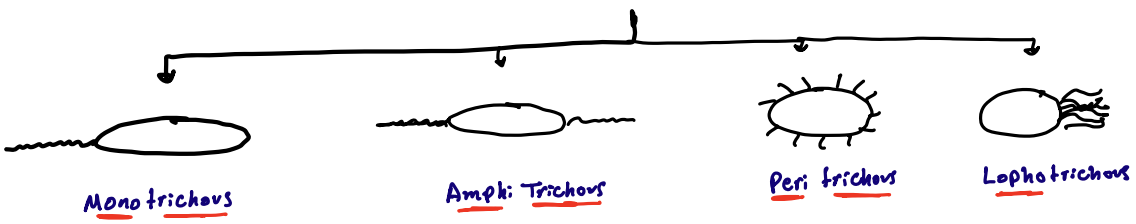


↝ Membrane bound cylinders (Each 0.2 μm)



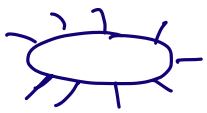


9 + 2
Doubles central microtubule

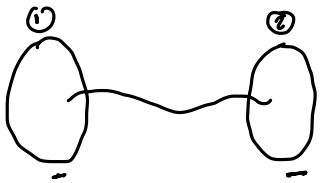


* Pili :

- Hair like Appendages
- Found on Both: G+ve & G-ve.
- No role in mobility.
- Arrangement: peritrichous.



- **Somatic pili:**
  - FXN: Attachment
- **Sex / conjugate pili:**
  - FXN: Bacterial conjugation.
  - allow Transfer of DNA BTW Bacteria
    - Dessemination of genetic Trait. Ex: AB resistence.



* Fimbrea:

- Short pillus
- Attachment.
- More than pillus & shorter.