

Respiratory system

Microbiology laboratory section

THROAT SWAB

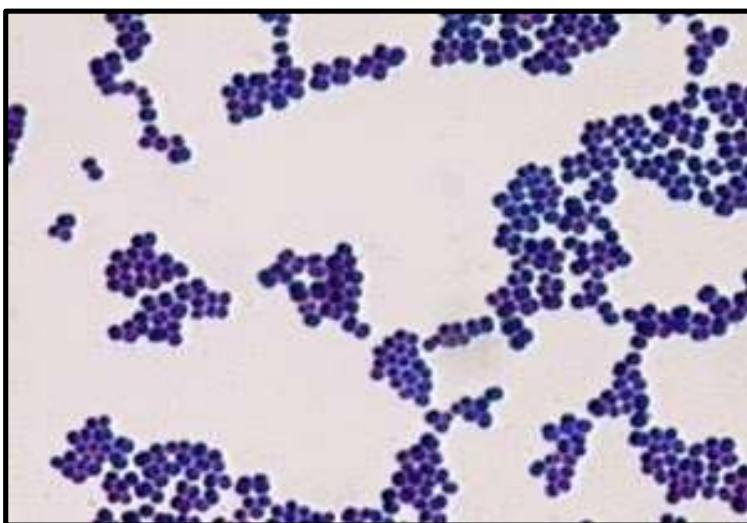
**Gram Positive
Coccus**

**Staphylococcus
Spp.**

**Streptococcus
Spp.**

GRAM STAIN

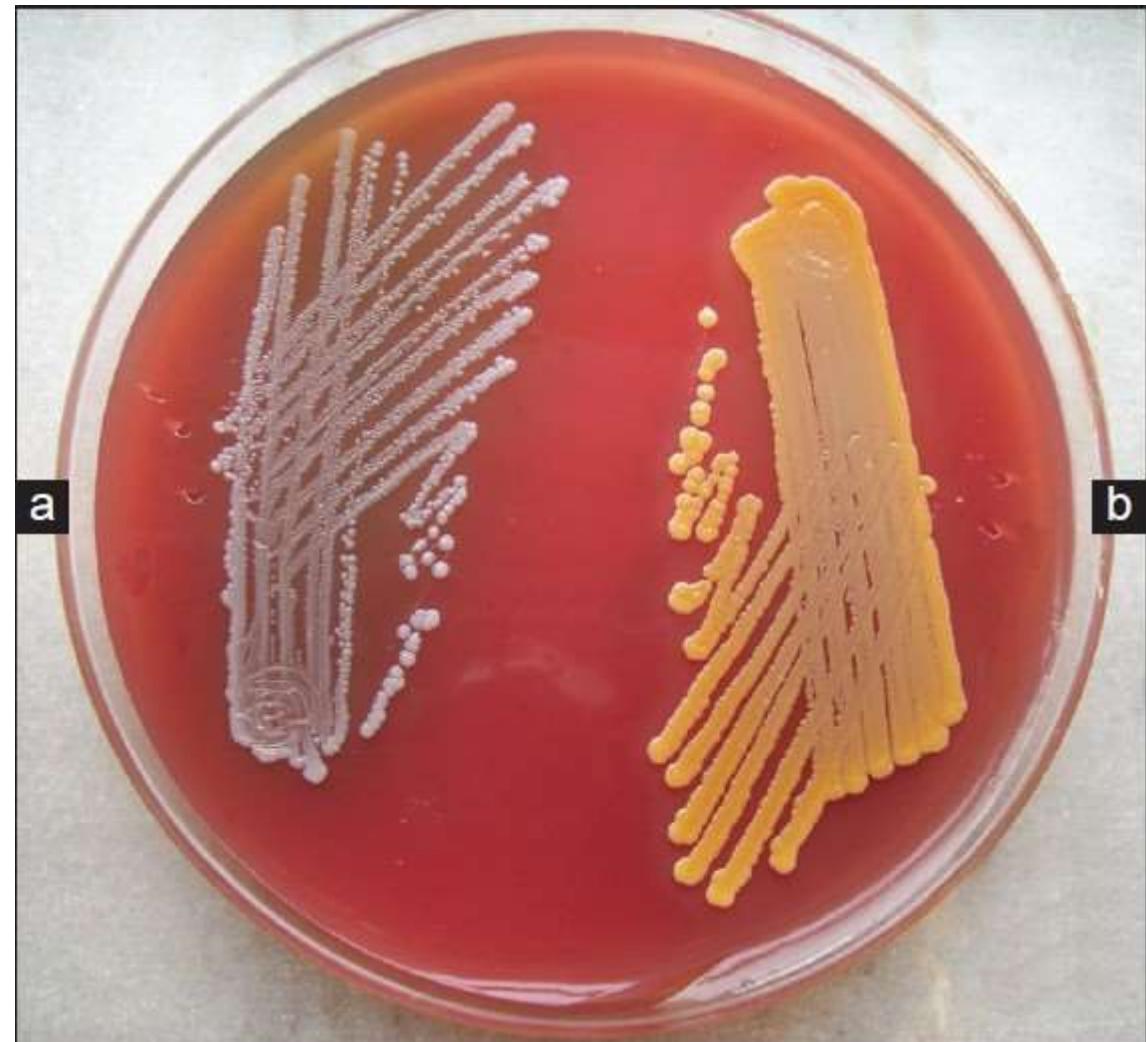
Staphylococcus



Streptococcus



A- *staphylococcus .albus*

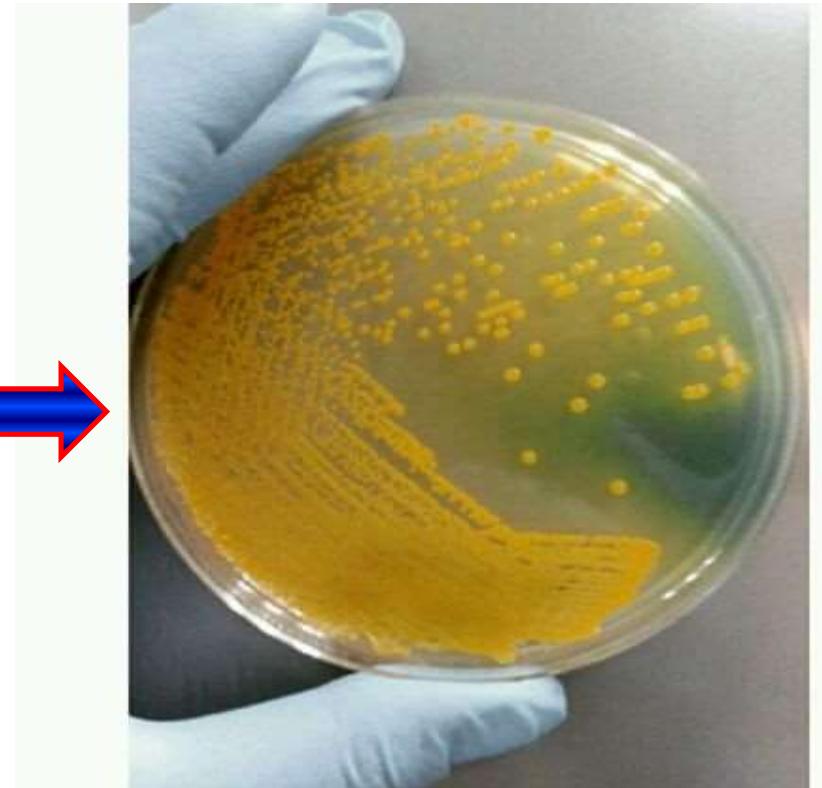
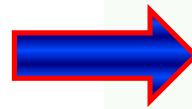


B- *staphylococcus.Aureus*

Blood agar



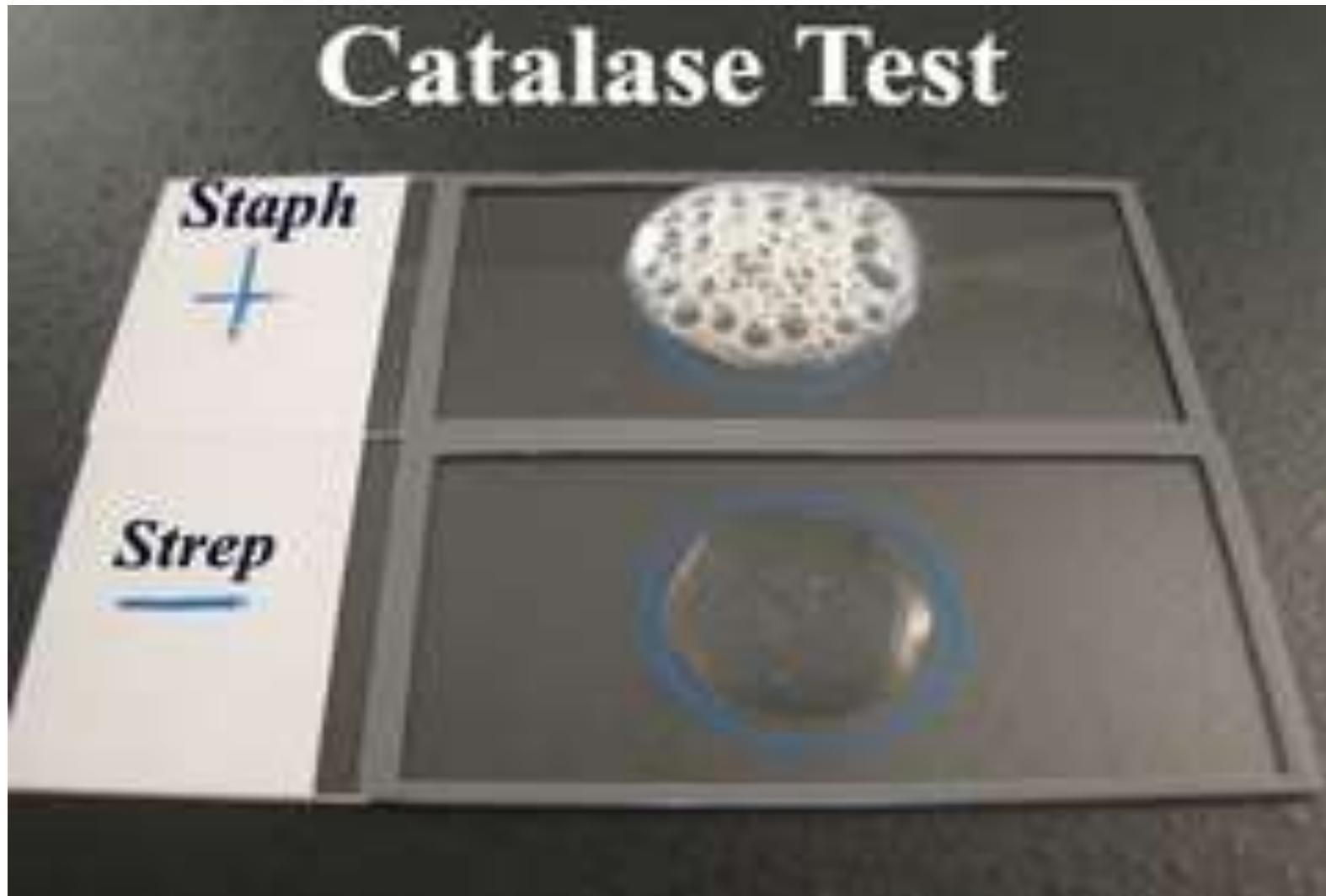
CLED media
Lactose fermentation (+ve)
staphylococcus spp.



Test for differentiation of Staphylococcus species



Catalase test

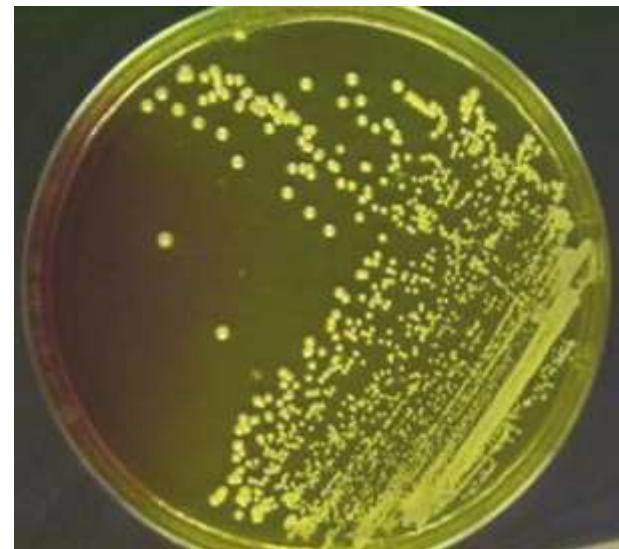


MSA

Mannitol salt agar media



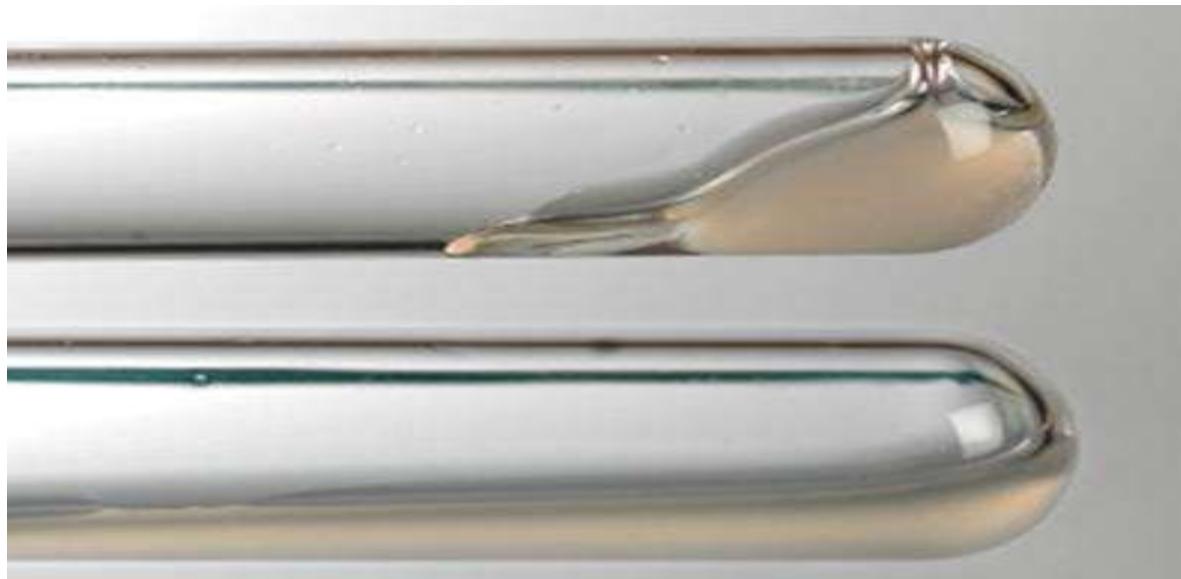
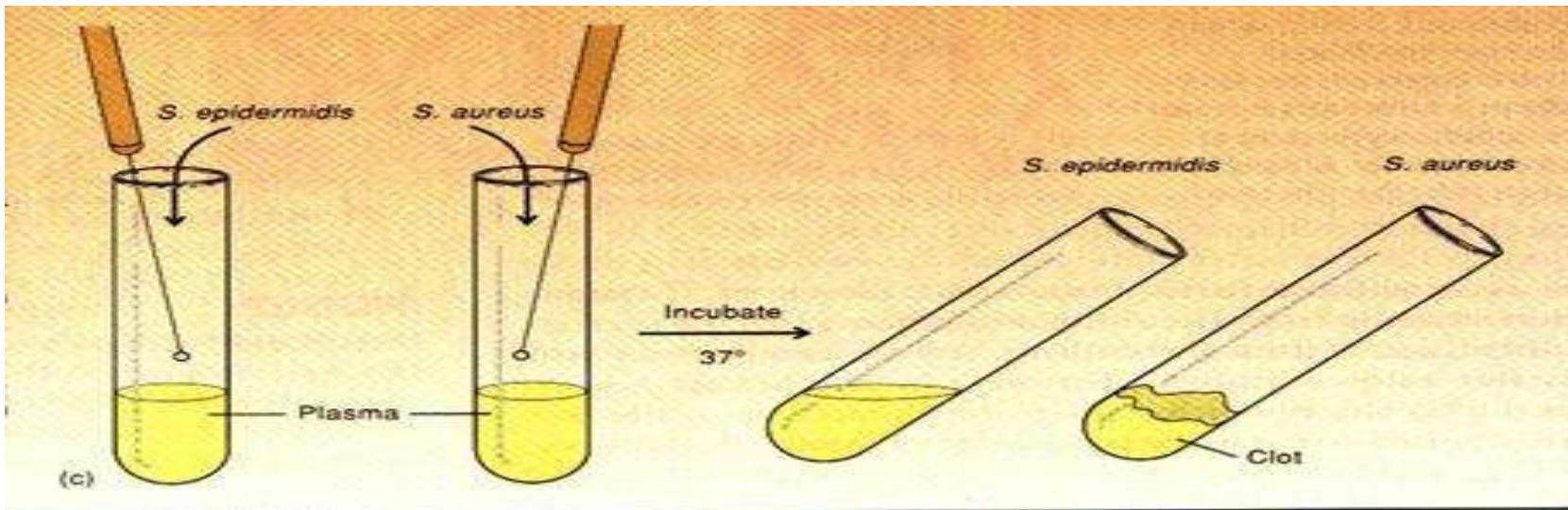
S.aureus



S.albus



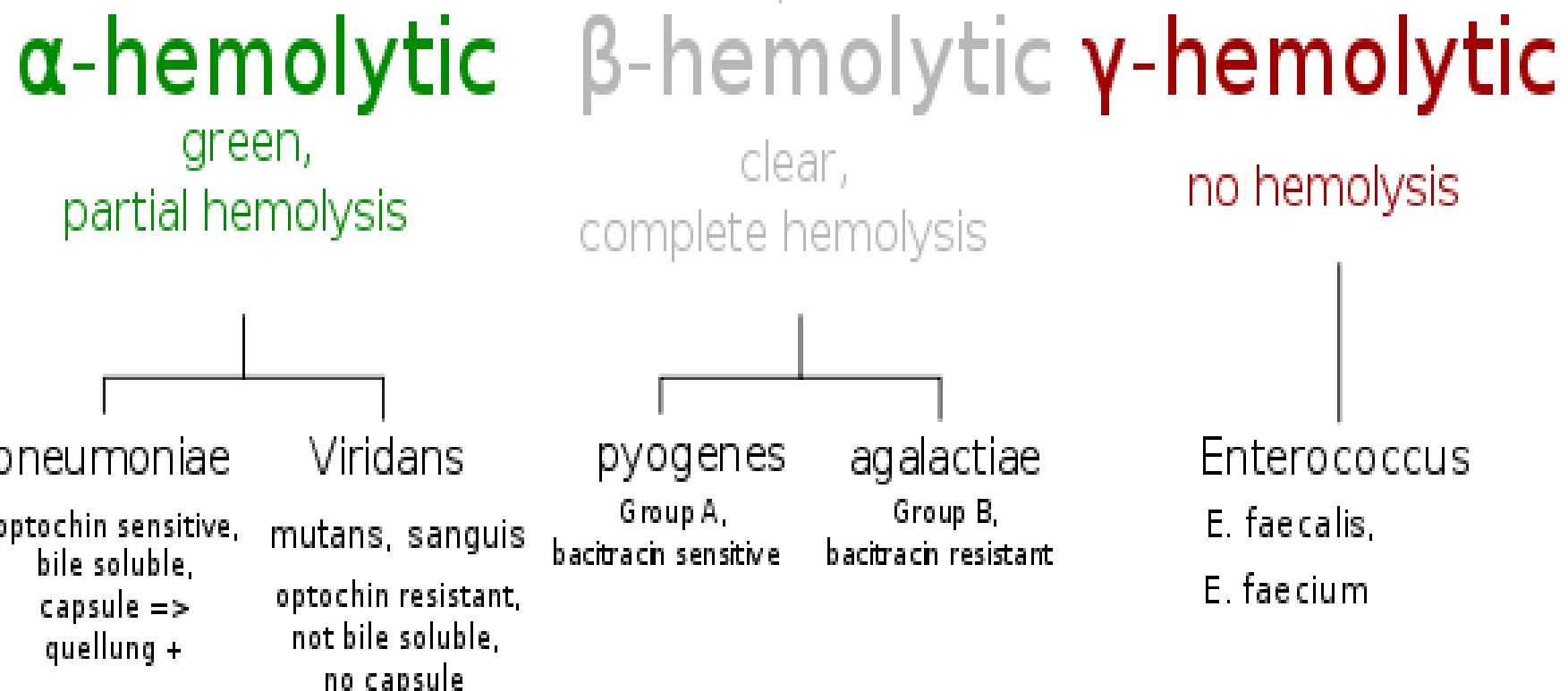
Coagulase test



S.aureus

S.albus

Streptococcus



Hemolysis on sheep blood agar

Blood Agar:

Shows three types of hemolysis

α Hemolysis

β Hemolysis

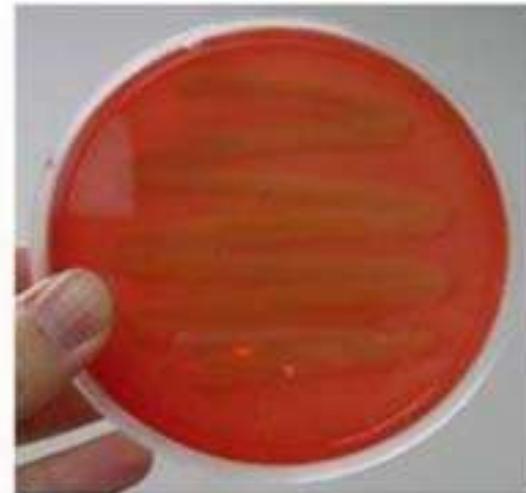
γ Hemolysis



Beta Hemolysis



Alpha Hemolysis



Gamma Hemolysis

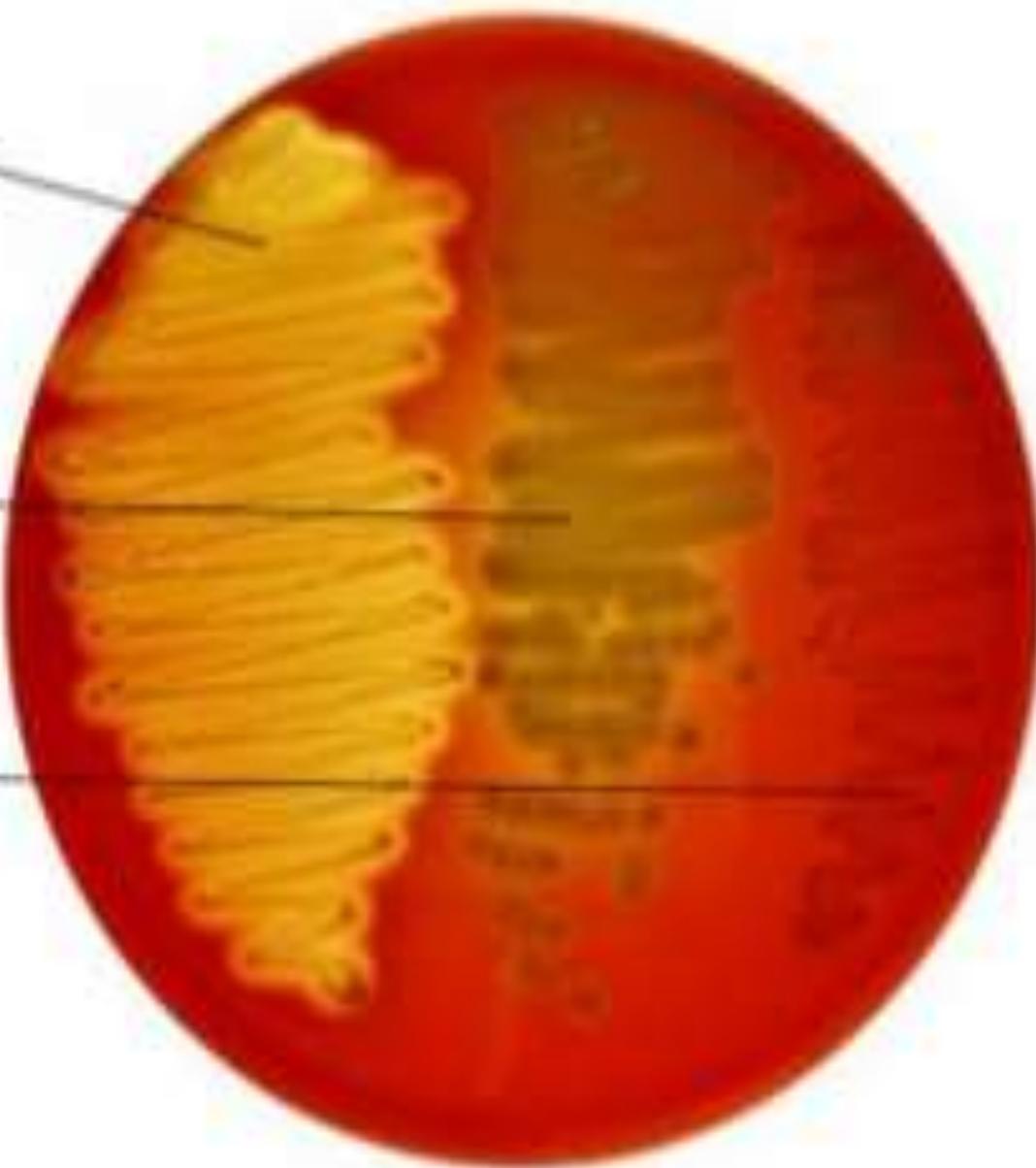
Beta



Alpha



None



Differentiation between α -hemolytic streptococci

	Hemolysis	Optochin sensitivity
<i>S. pneumoniae</i>	α	Sensitive (≥ 14 mm)
<i>Viridans strep</i>	α	Resistant (≤ 13 mm)

Optochin test

Streptococcus pneumoniae



Streptococcus pneumoniae strain on blood agar showing alpha hemolysis (green zone surrounding colonies). Note the **zone of inhibition** around a filter paper disc impregnated with optochin. (**sensitive** to optochin)

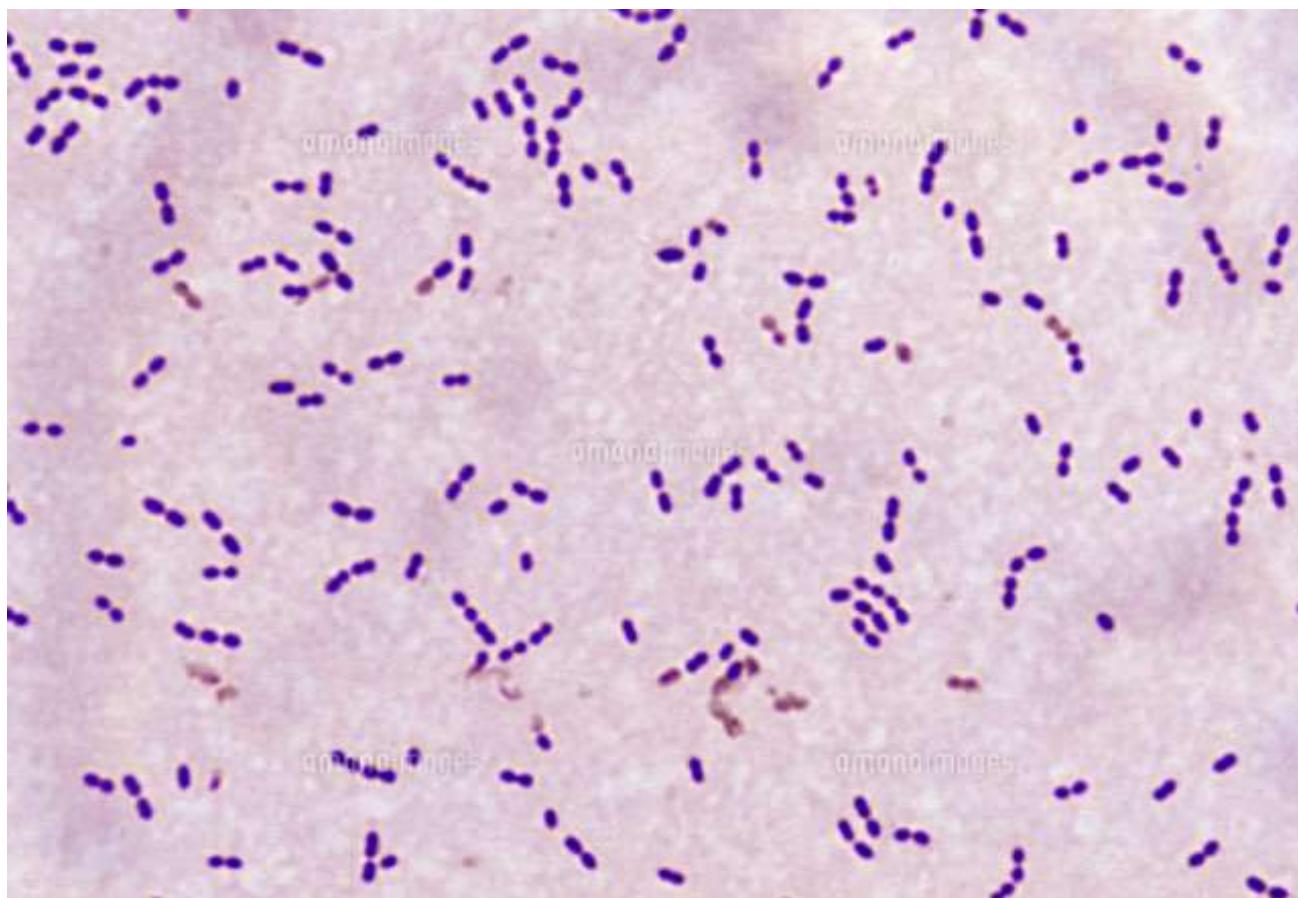
Optochin test

Streptococcus viridans

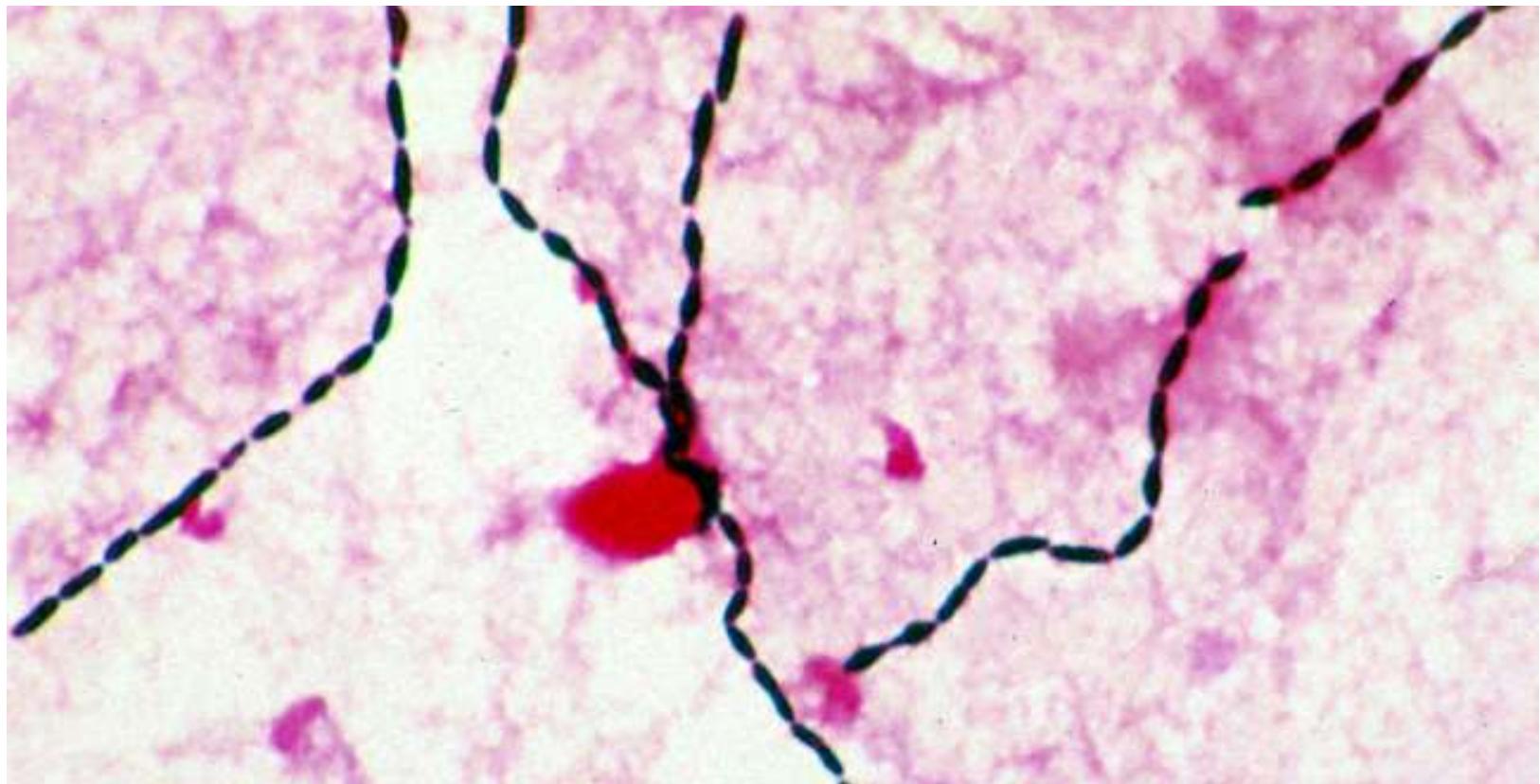


Streptococcus viridans strain on blood agar showing alpha hemolysis (green zone surrounding colonies).
No zone of growth inhibition (Resistant) around a filter paper disc impregnated with optochin.

Streptococcus pneumoniae



Streptococcus viridans



Differentiation between β -hemolytic streptococci

	Hemolysis	Bacitracin sensitivity
<i>S. pyogenes</i>	β	Susceptible
<i>S. agalactiae</i>	β	Resistant



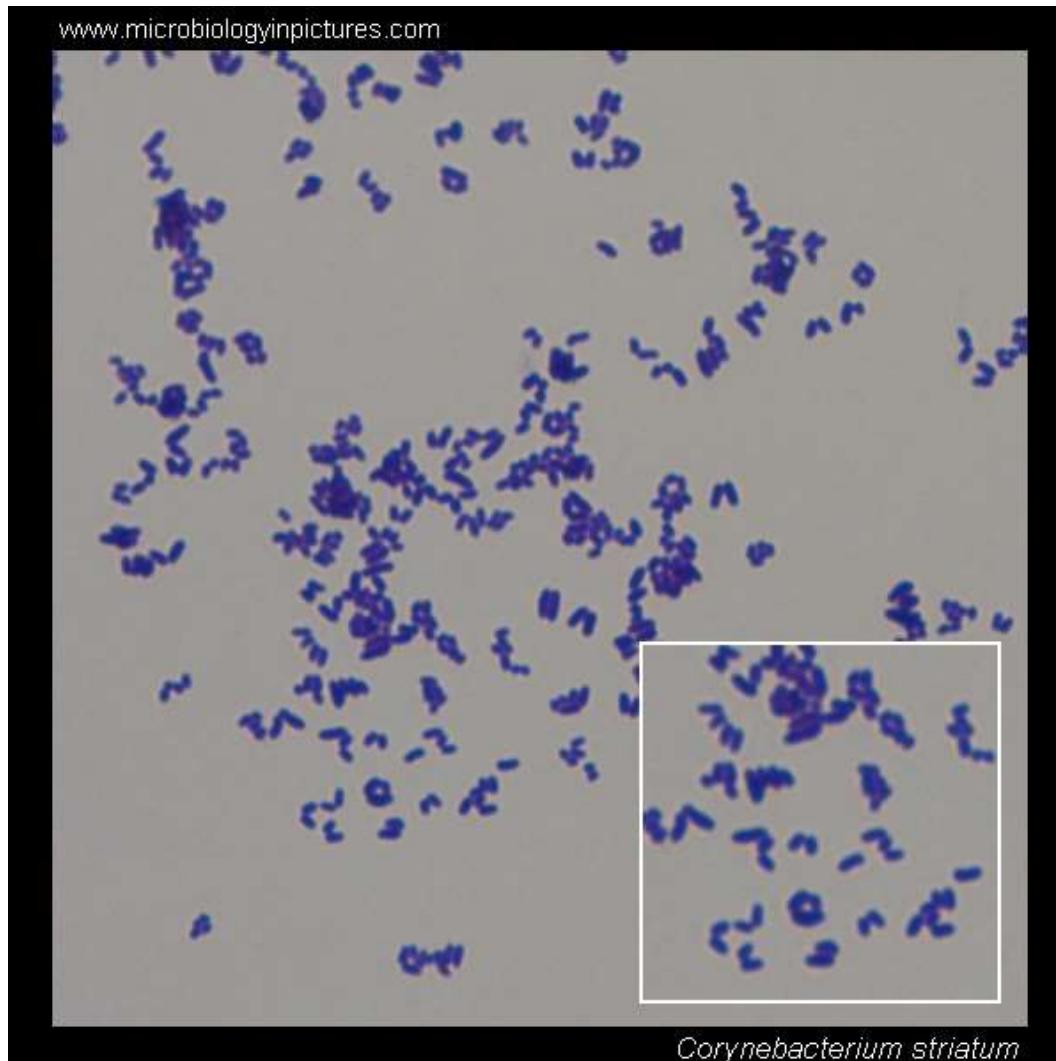
Bacitracin test for *Streptococcus pyogenes*

Diphtheroids

Gram Positive
Cocco-bacilli

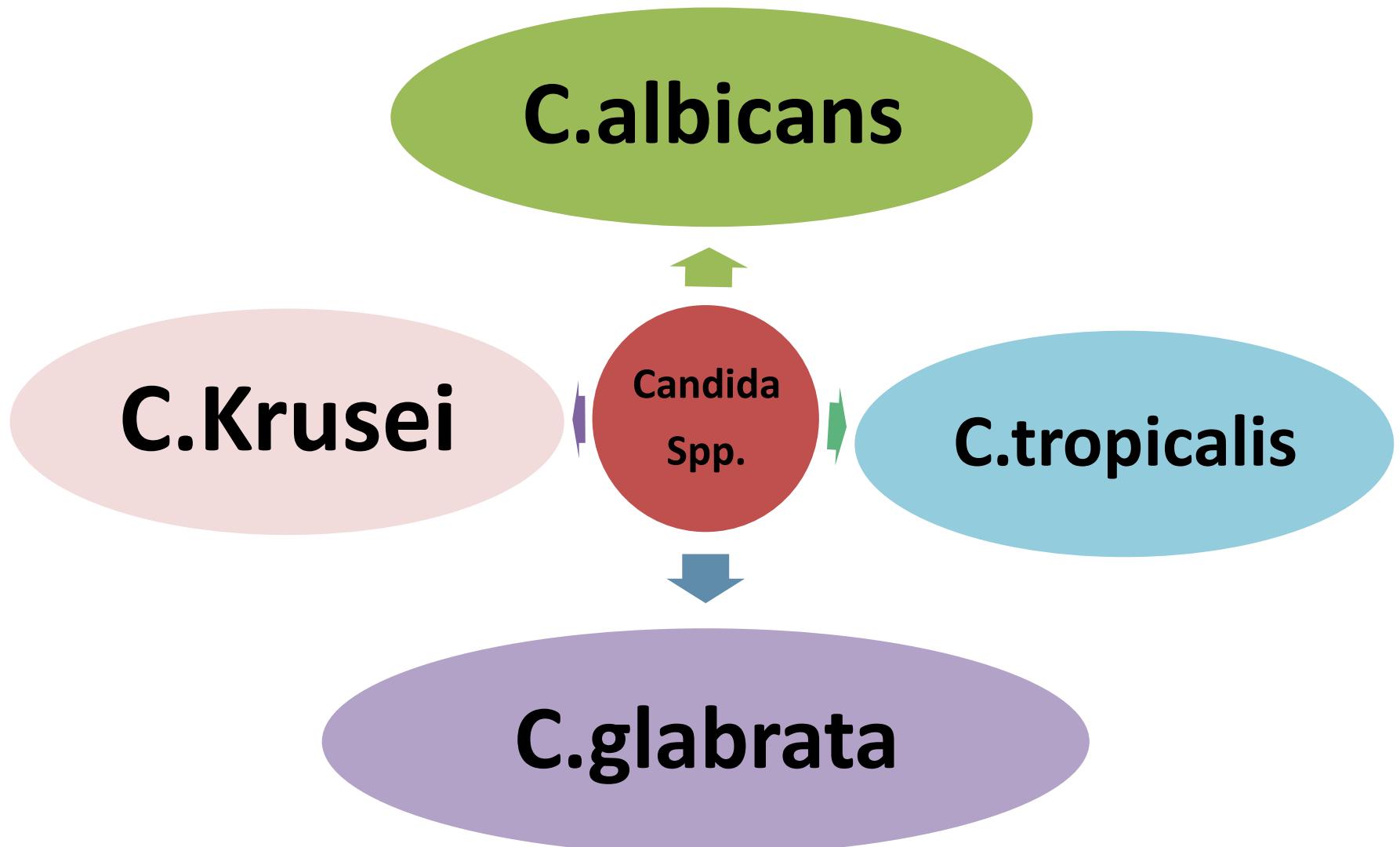
Arrangement as
Chinese letter

文 学 家



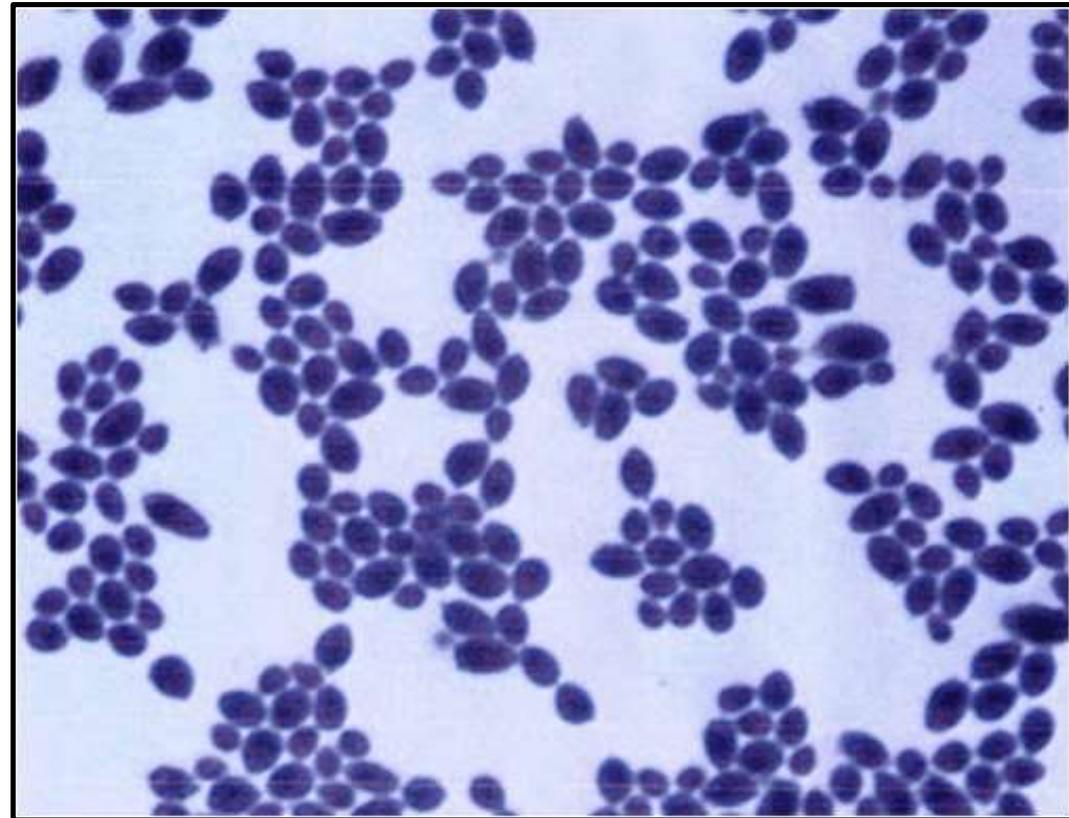
Corynebacterium striatum

Candida Species



Candida Spp

- Larger than Bacteria
- Budding

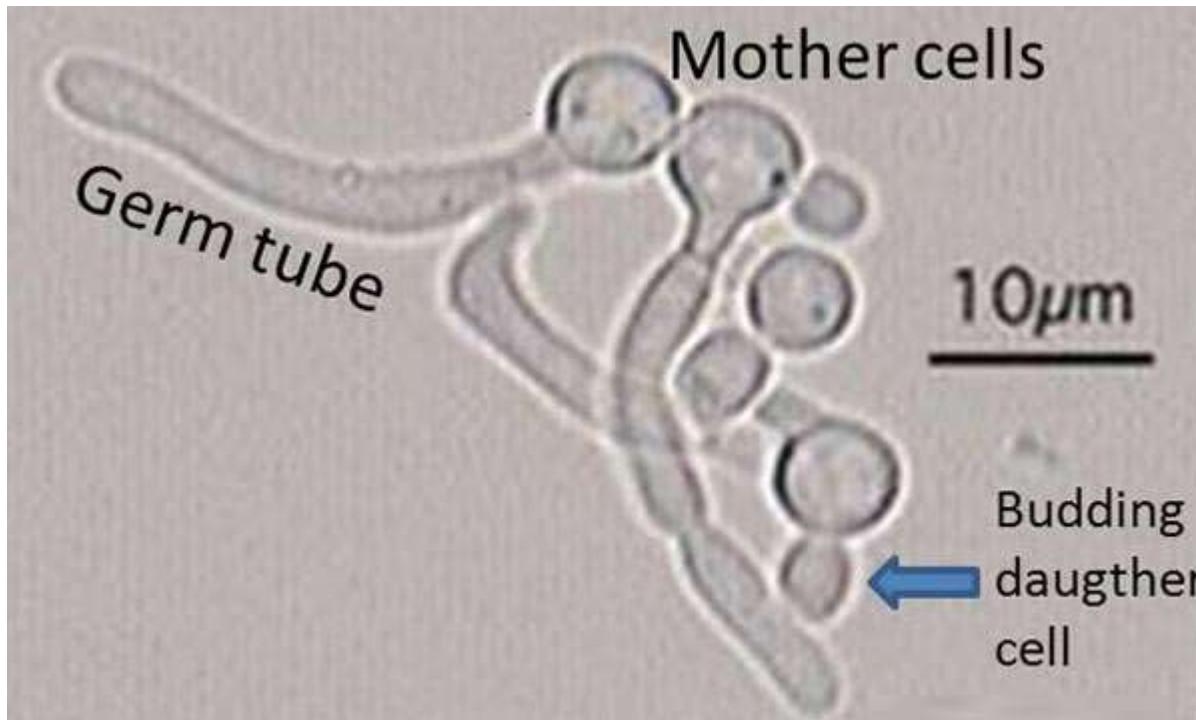


sabouraud dextrose agar



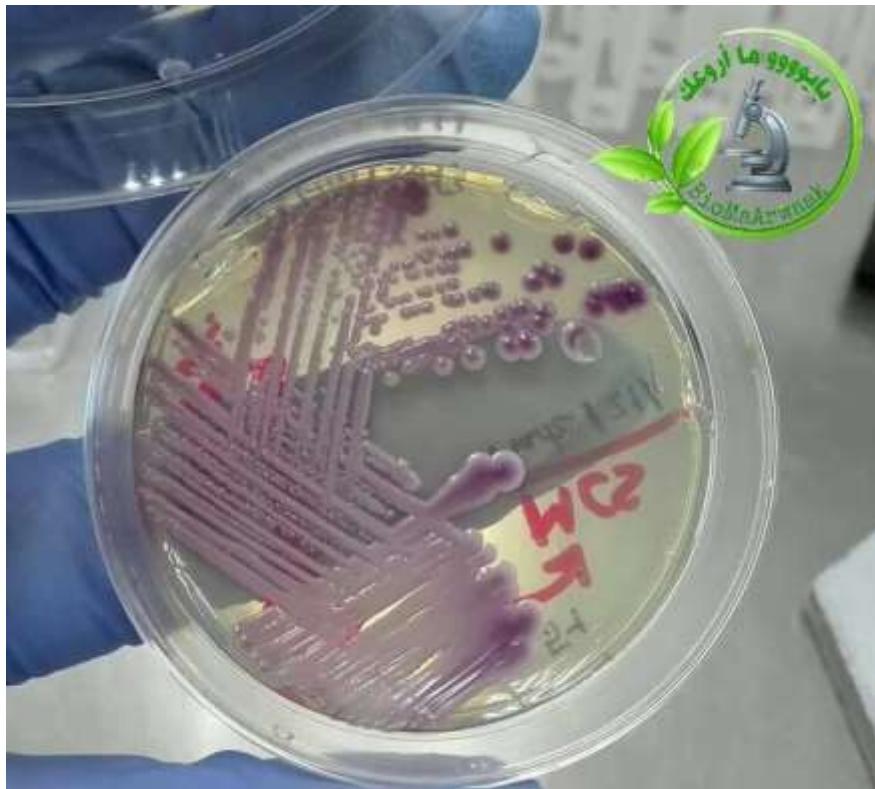
M063
Candida albicans
10231

To Differentiate between C.albican and other Species



Germ tube
[Serum + candida]

2. Chrom agar



C.glabrata : violet (dark pink)
glistering

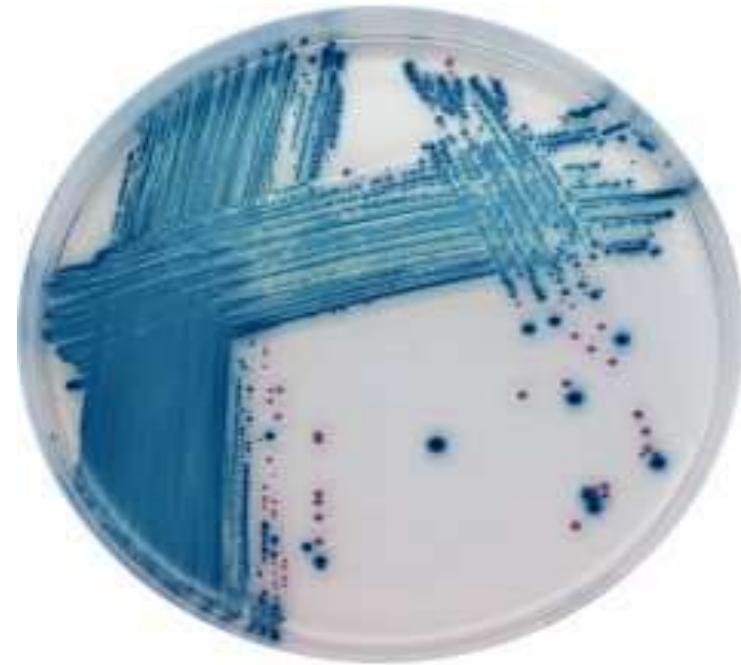


C.albicans : Green

Chrom agar



C.Krusei : rough
dry pale pink



C.Tropicalis
Blue



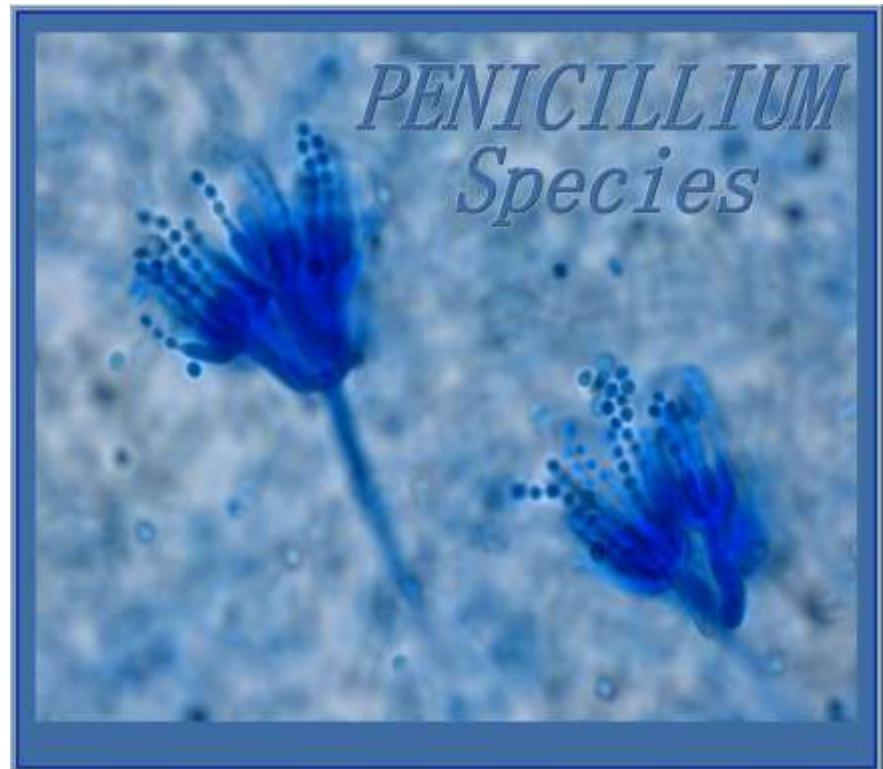
Aspergillus Niger

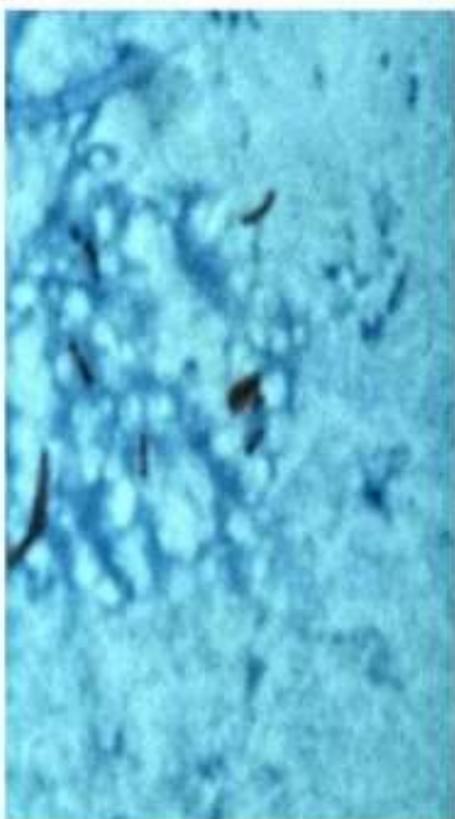


K. Nishimura

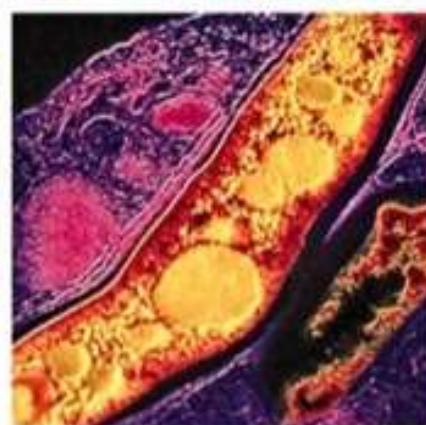
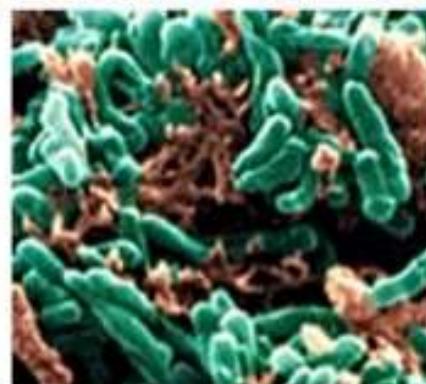


Penicillium Spp.





MYCOBACTERIUM TUBERCULOSIS



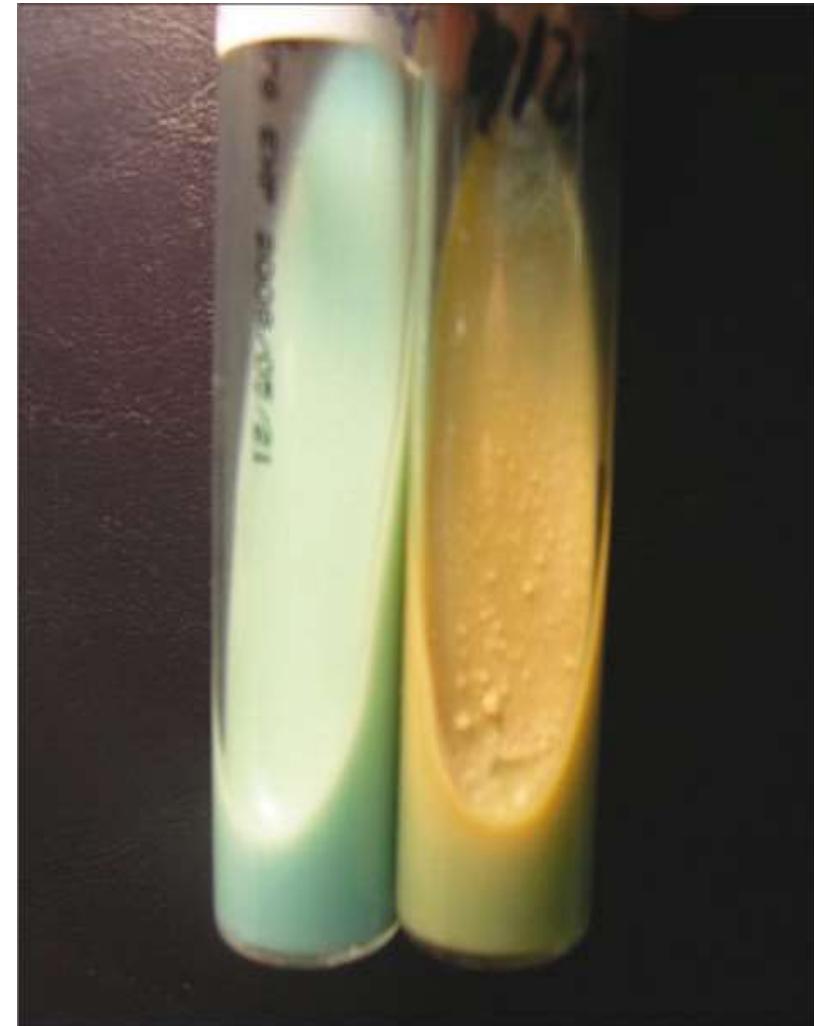
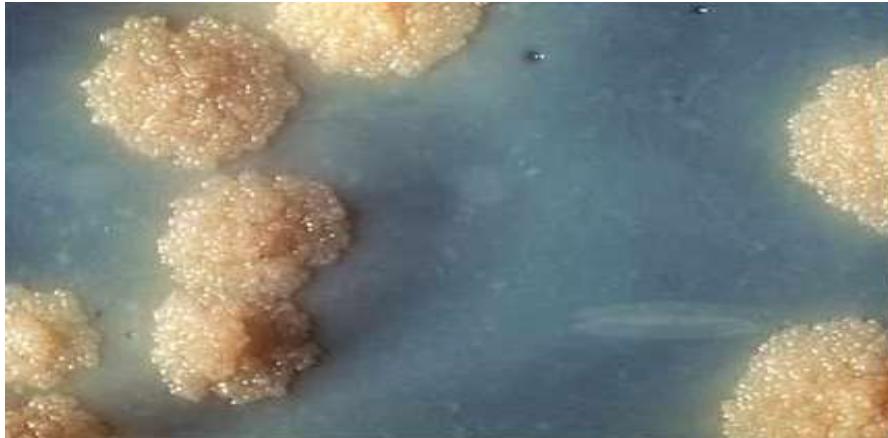
Lowenstein –Jensen Medium

- Contain malachite green and egg albumin
- Media color : green
- Cell show :

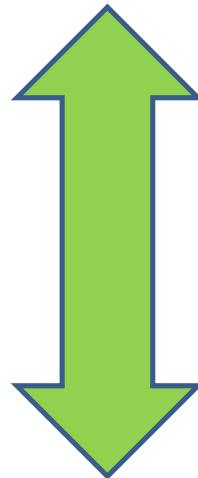
Rough

Tough

Buff



Incubation Period = 4 weeks



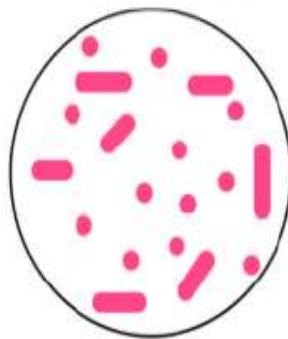
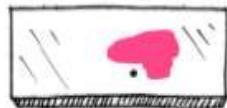
**Put the media in covered tubes
to avoid drying of media**

ziehl neelsen Acid fast stain

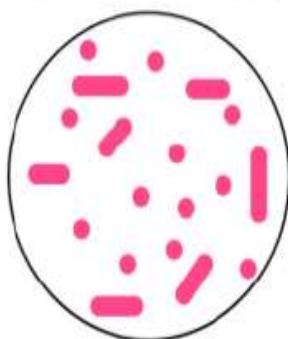
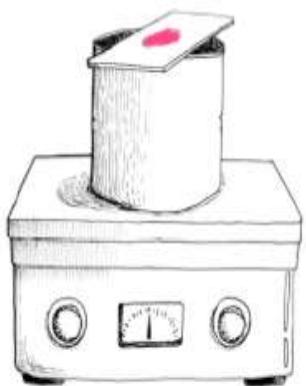
- Mycobacterium Tuberculosis cell wall are waxed for that reason do heating while staining .
- Stain made of :



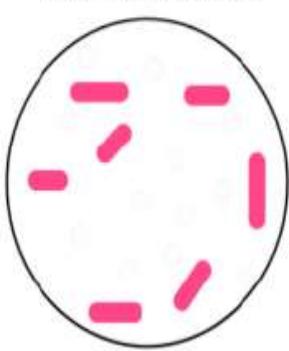
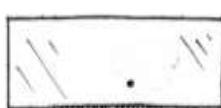
- **Carbol fuchsin**
 - Hydrochloric acid alcohol (3% HCL)
 - Methylen blue



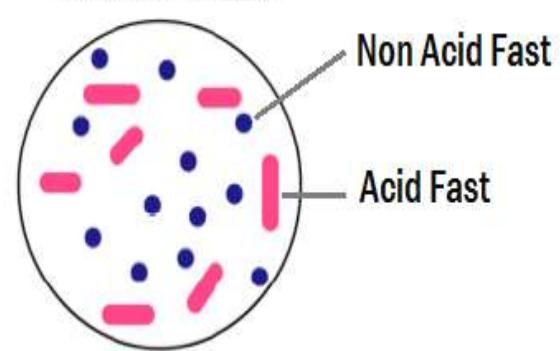
Application of
Carbolfuchsin
(primary stain)



Application
of heat
(mordant)



Application of
Acid Alcohol
(decolorizer)



Application of
Methylene Blue
(counter stain)

T.B

Acid fast stain

