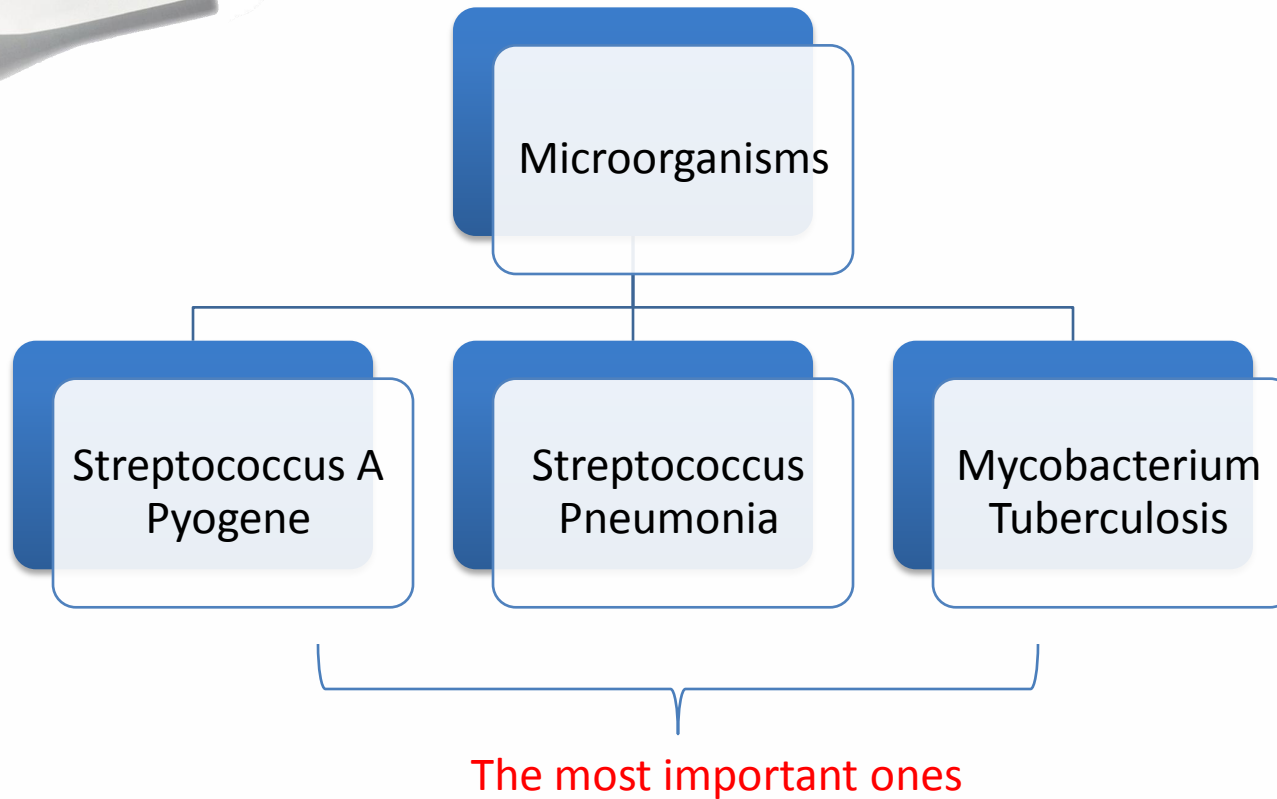


# Mind map (Practical)

important  
things are  
highlighted in  
**RED**

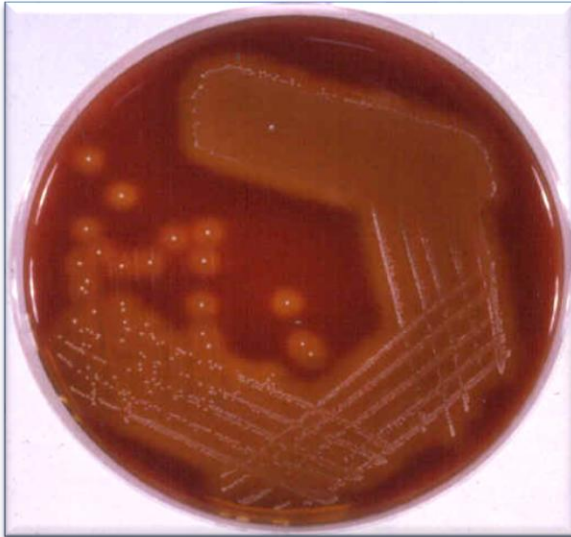


# Bacteriology

## Case 1

A **5 year** boy was brought to hospital, outpatient department complaining of **fever** and **sore throat**. He had **regular vaccination** history. On examination his temperature was **38.5° c**, the tonsil area and **pharynx were obviously inflamed** with some **foci of pus**.





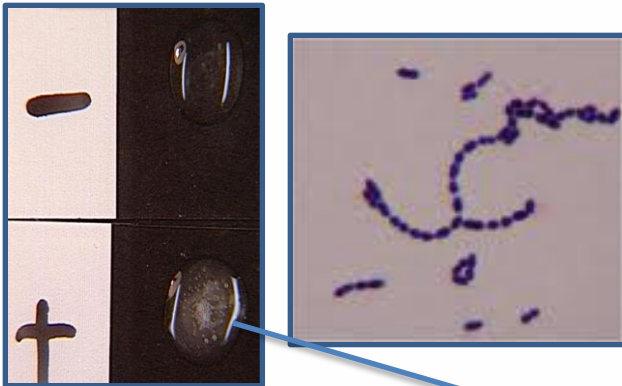
## Blood & Catalase tests:

The full blood count showed a total white cell count of 15000/ml.

Throat swab culture showed colonies with clear haemolysis on blood agar.

They were catalase **negative**.

The gram stain of these colonies showed gram positive cocci in chains



Catalase test

Catalase test differentiates between staphylococci and streptococci. Catalase is produced by staph. So it will appear as bubbles gas if it positive

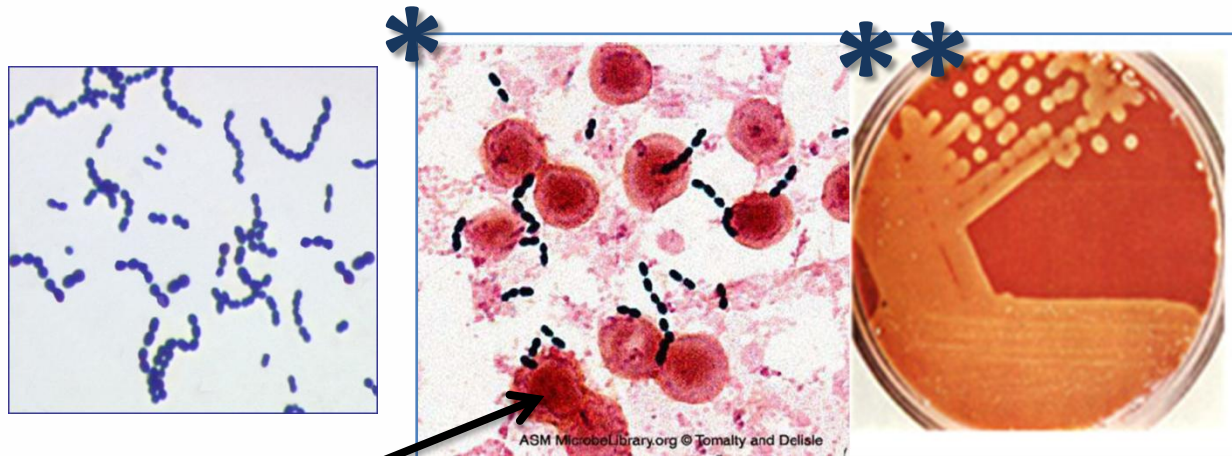
**Disease:** Pharyngitis ( inflammation of the pharynx, also called **sore throat**)

**Organism:** **Streptococcus pyogenes Group A** (catalase test confirmed it to be bacteria, but it's commonly cause by viruses)

**Diagnosis:** 1) Throat swab → gram stain\* and Culture in blood agar\*\*.  
2) **Bacitracin test\*\*\***

**Treatment :** Penicillin G (or erythromycin if the patient have allergy of penicillin )

**Complications:** rheumatoid fever and glumuler nephritis



\* Gram stain of Streptococcus pyogenes in a clinical specimen

\*\* Colonies of *Streptococcus pyogenes* on blood agar exhibiting beta (clear) hemolysis

neutrophils

\*\*\*: it's a test that confirms the diagnosis because it distinguishes between S.group A & S.group B.

# Case 2

A 28 Year Old Female presented to the accident and emergency of KKUH with a sudden onset of fever, right sided chest pain and productive cough of purulent sputum. On examination her temperature was 39 °C. There were Rhonci and dullness on the right side of the chest. X-ray showed massive consolidation on the right side of the chest.





## Disease :

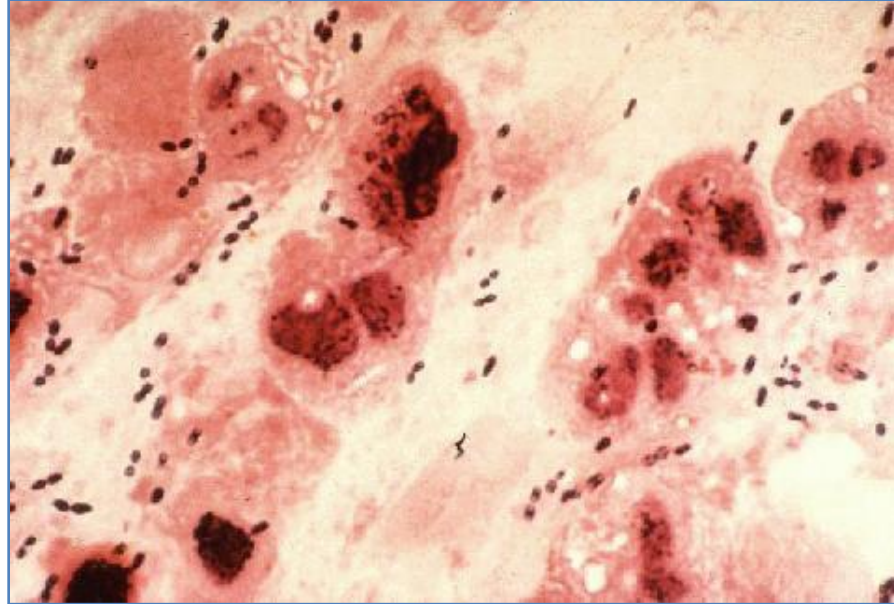
Inflammation of the right lung  
(lobar pneumonia)

## Organism :

Streptococcus pneumonia  
(Pneumococci)

## Investigation :

Sputum for culture (showing:  
Alpha hemolytic colonies in blood  
agar)



The difference between Pneumococci & group A is that the 1<sup>st</sup> are diplococci ( ●● )

## Diagnosis :

We need to know is it strept or staph?

### 1-catalase test:

Is negative (-) → it's streptococci not staphylococci

It's strept! But we need to know is it beta or alpha hemolytic?

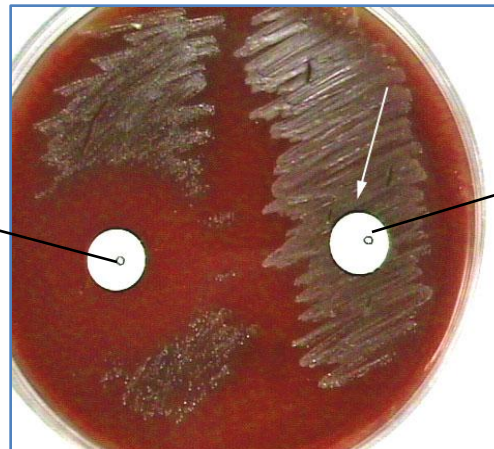
### 2-hemolysis test:

green shadows → the streptococci are Alpha-hemolytic

we need to know witch species, is it pneumoniae or not?

### 3- Optochin Susceptibility Test:

Optochin susceptible  
*S. pneumoniae*



Optochin resistant  
*S. viridans*

To Distinguish between  
streptococcus pneumonia  
from other streptococci

**Treatment:**

Penicillin G



# CASE 3

Abdul Karim is a 45 year old Saudi man who was admitted Hospital because of **2-3 month history of loss of appetite, weight loss**, and on and off **fever** with attacks of **cough**. Two days before admission, he **coughed blood (haemoptysis)** Abdul karim is **diabetic** for the last 5 years. His father died of **tuberculosis** at the age of 45 years.

- X – ray showed multiple opacities and cavities
- The ESR was increased (85 m /hour)



chest x-ray with bilateral upper lobe opacities (white areas) with including a very large cavity in the right upper lobe (arrows).

## Disease:

Pulmonary tuberculosis , granulomatous inflammation of the lung ( TB )

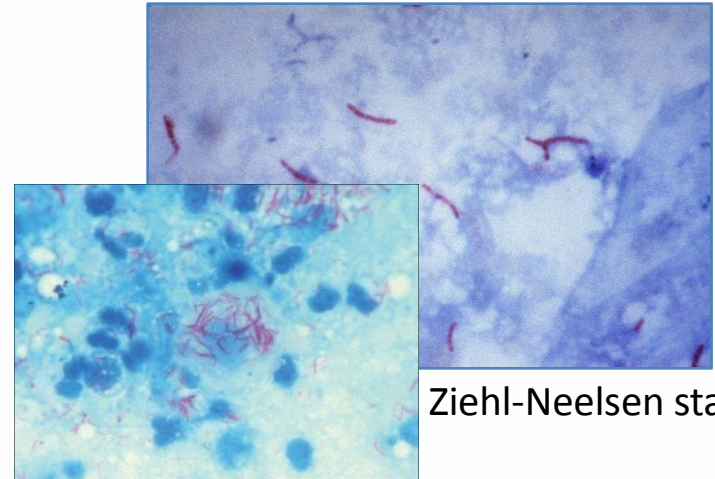
## Organism:

Mycobacterium tuberculosis

## Diagnosis:

### 1-Sputum Microscopy:

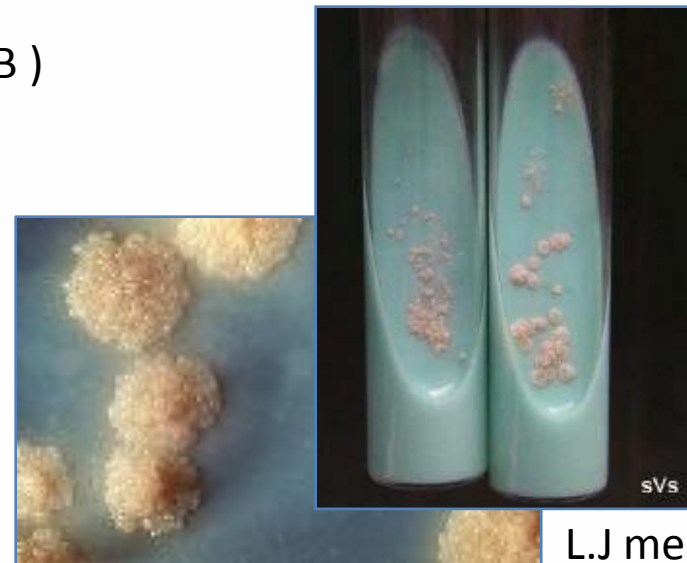
Ziehl-Neelsen stain shows Acid Fast Bacilli ( AFB )



Ziehl-Neelsen stain

### 2-Culture:

Growth on L.J media ( selective media for mycobacteria)



L.J media

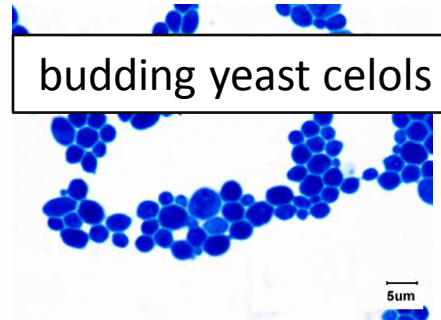
# Mycology

Less important

## 1. Candida albicans

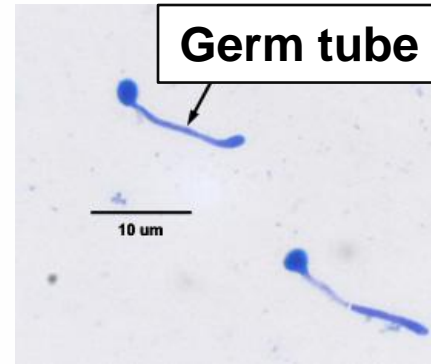


Vaginal Smear



budding yeast celols

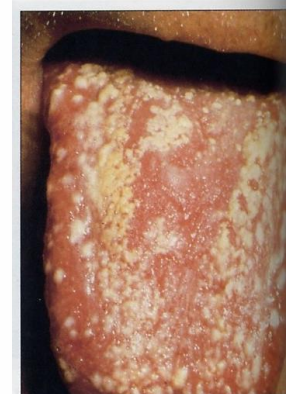
With Gram stain



Germ tube

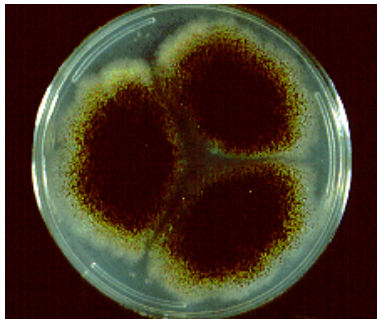
10 um

Dimorphal switch (from a yeast form to a filamentous form)

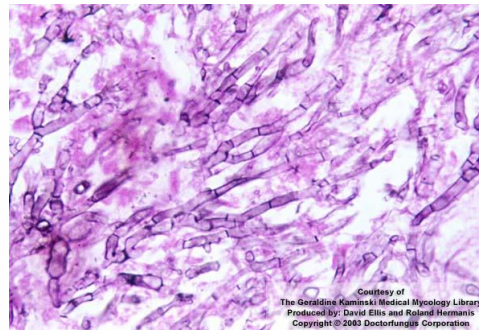


oral thrush

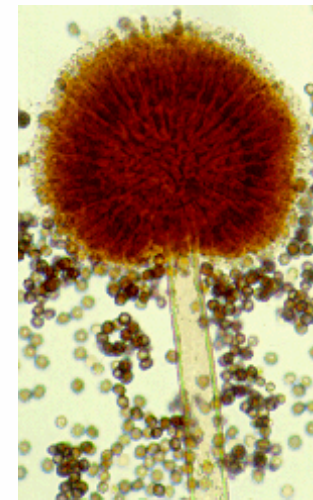
## 2. Aspergillus niger



Culture of A. niger.



GMS stain section showing dichotomously branching



Conidial head of A. niger