

Colony Morphology

- Faculty of Medicine
- Second year 2023-2024
- The Hashemite University
- Dr. Ashraf Khasawneh



Introduction

- Provides additional information for the identification of the bacterium.
- A colony is defined as a visible mass of microorganisms all originating from a single mother cell; therefore a colony constitutes a clone of bacteria all genetically alike.

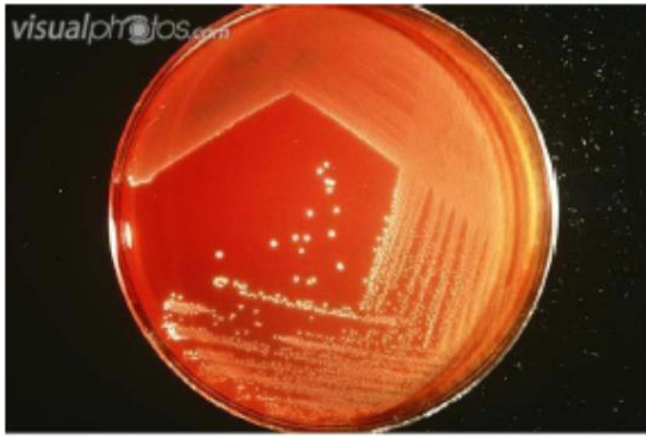


On solid medium the following characteristics are observed

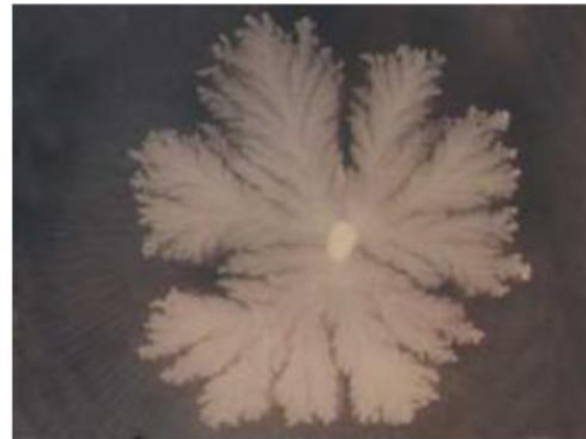
- i. **Shape:** circular, irregular, radiate or rhizoid, filamentous
- ii. **Size:** pinpoint, small, medium, large
- iii. **Elevation:** flat, raised, convex, umbonate, dimpled
- iv. **Margin:** entire, wavy, lobate, filiform, curled
- v. **Surface:** smooth, wavy, rough, granular, etc.
- vi. **Appearance:** shiny, dull, opaque
- vii. **Texture :** smooth, rough, wet, dry, moist, mucoid, brittle, viscous.
- viii. **Color :** colorless, pink, black, red, bluish-green.



1. Shape



Circular/Entire



Rhizoid



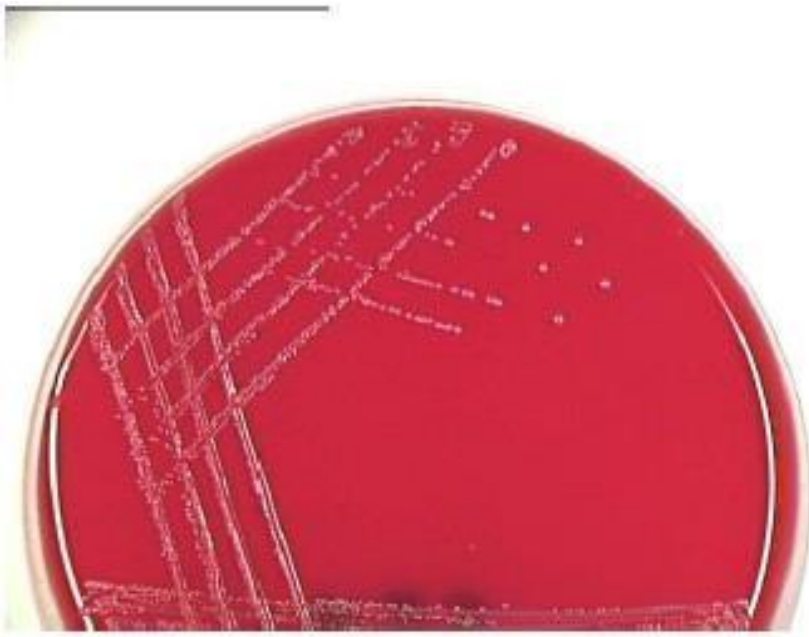
Irregular



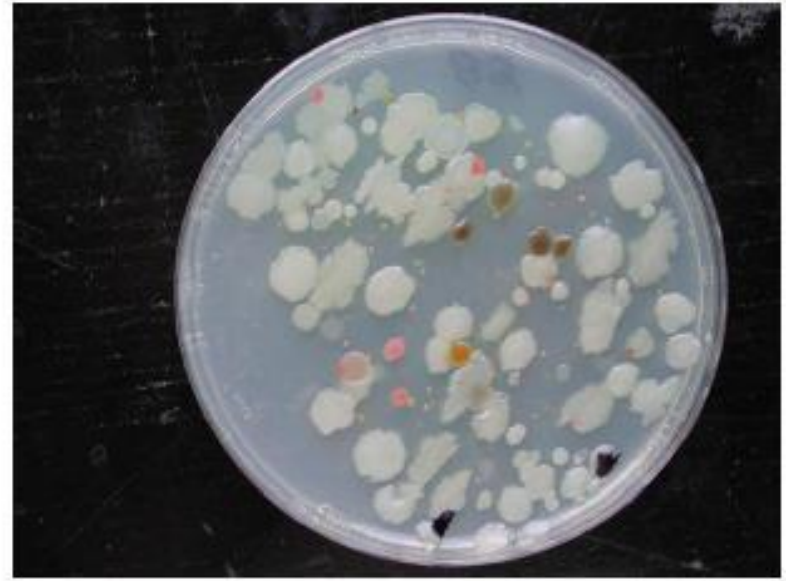
Filamentous



2. Size



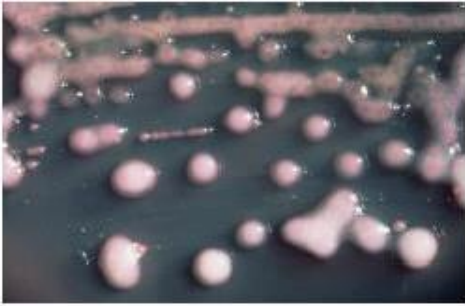
Pinpoint



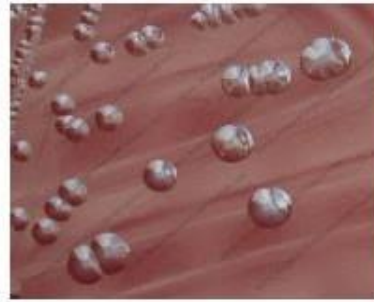
Large



3. Elevation



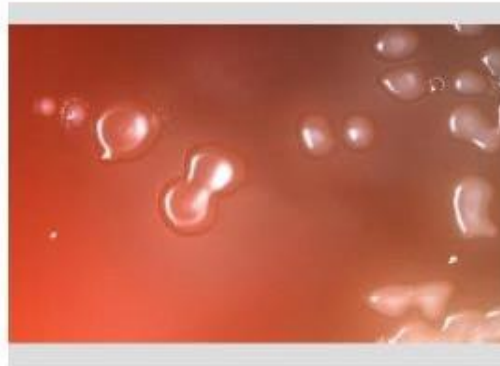
Raised



Convex



Umbonate



Dimpled

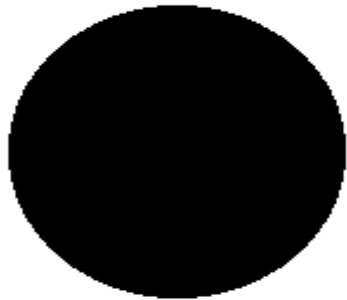


Flat



Colony Morphology

Form



Circular



Irregular



Filamentous



Rhizoid

Elevation



Raised



Convex



Flat



Umbonate



Crateriform

4.

Margin



Entire



Undulate



Filiform



Curled



Lobate

MARGIN



Curled



Entire (smooth)



Filamentous



Undulate (wavy)



Lobate



Erose (serrated)

6. Appearance

Appearance

- Shiny
- Dull
- Opaque



ASM MicrobeLibrary.org © MacDonald, Adams and Smith

Shiny



Dull



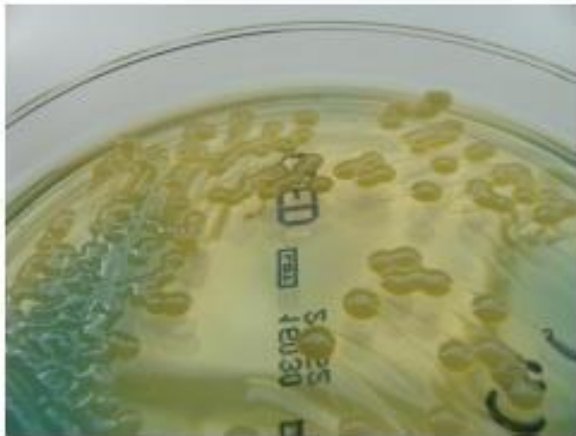
7. Texture

Texture

- Smooth
- Rough
- Wet



Smooth



Wet



Rough

TEXTURE

Slimy, moist

Matte, brittle

Shiny,
viscous

Dry, mucoid

Translucent

Iridescent
(changes
colour in
reflected
light)



8. Pigmentation



Non-pigmented



Pigmented

COLOUR



Orange



Red or pink



Black



Brown



Opaque or white



Milky



9. Hemolysis patterns

Blood Agar:

Shows three types of hemolysis

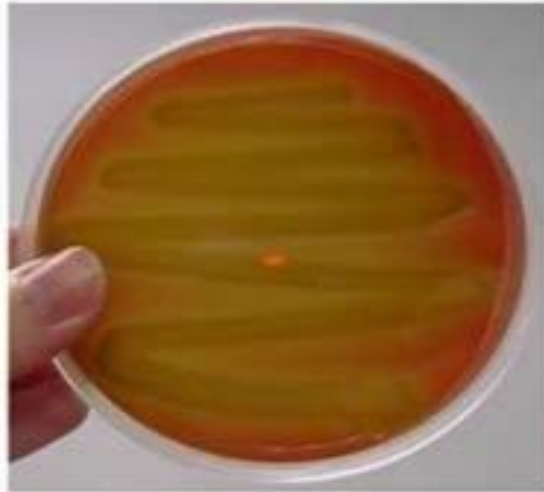
α Hemolysis

β Hemolysis

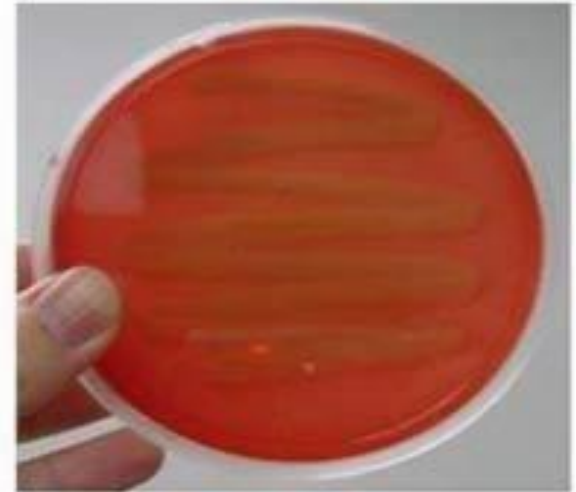
γ Hemolysis



Beta Hemolysis



Alpha Hemolysis



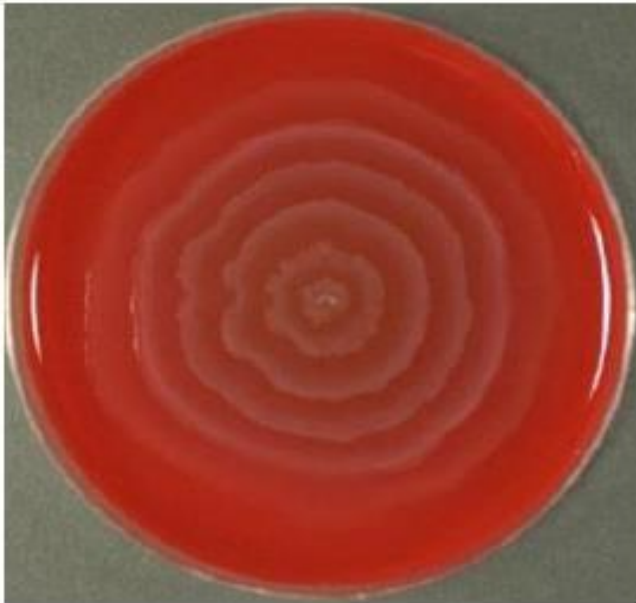
Gamma Hemolysis



10. Others

Certain bacteria may exhibit some unique characteristics.

- *Pseudomonas aeruginosa* – smells sweet, grape-like
- *Proteus* spp. – smell like chocolate cake
- *Proteus* spp. – swarm across the agar
- *Klebsiella* spp. may be very wet



Swarming *Proteus*



Wet *Klebsiella*

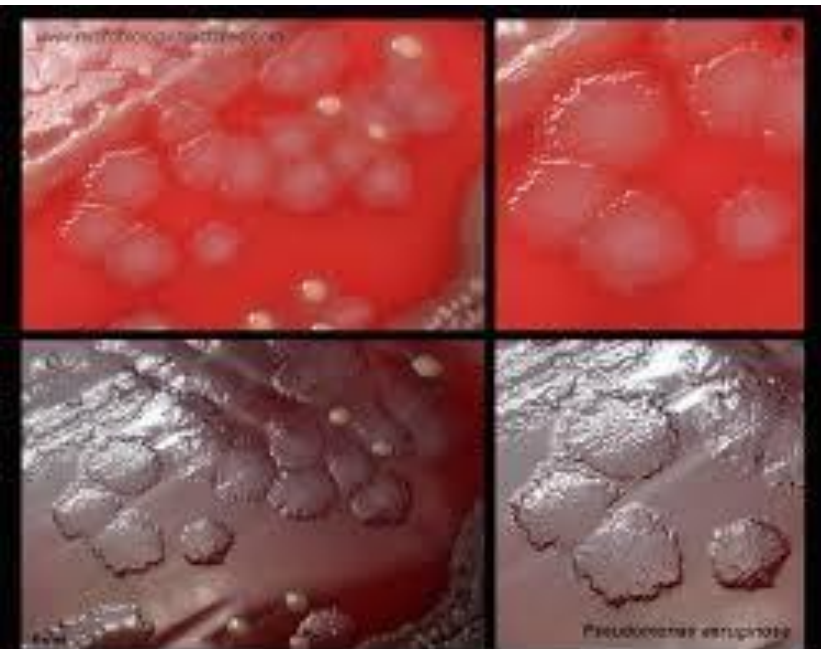


Colony Morphology examples on blood agar



Pseudomonas aeruginosa

- Irregular
- Raised
- Unclear margins
- Moist
- Opaque
- Shiny
- Brownish gray
- 2 mm



Colony Morphology examples on blood agar

Sorbitol MacConkey



Escherichia coli

- Circular
- white
- Raised
- Opaque
- Soft
- Moist
- Regular margins
- Beta hemolysis



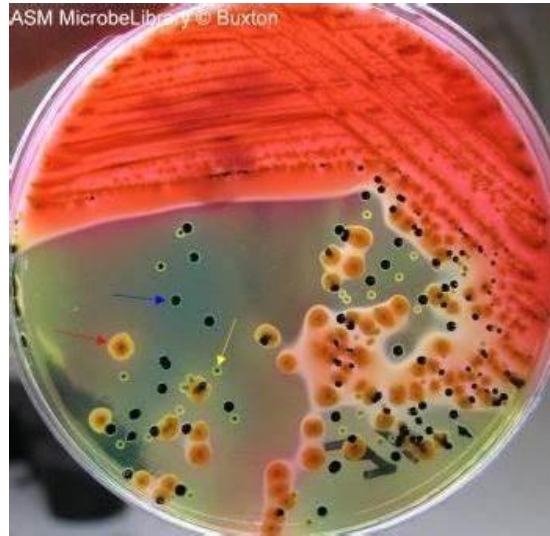
Colony Morphology examples on blood agar

Klebsiella pneumoniae

- Circular
- Mucoid
- 2-3 mm
- Regular margin
- Grayish white
- Opaque

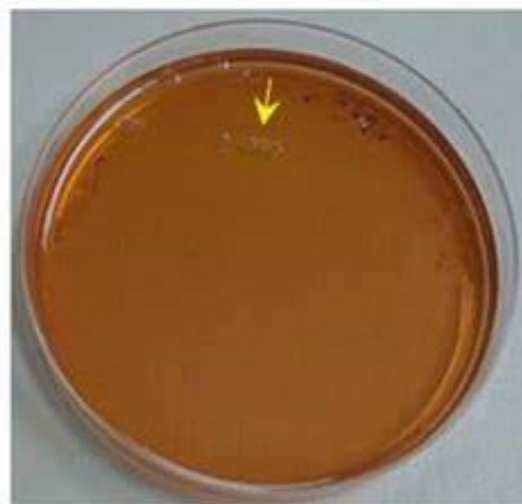


Colony Morphology examples on blood agar



Salmonella typhi

- Circular
- flat
- 1-2 mm
- Regular margin
- Gray
- Opaque
- Moist



Salmonella on SS Agar

Shigella on SS Agar



Colony Morphology examples on blood agar



Proteus species

- Irregular margin
- Unclear colonies
- Swarming appearance



Colony Morphology examples on blood agar

Acinetobacter

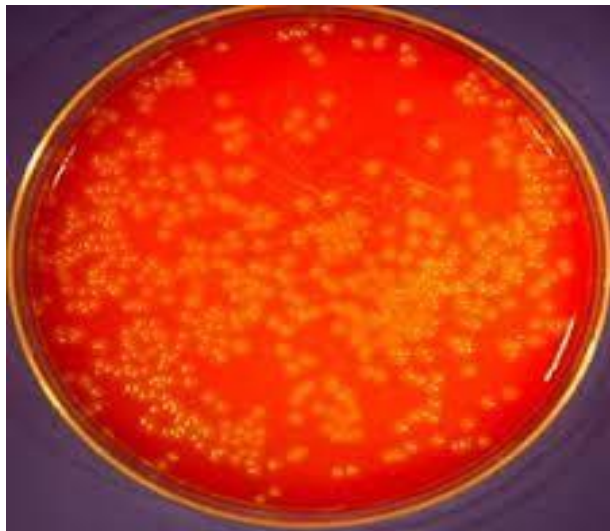


- Shiny
- Circular
- Raised
- Clear
- Moist
- Small 1mm



Colony Morphology examples on blood agar

Listeria

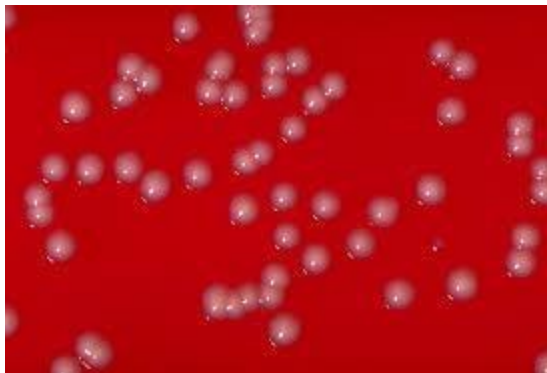


- Tiny
- Circular
- Regular
- Opaque
- Smooth surface
- Glistening
- 1mm



Colony Morphology examples on blood agar

Corynebacterium diphtheriae



- 0.5 mm
- Whitish gray
- Glistening
- Raised
- Circular
- No hemolysis



Colony Morphology examples on blood agar

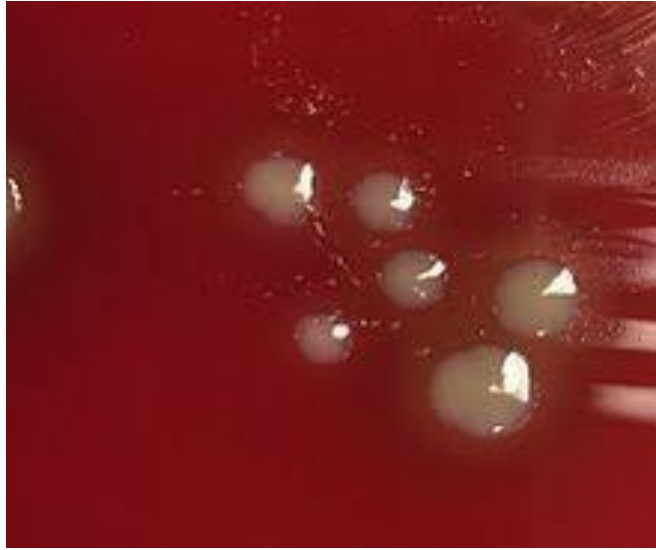
Shigella sonnei



Salmonella-Shigella (SS) Agar

- 1-2 mm
- Circular
- Moist
- Entire margin

Colony Morphology examples on blood agar



Haemophilus influenzae

- Circular
- Convex
- Transparent
- colorless
- Moist
- Small
- Satellite



Colony Morphology examples on blood agar

Staphylococcus aureus



- Golden yellow
- Beta hemolysis
- Circular
- 1 mm
- raised
- Entire margins
- Opaque
- Small
- Glistening



Colony Morphology examples on blood agar

Staphylococcus epidermidis



- Gray whitish color
- Beta hemolysis
- Convex
- Opaque
- 0.5 mm
- Wet



Colony Morphology examples on blood agar

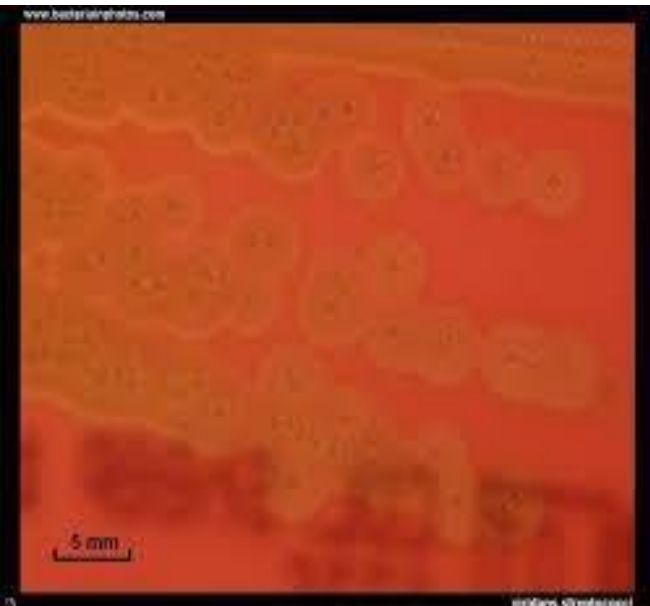
Enterococcus faecalis



- Raised
- 1 mm
- Gray
- Circular
- Regular margins
- Gamma-hemolysis



Colony Morphology examples on blood agar



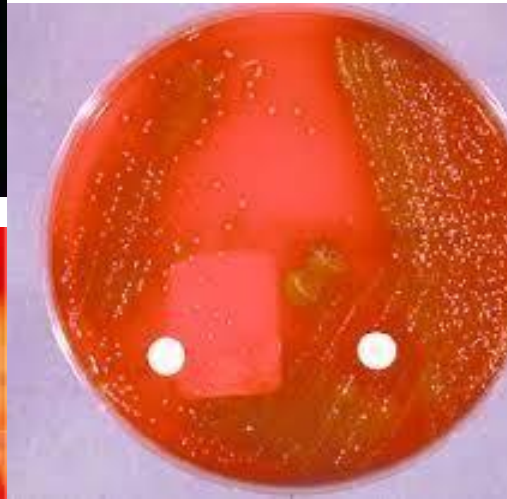
Viridans streptococci

- Circular
- Regular margins
- 0.2-0.3 mm
- Alpha-hemolysis



Colony Morphology examples on blood agar

Streptococcus pyogenes



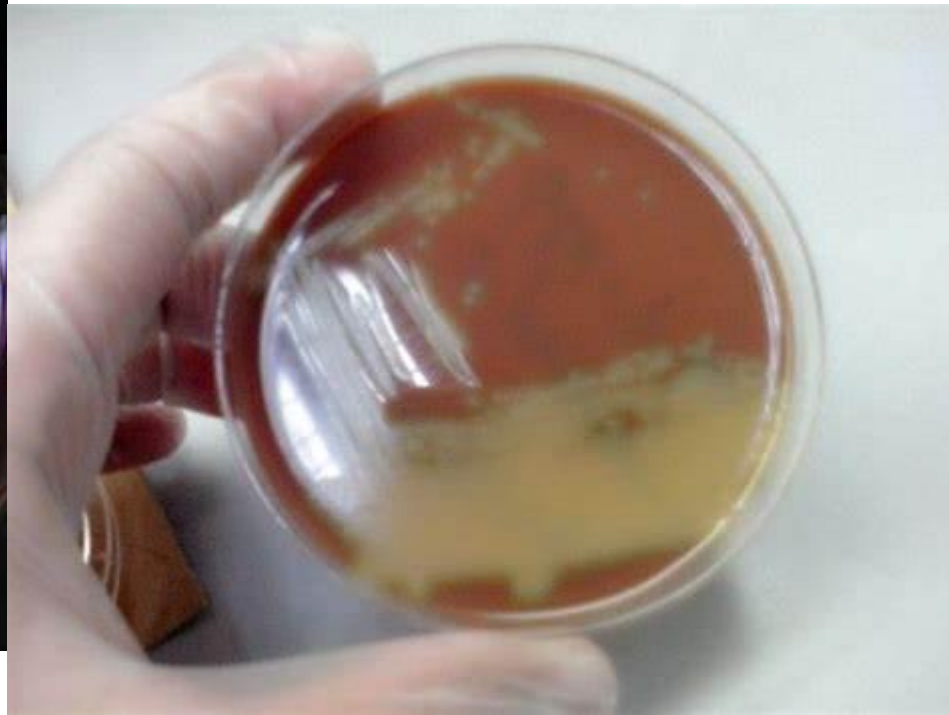
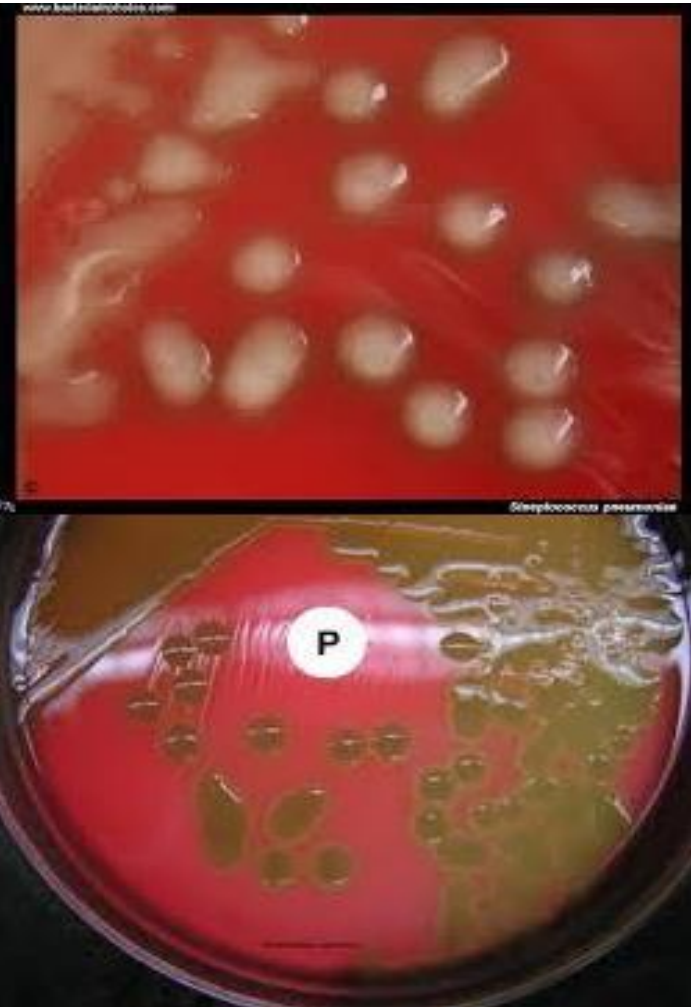
- Dry
- Opaque
- Regular margins
- Circular
- 0.5 mm
- Gray
- Beta-hemolysis



Colony morphology examples on blood agar

Streptococcus pneumoniae

- Irregular margins
- Raised
- Unclear margins
- Moist
- Opaque
- Shiny
- 2 mm
- Alpha-hemolysis



GOOD LUCK

